

NATURAL
LANDS
TRUST

Conservation Design

in the Chesapeake Bay Watershed



November 2000

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Part One

CONSERVATION SUBDIVISION DESIGN *A Four-Step Process*

NATURAL LANDS: Special Places in Your Community

If you live in a rural area or along the suburban fringe, chances are that you live not far from a stream valley, wildflower meadow, or woodland. Chances are also good that none of these special places will be recognizable 20 or 30 years from now, unless they are in a public park, state forest, or federal wildlife refuge, or unless they happen to be protected through a conservation easement held by a conservation organization such as a land trust.

That is because most counties (with some notable exceptions) have adopted zoning and subdivision ordinances whose principal purpose is to set rules for the orderly conversion of virtually all land that is dry, flood-free, and flat to moderately sloping, into developed properties.

Fortunately, practical alternatives do in fact exist, and this publication describes a straight-forward way to ensure that new subdivisions are designed around the central organizing principle of conservation. This technique can also be used to help communities create an interconnected network of open space through creative approaches to land development. Such an approach is especially relevant within the Chesapeake Bay watershed, where water quality issues are extremely important, and where

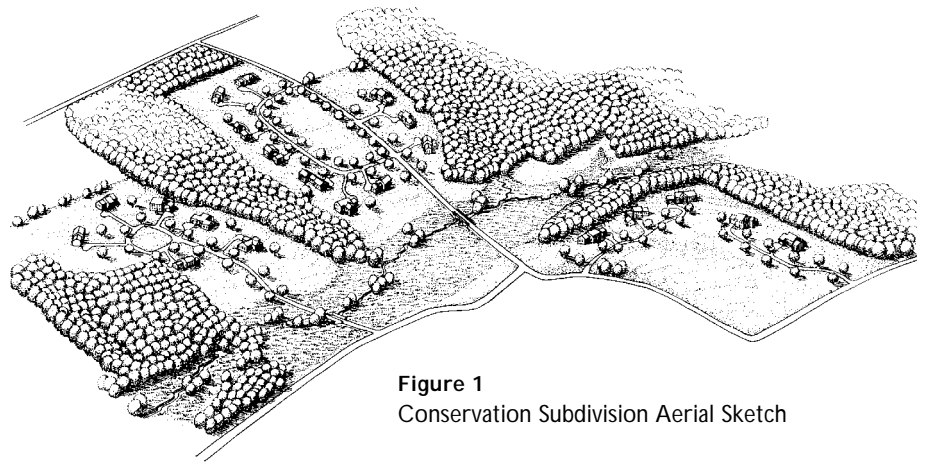


Figure 1
Conservation Subdivision Aerial Sketch

there is a real need to conserve the remaining woodland habitat (and to reforest previously cleared areas, wherever possible) .

SPECIAL FEATURES WORTH CONSERVING

The aerial drawing above (Figure 1) shows how a semi-wooded property could be developed at the normal two-acre density allowed under existing zoning, following the principles of conservation design. Altogether, two-thirds of this 63-acre parcel could be conserved, including 23 acres of upland woods, five acres of wetlands, and 14 acres of open meadow.

Although the woodlands on this site are not visually spectacular, they are capable of providing instant buffering between backyards in addition to their intrinsic habitat value. The species found there along a typical 300-foot length include white ash, tulip poplar, white oak, sweet gum, cockspur hawthorn, wild crabapple,

black cherry, and hackberry. These trees provide many perching, feeding and nesting opportunities for a variety of arboreal birds such as indigo buntings, tree swallows and bluebirds, as well as habitat for raccoons, opossums, and squirrels.

Beside some of the woodlands grows a dense thicket of shrubs including black chokeberry, box huckleberry, pin cherry, American hazelnut, viburnum, elderberry and blackberry bramble which, together with a variety of thick meadow grasses, offer excellent cover for meadow voles and other small rodents, providing abundant food sources for foxes and other carnivores.

The meadows bordering the stream valley are filled with rue anemone, sweet flag, marsh bellflowers, turtlehead, spearmint, milkweed, silky dogwood and summersweet or sweet pepperbush, and the upland meadows are noted for their wild strawberry, sleepy catchfly, tall anemone thim-

Figure 2
Before Development Aerial Sketch

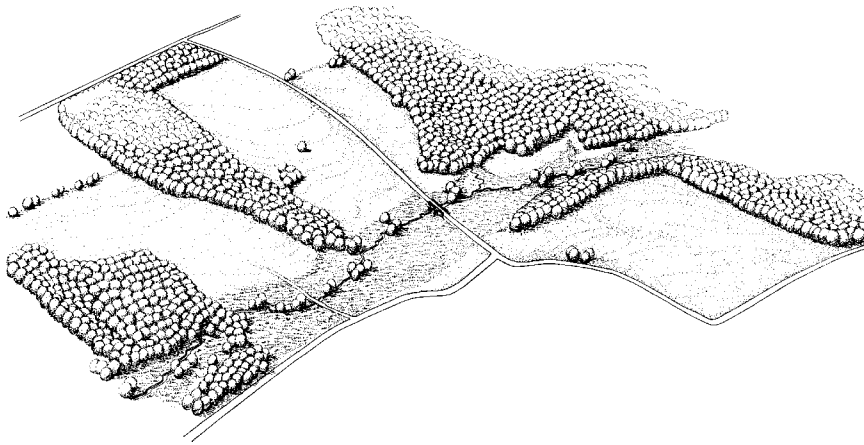


Figure 3
Yield Plan

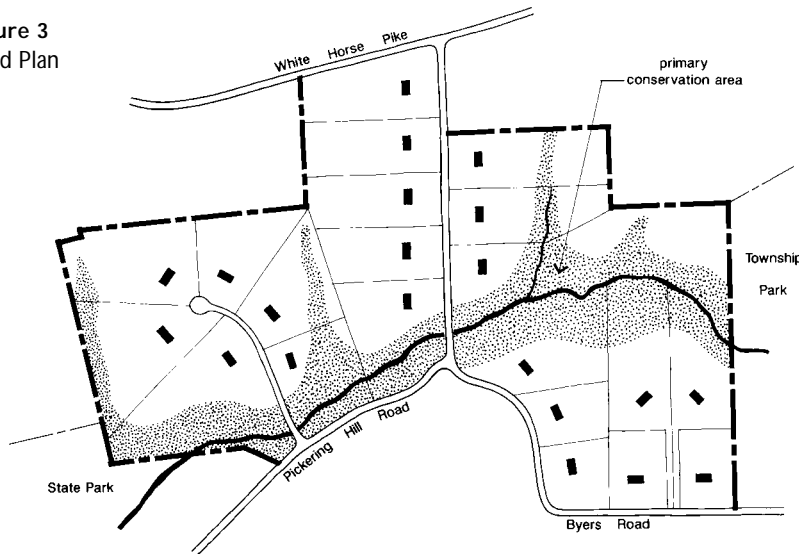
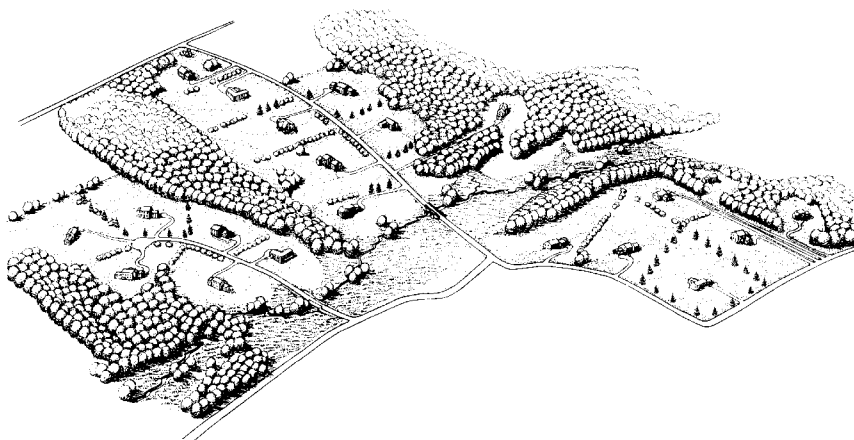


Figure 4
Yield Plan Aerial Sketch



bleweed and broomsedge. These features can also be seen in Figure 2, showing the site in its pre-development state.

Under normal development circumstances, not one of these features would rate highly enough for it to be designed around and saved, or even noted, as local ordinances typically do not address conservation of such natural areas. However, they provide food and shelter for a myriad of birds, small mammals, amphibians and insects. (For example, milkweed is a critical plant in the life cycle of the Monarch butterfly, a species that is currently suffering markedly from the careless destruction of this kind of habitat, which is almost universally being replaced by tidy suburban lawns.)

CONVENTIONAL SUBDIVISION DESIGN

Figures 3 and 4 illustrate the typical kind of “checkerboard” layout that is permitted (sometimes even required) by local zoning and subdivision ordinances. Conventional developments such as this needlessly displace wildlife habitat and convert other natural areas into ecologically diminished suburban yardspace. The same number of houses could just as easily be accommodated onto a smaller portion of the land, not only reducing development costs but also helping to foster a greater sense of community among the new residents by providing them with a more neighborly arrangement of homes. The two-acre lots shown in these drawings are “too large to mow and too small to plow.” Meanwhile, many forms of wildlife are driven farther away, and opportunities to take woodland walks or weekend strolls across wildflower meadows simply do not exist, because every acre has been divided into private lawns and yards.

THE CONTEXT

Local Planning for Conservation and Development

To broaden land conservation efforts throughout the region, this publication has been prepared by staff at the Natural Lands Trust in Media, Pennsylvania, who have for the past five years been working on an approach to revising local zoning and subdivision ordinances that will multiply the options available to landowners, while also setting higher standards for both the quantity and quality of land that is set aside for permanent conservation.

Protecting Networks of Conservation Lands

The ultimate goal of these planning efforts is to help local officials identify and protect an interconnected network of natural lands woven into the fabric of new development, to assure greener futures for succeeding generations of residents. While traditional conservation methods such as acquisition, easements and "limited development" (involving greatly reduced densities) will continue to play an important role in certain instances, it is likely that the vast majority of undeveloped parcels in the Bay watershed region will ultimately be proposed for full-density residential development in the years to come. It is therefore essential that more conservation-oriented design standards be incorporated into the local land-use ordinances that govern subdivision proposals, so that the majority of new developments will contain a substantial percentage of protected open space.

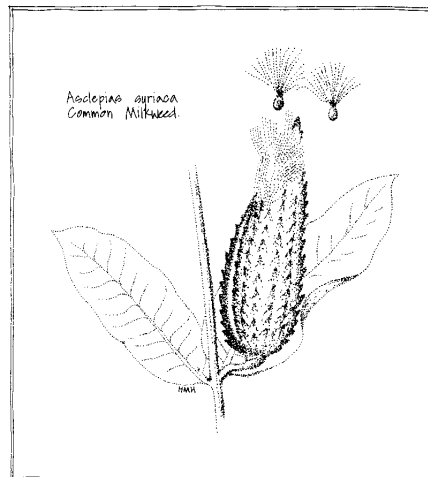
County-wide Open Space Plans

The site planning principles which this publication advocates for individual properties that are proposed by their owners for development are part of a much larger effort to help local

officials prepare county-wide open space plans. These plans typically include maps combining a variety of natural resource data with tax parcel boundaries to identify, well in advance of development, broad opportunities for conservation throughout the community.

Ordinance Improvements

After completing these maps and drafting specific planning policies to conserve significant resources, the next step involves helping local officials to update their land-use ordinances. A key provision allows communities to require that developers take those pre-identified conservation areas into ac-



count and design their houselots and streets around them in a respectful manner. In a typical situation, flexible standards for lot size and frontage allow for the full legal density to be achieved on one-third to one-half of the buildable land, leaving the balance in permanent conservation.

Several jurisdictions in the region have also taken the further step of requiring that developers group their homes on half or less of their unconstrained land so that upland terrestrial habitat and other ecologically important areas may be maintained in their

natural state. Current regulations in most parts of the Bay watershed protect only unbuildable areas such as wetlands, floodplains, and steep slopes (the so-called "obligatory open space"). Without open space design standards such as advocated here, most developers would continue to overlook other important conservation possibilities in their subdivisions, fragmenting many kinds of natural lands into individual houselots, rather than designing around them to create undivided conservation areas managed for long-term resource protection.

The kind of resource fragmentation described above is illustrated in Figures 3 and 4 and in the upper part of Figure 5, showing a typical large-lot subdivision layout that divides all upland and lowland areas on the subject parcel into a checkerboard of houselots and streets. Houses would, of course, be located away from wetlands, floodplains and steep slopes under most current ordinances, but woodlands and meadows would typically be cut up into individual lots and converted to suburban yardspace, precluding any overall management to enhance wildlife habitat or conserve other resource values.

In the majority of cases where complete protection of the land is not possible, new ordinance standards can be adopted to ensure that developers lay out their houselots and streets around the central organizing principle of open space conservation.

Although lots that abut conservation land typically sell more quickly and at premium prices compared with standard lots surrounded by more of the same, many developers lack experience in designing and marketing this kind of alternative, and therefore tend to continue subdividing in the conventional land-consumptive manner.

CONSERVATION SUBDIVISIONS

A new breed of development—known as “conservation subdivisions”—is illustrated in the middle section of Figure 5. In communities where all three controlling documents (the comprehensive plan and the zoning and subdivision ordinances) are coordinated to produce an interconnected network of natural lands—even after the last unprotected property is ultimately developed—subdivisions would typically contain between 50 and 70 percent conservation land. Those areas would be located in broad conformance with a community-wide “Map of Conservation and Development” to ensure that the eased land in each development will connect with similar areas on adjoining parcels.

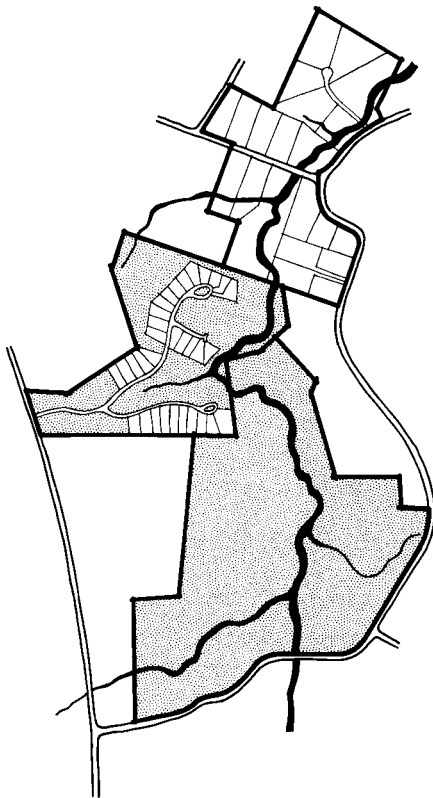


Figure 5
Three parcels on a stream valley

Conserving a parcel in its entirety—either through fee ownership or holding an easement—as illustrated in the lower example in Figure 5 is, of course, preferable, but may not always be practicable. Land trust preservation efforts are an indispensable element of any well-balanced open space protection strategy, but the role of such organizations is limited because they rely largely on the generosity of conservation-minded landowners and donors. Likewise, neither county open space bond monies, nor funding available from state-level acquisition programs, will be able to protect more than a handful of properties. The balance of this section describes a practical approach for designing full-density subdivisions around conservation principles, in accordance with new planning policies and ordinance standards devised to help communities implement their visions of a greener future for the generations that will follow our own.

Designing Around Conservation Features: The Four-Step Process

Until now, the zoning regulations in most communities have established a “one size fits all” approach to regulating lot sizes in each of their various districts, essentially creating a single standard size for new houselots which frequently results in “checkerboard” layouts of nearly identical lots covering the entire parcel. This result is illustrated in Figures 3 and 4, which for the purposes of the following example serves one useful purpose—as a “Yield Plan” demonstrating the legal development potential of the site (in this case, 21 lots could be created).

To provide more options for landowners (and developers) who might want to conserve their site’s most special features, while at the same time receiving an acceptable economic return on their property, model zoning

regulations have been drafted that offer a wide range of density options (from rural estate lots to village designs), each of which is related to specific standards for open space conservation. This approach is sometimes referred to as “multi-tiered zoning.”

In addition, new model standards have been drafted for designing residential subdivisions, accompanied by improved procedures for governing the process in which these development proposals are reviewed. The basic idea is to set up an approach in which land conservation becomes the central organizing principle around which houselots and streets are sensitively designed. As a general rule, this approach would conserve half to two-thirds of the land area of each site, in addition to the wetlands, floodplains and steep slopes that are already protected under existing regulations. This approach has been created to work well at both reduced density and full density levels, so that the principle of landowner equity is respected.

Among the procedures recommended here is the preparation of an “Existing Resources and Site Analysis Map.” (In this section these features are all shown on Figures 6 and 7.) This critical element identifies all the special characteristics of the subject property, from unbuildable areas such as wetlands, floodplains and steep slopes, to other kinds of land that are developable but which contain certain features that merit the small amount of additional effort needed for their conservation. Such features might include mature or healthy and diverse woodlands, wildlife habitats critical for breeding or feeding, hedgerows and prime farmland, scenic views into and out of the site, and historic buildings in their rural context.

Production of the “Existing Resources and Site Analysis Map” sets the stage for beginning the four-step design process.

**Step One:
Identifying Conservation Areas**

The first step, which involves the identification of open space worthy of preservation, is divided into two parts: Primary Conservation Areas (Figure 6) limited to regulatory wetlands, floodplains and steep slopes, and Secondary Conservation Areas (Figure 7) including those unprotected elements of the natural and cultural landscape that deserve to be spared from clearing, grading, and development.

The act of delineating conservation areas also defines "Potential Development Areas," which occupy the balance of the site (Figure 8). This completes the first step and virtually ensures that the site's fundamental integrity will be protected, regardless of the actual configuration of house-lots and streets that will follow. In other words, once the "big picture" of conservation has been brought into focus, the rest of the design process essentially involves only lesser details. Those details, which are of critical importance to progressive developers, knowledgeable realtors, and future residents, are addressed during the last three steps. In Figure 7, those features include the mature woodlands, hedgerows, wildflower meadows, stream valley, and views into the property from the existing road.

**Step Two:
Locating House Sites**

The second step involves locating the approximate sites of individual houses, which for marketing and quality-of-life reasons should be placed at a respectful proximity to the conservation areas, with homes backing up to woodlands or hedgerows for privacy, fronting onto a central common or wildflower meadow, or enjoying long views across open fields or boggy areas (Figure 9). In a full-density plan, the number of house

Figure 6
Primary Conservation Areas

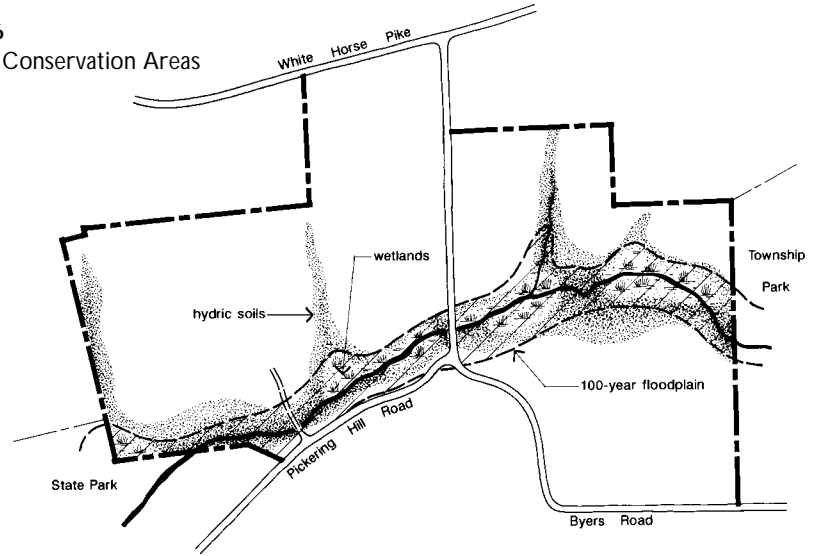


Figure 7
Secondary Conservation Areas

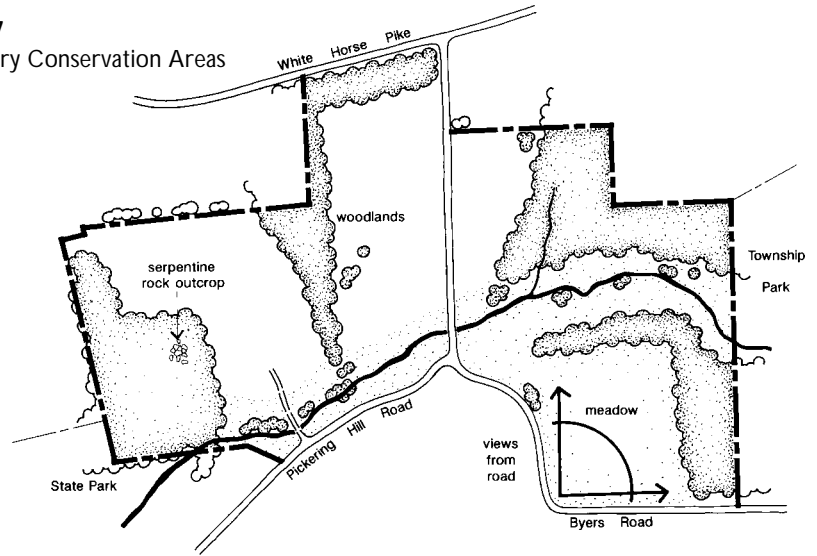
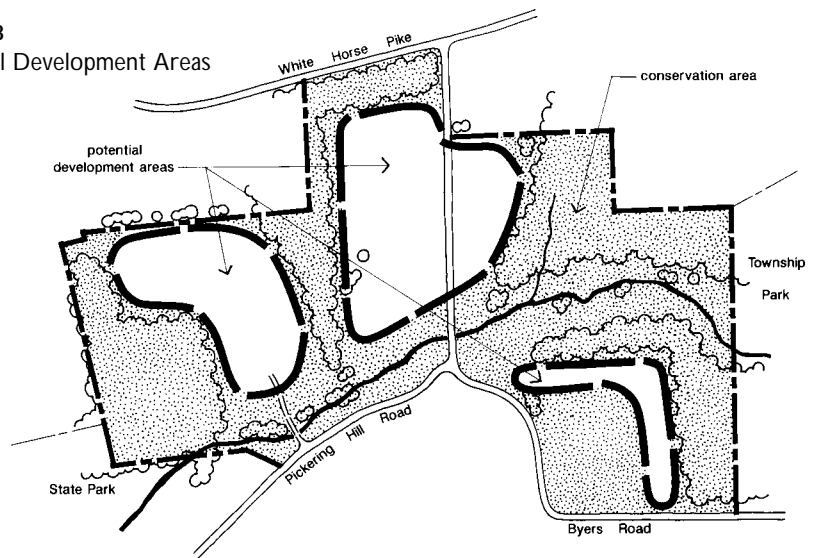


Figure 8
Potential Development Areas



sites will be the same as that shown on the “Yield Plan” (21 in this example). Other options would include voluntarily reducing that density to create a “limited development” plan, which under certain circumstances might produce the same economic payoff for the landowner.

**Step Three:
Aligning Streets and Trails**

The third step consists of tracing a logical alignment for local streets to access the 21 homes and for informal footpaths to connect various parts of the neighborhood, making it easier for residents to enjoy walking through the open space, observing seasonal changes in the landscape and possibly meeting other folks who live at the other end of the subdivision (Figure 10).

**Step Four:
Drawing in the Lot Lines**

The final step is simply a matter of drawing in the lot lines, perhaps the least important part of the process. Successful developers of open space subdivisions know that most buyers prefer homes in attractive park-like settings, and that views of protected open space enable them to sell lots or houses faster and at premium prices (Figures 11 and 12). Such homes also tend to appreciate more in value, compared with those on lots in standard “cookie-cutter” developments offering no views or nearby open space.

SUMMING UP

**Advantages for Local Officials,
Developers, and Residents**

Perhaps the most significant aspect of this design process is the way that it can help communities build an interconnected network of conservation areas. As described at the beginning of this publication, county-wide open

Figure 9
Locating House Sites

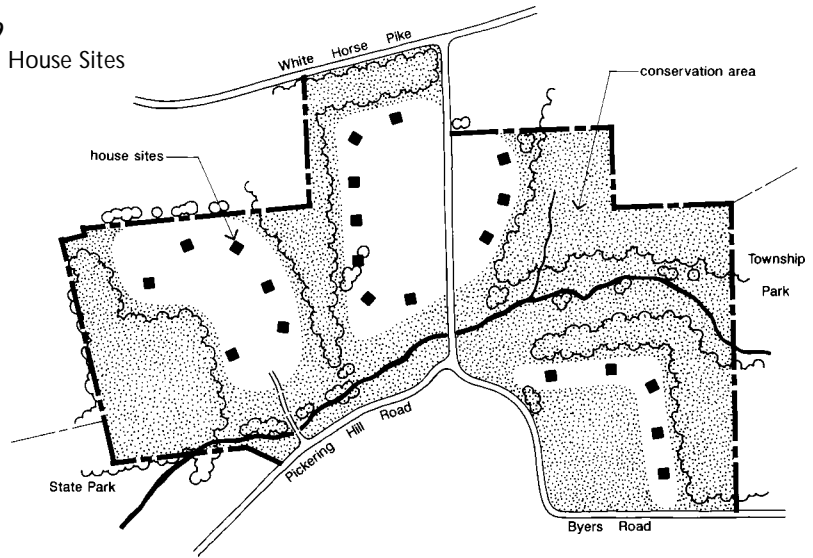
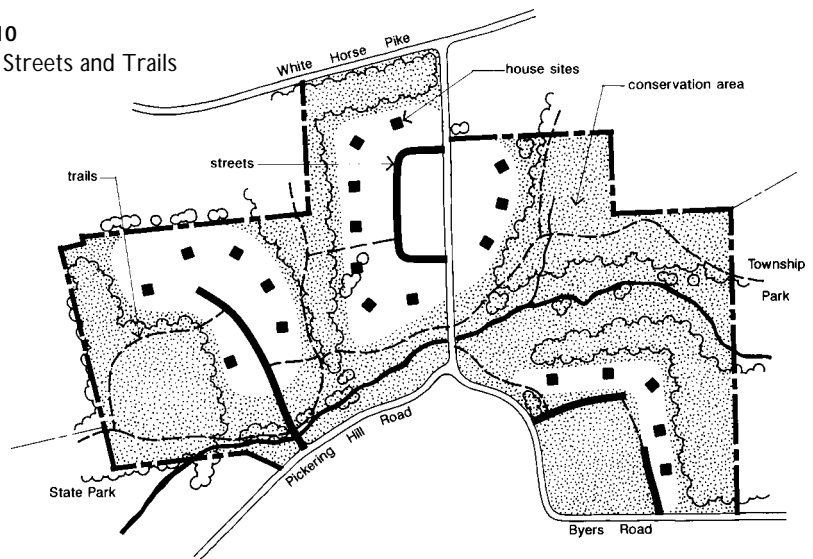


Figure 10
Aligning Streets and Trails



space plans, containing “Maps of Potential Conservation and Development,” can pre-identify land to be conserved in each new residential subdivision. Of course, such plans must be supplemented by amendments to zoning and subdivision ordinances to ensure that developers design around the natural features on their property and place them into undivided conservation areas rather than allowing them to be converted to suburban lawns and streets.

These kinds of designs are finding a ready market among homebuyers, who are placing greater emphasis on “quality of life” issues when purchasing new houses. In the case examples illustrated in this publication, the developers have recognized the value of open space conservation, using it successfully as a marketing tool. Long vistas across permanently preserved fields, plus acres of protected woodlands, have helped ensure the success of these developments—which are

Figure 11
Drawing in the Lot Lines

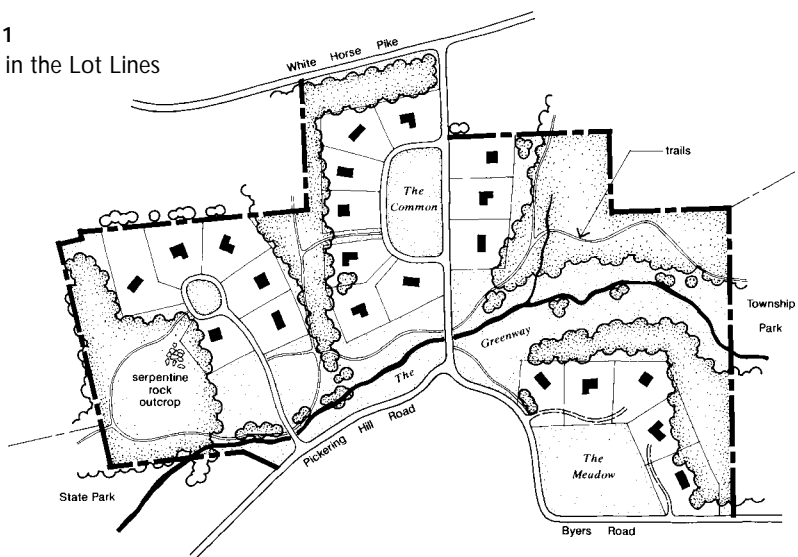
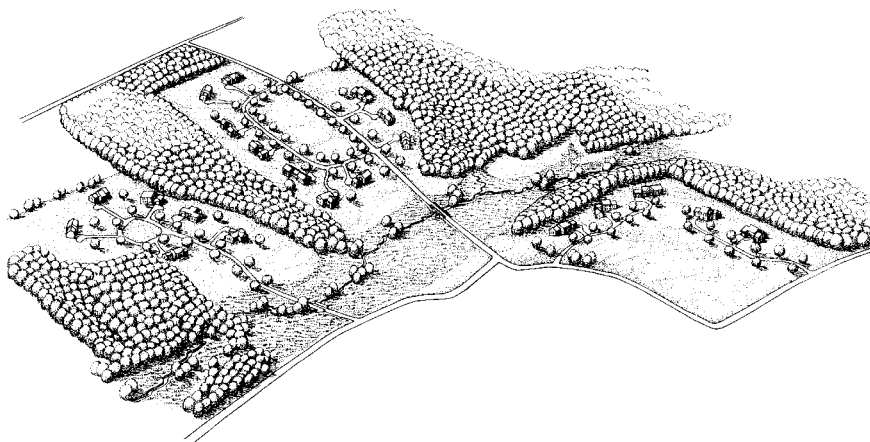


Figure 12
Conservation Subdivision Aerial Sketch



“twice green” both ecologically and economically.

Various surveys have confirmed that between one- and two-thirds of house buyers in golf course developments have little or no interest in playing golf. They have chosen homes there primarily because they prefer to dwell in park-like settings, ones that offer attractive views from their windows and pleasant places in which to stroll. Developers find that lots abutting or looking onto open space sell faster—

and at premium prices—compared with lots that are surrounded by more of the same. The good news for everyone is that huge sums need no longer be spent clearing natural land to create artificial open space in the form of golf courses. Developers who leave Nature alone can reap the same benefits at minimal cost—and with minimal disturbance to woodlands, meadows and fields.

TOWARD A NEW LAND ETHIC

The idea of a “land ethic” represents an evolution from the ancient Judeo-Christian ethics that govern relations among individuals and between individuals and society. Sixty years ago, Aldo Leopold suggested a third kind of ethic to deal with man’s relation to the land.

As Leopold, who founded the discipline of game management at the University of Wisconsin, observed in 1933, “There is yet no ethic dealing with man’s relation with the land and the animals and plants which grow upon it... The land-relation is still strictly economic, entailing privileges but not obligations.”

The idea of a land ethic is probably very much alive in the minds and hearts of many rural residents, including many landowners. What farmer, for example, would truly prefer the noise of traffic or the hum of air conditioners over the sound of bird-song or the rustle of wind through the leaves? Who would prefer to see rooftops defining the horizon line instead of treetops, or parking lots instead of fields and meadows?

In Leopold’s time there were few financial alternatives for those who depended upon the value of their land to ease their retirement years, or to pay for health care costs. Today a variety of options exist, allowing landowners to realize the economic value of their farms and woodlands without destroying the wildlife and ecological values of their properties. The conservation design approach described in this publication illustrates one of these options, one that could be used along with others to strike a better balance between development and natural areas conservation.

Among the other options are the purchase of development rights, the

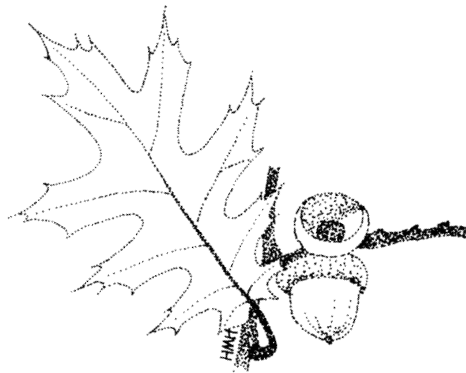
transfer of development rights, “landowner compacts” involving density shifts among contiguous parcels, bargain sales to land conservancies, and “limited development.” Of the entire range of alternatives, it is likely that the approach described in this publication offers the greatest overall, long-term potential because it does not require public expenditure, does not depend upon landowner generosity, does not need a special “high end” market, does not involve complicated regulations for transferring rights to

other sites and does not depend upon the cooperation of two or more adjoining landowners.

This is not to imply that the other options should not be actively encouraged in your community, but rather to place those techniques in a realistic perspective as supporting elements in an county-wide program of conservation and development that is most logically based upon the flexibility and advantages offered by “conservation subdivision design,” within a comprehensive planning framework as delineated on areawide

“Maps of Potential Conservation and Development.”

The great advantage of some of the other options is that many of them preserve parcels in their entirety, although they are implemented less frequently. The great advantage of open space planning and conservation design is that when they are institutionalized into local zoning and subdivision ordinances, they will be used on a day-to-day basis to protect significant percentages of land in each new subdivision that is proposed.



Part Two

CASE EXAMPLES OF CONSERVATION DESIGN

The examples of conservation design presented in this section illustrate many of the principles mentioned in the first part of this booklet. They have been selected to demonstrate how this design technique can be adapted to protect various different kinds of resources: ecological, agricultural, historical, and cultural. They also represent a diversity of overall densities, lot sizes, and market prices. Interested readers are encouraged to visit these greener neighborhoods, and to invite their community officials and planning staff so they might benefit from experiencing these projects first-hand.

CARDINAL MEADOWS *versus* "CARDINAL WOODS"

Location: Routes 769 and 651, Fauquier County, Virginia

Developer: Donald Mitchell, Remington, Virginia

Site Designer: Barry Starke, FASLA, Earth Design Associates, Casanova, Virginia

Development Period: 1984 to 1987

Cardinal Meadows is a conservation subdivision located in the southwestern part of Fauquier County, approximately a two and one-half hour drive west of Washington, DC. Situated within a zoning district which at the time required five acres per dwelling, it contains 28 lots averaging two acres in size, plus a large "conservancy lot," embracing the 119-acre balance of the original 175-acre tract. The principal design objectives of the County during the period when this project was undertaken, was to preserve agricultural land and to conserve scenic viewsheds. Clearly, the design has succeeded very well on both counts.

Cardinal Meadows exemplified the most progressive, state-of-the-art



The woodlands at Cardinal Meadows are home to a number of upland deciduous species, including tulip poplar, oak, and shagbark hickory, and are largely free of invasives and exotics.

thinking in the fields of landscape architecture and land-use planning as they pertained to residential subdivisions at the time it was designed, several decades ago. Since then, however, due to rising awareness of the

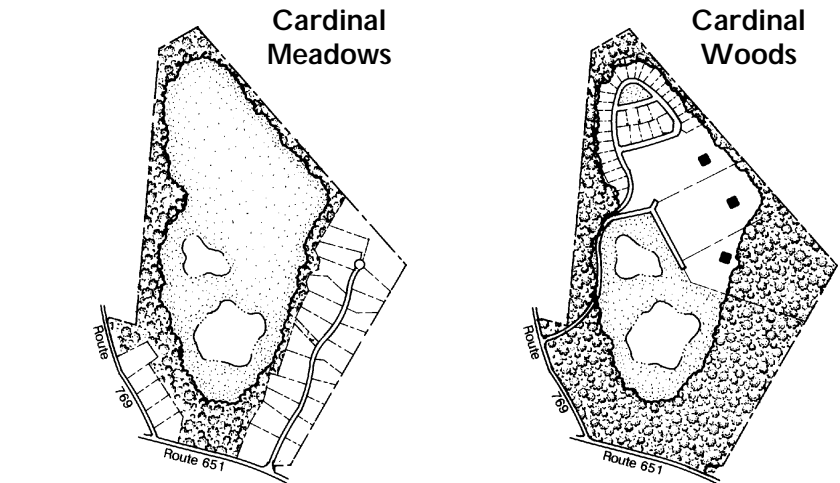
need to conserve forest cover in largely agrarian or developing areas, a number of significant changes have occurred in the thinking of these professions. Part of this shift in emphasis as to which type of resource to conserve is based upon wildlife habitat concerns, while a larger part is due to heightened concerns about the need to enhance on-site groundwater recharge and parallel need to improve the quality of surface water runoff.

When farmland preservation became a high-profile, national issue several decades ago, prompting Congressional interest in documenting the growing losses of cropland to development around the edges of every metropolitan area in the country, one logical response to that problem was to devise design strategies for locating houselots and streets in "unproductive" parts of subdivision tracts where both woodlands and farmland were available for that purpose. This line of thought reached a high point in the graphic expression of alternative development strategies in a design guidebook produced with the principal goal of preserving the extremely deep (10 feet), productive

cropland on the valley floor bordering both sides of the Connecticut River in western Massachusetts. That volume, *Dealing with Change in the Connecticut River Valley: A Design Manual for Conservation and Development*, first published in 1988, earned several national awards and went through five printings in as many years. The illustration, near right, depicts the designers' creative response to the farmland preservation challenge in that area at that time. The layout of Cardinal Meadows, which preceded this publication by several years, closely follows that same design philosophy.

Since that time the issues have been redefined in certain parts of the country, and within the Chesapeake Bay watershed this has indeed been the case, due to significant declines in the Bay's water quality. Those declines have been paralleled by similar decreases in the populations of many species of finfish and shellfish, with resulting economic impacts on the local industries which had traditionally depended on stable fish populations. The state governments of Maryland and Virginia led the way a decade or more ago with perhaps the most rigorous water quality protection laws and regulations in the nation. In large measure, those new restrictions have focussed on ways to actively discourage further diminution of the woodland resources within the Bay watershed, with stringent requirements for reforestation when clearing for development is inevitable.

The art and science of subdivision design has evolved accordingly, as expressed in a subsequent book by one of the principal authors of the Connecticut River Valley design manual. Entitled *Conservation Design for Subdivisions: A Practical Guide for Protecting Open Space Networks*, this later volume (1996) demonstrated how the same basic principles of "designing around" the most significant resource



The original 1984 site plan, and a hypothetical alternative tree-saving layout produced 16 years later, show contrasting approaches to conservation design. When farmland and rural character preservation are the primary objectives, the original design illustrates a logical and skillful design solution. When the conservation of woodlands, wildlife habitat, water quality, and aquifer recharge issues are of greater concern, a layout that minimizes forest disturbance is generally preferred.



These meadows and fields are permanently protected through a perpetual conservation easement, which preserves both productive farmland and scenic views, in line with the priorities established in Fauquier County's Comprehensive Plan.

could be easily applied to spare woodlands. Indeed, five of its seven case studies in that volume favored forestal resources over agrarian lands. Significantly, this work was produced at a land trust located in the state containing the lion's share of the Bay watershed (Pennsylvania). To illustrate the contrast of this approach with that taken in the earlier publication, a typical site plan from each book is repro-

duced below.

The approach known as "conservation subdivision design," as redefined with water quality issues foremost in mind, offers distinct opportunities for reforestation when this design technique is used to conserve open land on unwooded development sites, because those abandoned fields or pastures can be reforested to compensate for woodland losses on other development sites.



The subdivision street design at Cardinal Meadows utilizes open drainage swales rather than curbs, gutters and catch basins, enhancing the opportunity for on-site infiltration and groundwater recharge. Homes are screened from view on their private wooded lots.



This pond has been retained as part of the large "conservancy lot" that encompasses all of the open land at Cardinal Meadows, and which is operated as a hobby farm. Easements provide, however, for access to the pond by subdivision residents.

Developers of such conservation subdivisions can market and sell the rights to reforest parts of their open space to other developers who must clear trees in other subdivisions. This mechanism could work in much the same way that wetlands credits operate: conservation developers who have restored former wetlands in their new neighborhood open spaces (usually by crushing tile-fields originally installed

by farmers to drain hydric soils to improve crop production) sometimes sell wetland mitigation credits to other developers whose projects necessitate wetland filling.

In the contemporary, theoretical re-design of Cardinal Meadows (whose name becomes "Cardinal Woods" in recognition of the alternative resource it protects), houselots and streets have been relocated to

former pastures, with views of the pond across conservation meadows and toward the woodland preserve. The economic yield of this alternative development should approximate that of the original layout, with five more hamlet lots (nine of which back up to trees for seclusion, privacy, and value), and two additional conservancy lots.

On parcels that are entirely wooded, the "cardinal rule" would be to reduce lot size to the greatest extent practicable, perhaps locating all the (individual or shared) septic system drainage fields under a central village green, which would become the only part of the property designated to be cleared of trees except the house sites and the streets themselves. All the remaining woodland would be managed as a preserve, either as common open space or as noncommon open space, but always protected in perpetuity through a conservation easement. In determining "which trees to hug and which to let go," an inventory of the forest resource would be required to be undertaken by the applicant, identifying the areas with the healthiest and most diverse stands.

The new layout for "Cardinal Woods" is based upon the lines of several successful hamlets in Loudoun County, VA, where smaller lot sizes have not posed marketing or sales problems, as they were intended from the beginning to cater to the needs and desires of three large and growing subgroups of the buying public that are presently not well-served by the minimal choice available in the new housing stock produced by most developers: empty-nesters, single-parent households, and young couples with no children or only toddlers. For sometimes different reasons, many people in these three population subgroups find they do not need large suburban lots and can in fact live more comfortably in homes with yards requiring less time and effort to maintain.

BIRCH HOLLOW HAMLET

Location: Hillsboro, Loudoun County, VA

Owner: Durette Upton, Round Hill, VA

Developer and Site Designer: Chuck Jones, Land Management and Design, Leesburg, VA

Landscape Architect: William Neville, Patton, Harris, Rust and Associates, Leesburg, VA

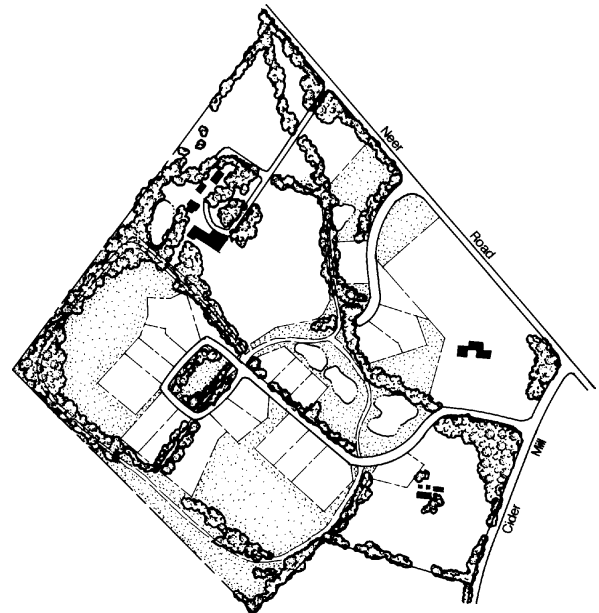
Development Period: 1993 to 1996

Nestled between the Short Hills and the Blue Ridge Mountains in western Loudoun County, Birch Hollow lies midway between Leesburg and Charlestown, WV, approximately eight miles from each county seat. Under conventional zoning options available under the ordinance, this 109-acre parcel could have yielded roughly 32 three-acre subdivision lots or 10 ten-acre estate lots. However, due to an over-abundance of lots in these sizes, neither of those products were selling well when the owner decided to develop her property, and this

fact influenced the decision to select the County's new hamlet option. This approach produced 21 hamlet lots ranging in size from 0.6 to 1.7 acres, plus three large "conservancy lots" 10 to 26 acres in area. As these larger parcels were situated along two existing roads bounding the property, they cost the least to develop and were sold with the smallest investment (while also commanding premium prices), helping to generate a critical income stream permitting the landowner to proceed with expensive infrastructure improvements. Their location also



A swale in this meadow provides moist growing conditions for several species of wild grasses and flowers. Barely visible at the far end is a large barn, located on the original farmstead, and now part of a large conservancy lot.



Birch Hollow's site plan illustrates a more formal hamlet configuration, with a central green bordered with houselots, nestled within larger tracts of protected open space.

visually screens the hamlet from the two public roads bordering the old farm, thus helping to achieve the County's scenic viewshed objectives.

Designed by an experienced rural developer and aid out by a trained landscape architect, Birch Hollow's design has retained nearly every tree that had been growing on the site prior to development, and includes wetlands which have been restored by the developer. Streets have been curved to calm traffic movement, and their alignments capture "terminal vistas" of three ponds. The first pond dominates the view as one enters the hamlet from Cider Mill Road to the east, while the others can be seen from the end of the cul-de-sac accessed from Neer Lane. The neighborhood's chief focus, however, is the hamlet's central "green," occupying roughly 1.5 acres.

Of the 90 acres of open space within Birch Hollow, 43 are common lands accessible to hamlet residents, while 47 are "non-common" areas within the large private conservancy lots. Many of the septic systems for the hamlet lots are located within the common open space, so that houses and lots could be positioned on the property in a more logical, organized manner, rather than dotting the landscape wherever percable soils exist. Needless to say, all of the designated open space is permanently protected through conservation easements held by the County of Loudoun.



The village green is framed by a hedgerow on one side and a row of houses on the other. Just to the left of the hedgerow (outside the photograph) is one of the hamlet trails, which also follows this traditional landscape feature before crossing the gravel road and traversing the meadow.



Several homes enjoy direct views of the ponds, where care has been taken not to compromise water quality or habitat by maintaining an unmanicured edge.



This pond is one of several at Birch Hollow. Note the native wildflowers that thrive along its edge.

DOBBINS CREEK HAMLET

Location: Lovettsville, Loudoun County, VA

Owner: The Gilbert Family, Philadelphia, PA

Developer and Site Designer: Chuck Jones, Land Management and Design, Leesburg, VA

Landscape Architect: William Neville, Patton, Harris, Rust and Associates, Leesburg, VA

Development Period: 1997 to present

Dobbins Creek is situated outside Lovettsville, about 15 miles north of Leesburg but only several miles south of the Brunswick (MD) station of the MARC regional rail line to Washington, DC. It is another thoughtful example of the County's innovative hamlet approach to conserving land and rural character in the transitional buffer zones which it has designated around the established towns and villages in western Loudoun.

Of the hamlet's 109 acres, all of the undivided land outside the 22 one-acre lots (and the roadways) remain in dedicated, perpetual open space. Each lot adjoins this open space, throughout which winds a network of walking trails for the use of all residents. In addition, this development contains five 10-acre "conservancy lots," one of which features the original 18th century log farmstead. Altogether, 70 acres continue to be farmed, while 16 acres of existing and created wetlands comprise an ecologically-designed greenway. Critical to the business success of this project was the creation of outlots from the beginning, which helped to finance the subsequent development.

Unlike the land in suburban subdivisions, which is typically converted to manicured lawns treated with herbicidal weed-killing chemicals, much of the open space in this kind of "country neighborhood" (such as exemplified in these two hamlets) is maintained through low-impact management techniques, such as

annual meadow-mowing, while the natural roll of the ungraded terrain helps to promote on-site infiltration of stormwater. At Dobbins Creek, the developer has enhanced basic watershed functions by enlarging flood storage capacity, constructing new wetlands, and planting riparian vegetation to stabilize banks and create additional wildlife habitat. In addition, the new pond has increased the surface water available for a number of aquatic species, while also providing recreational opportunities for residents and a convenient supply of water for fire-fighters. Through the creation of streamside buffers that filter stormwater runoff which previously had run directly from fertilized fields into tributaries of Dutchman's Creek, water quality has also been improved. Vegetation along the edge of the pond includes several dozen shrubs and trees transplanted from other parts of the property, such as button bush, black willow, red- and yellow-osier dogwood, and alder.

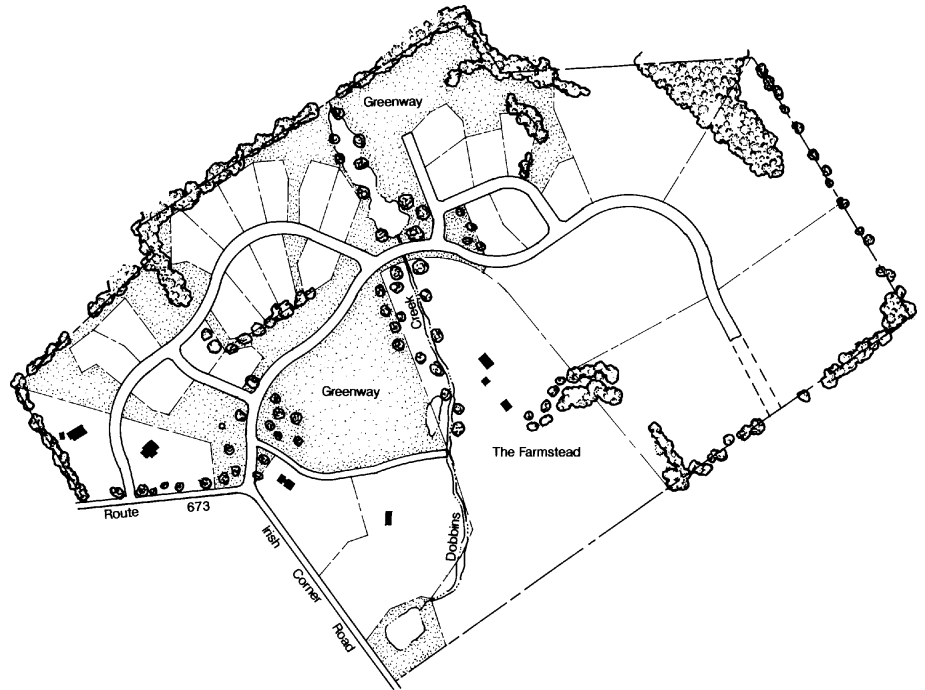


This large meadow borders one side of a "single-loaded" street (having houselots on one side only), opening up views into the common open space as one enters the Dobbins Creek hamlet subdivision.



Several of the large "conservancy lots" have been sold to families with horses, adding an equestrian element to the hamlet landscape.

Like Birch Hollow, Dobbins Creek was produced with the assistance of Land Management and Design, a Leesburg firm specializing in helping country landowners maximize their land values by creating a unique offering for the local real estate market, which is saturated with conventional three-acre lots that are “too small to plow and too large to mow.” This approach offers a fresh and inviting choice to homebuyers whose only option previously had been to purchase a sprawling, high-maintenance lot set among many others that blanket the countryside and suburbanize the formerly rural views. Owners of hamlet and conservancy lots enjoy permanently preserved vistas of the meadows, fields, ponds, and woodlands which define the County’s traditional pastoral character, while also enjoying access to more than just a three-acre lawn, with recreational trails provided throughout the protected open space.



The site plan of Dobbins Creek shows how the protected open space has been designated partly as common land and partly as noncommon land. In both cases further development is prohibited, although the specific type of open space use may change over time (some meadow acreage might, for example, be reforested, or converted to more active agricultural pursuits), with the approval of the organizations holding the easement.



Riparian vegetation was both preserved and enhanced (with native specie plantings) along the Dobbins Creek Greenway, pictured here with a low-impact bridge faced with local stone. Note also the gravel roadway, whose rougher surface serves to calm traffic speed and to reduce stormwater runoff.



The edges of the pond created by the developer were deliberately sculpted with several curves and coves to maximize shoreline habitat, and are maintained in a “rough” condition for the same reason.

PATERNAL GIFT FARM

Location: Highland, Howard County, Maryland

Developer: Susan Scheidt

Site Designer: LDR International, Columbia, Maryland

Development Period: 1997 to 2000

This attractive 123-acre farm property in the rolling uplands of western Howard County is located approximately 25 miles from Baltimore, 35 miles from Annapolis and 25 miles from Washington, DC. It takes its name from a larger 510-acre tract of land patented under the name "Paternal Gift" in 1803 by Dr. Charles Alexander Warfield of Baltimore

who deeded it as a gift for his son, Dr. Gustavus Warfield, a renowned colonial patriot.

Melvin and Prue Scheidt, who purchased the property in 1946, died in 1979, and their children continued to farm the land until 1995. The farm's business centered around beef cattle, thoroughbred horse breeding, horse boarding, and hay crops. Approximately 35 acres were traditionally leased to a neighbor farmer for corn and other crops. Ultimately, however, the farm had to be sold so that the assets could be distributed among the three heirs.

The family's challenge was to identify ways of preserving the integrity of the property while simultaneously maximizing its value. In 1990 the zon-

ing in western Howard County required all new lots to be at least three acres in area, a policy that inadvertently resulted in many historic, working farms being carved into large suburban lots supporting neither crops nor livestock, lots that were "too large to mow and too small to plow." The owners desired a more creative, land-conserving approach to development, in which smaller lots could be created adjacent to permanently preserved conservation land. After Susan Scheidt presented testimony and illustrative site plans to the County Planning Board, making the case for providing a "conservation design" option within the zoning ordinance (and also after an election in which this concept was one of the issues), new zoning permitting agricultural uses and residential development in cluster forms was enacted in 1992.

The family's goal all along was to permanently preserve its working farm—which formed part of Western Howard's cultural landscape of barns, pastures, orchards, ponds, and meadows—and to develop country home sites with scenic views, a quiet atmosphere, and privacy. To accomplish their objectives, the three heirs established a limited partnership, with Susan Scheidt serving as the general partner and developer. In the fall of 1991, she engaged the nearby firm of LDR International, situated in the new town of Columbia, to perform a site analysis identifying key features to be designed and preserved. The process yielded a number of alternative layouts, with the client eventually settling on a plan very similar to a site plan presented in testimony to the County Council in 1989.



This layout succeeds in preserving woodlands, viewsheds, and the property's equestrian tradition. The final site design reflected a blend of the landowner's detailed knowledge of the property and the family's own considered thoughts, together with techniques provided by the consulting landscape architects and planners.

The scenarios generated by LDR were based on a number of core principles established by the developer from the outset. The asphalt walking path is planned to connect the community to its pastures, barns, woodlands, orchard, and pond.

In the final layout, 28 one- to 1.5-acre home sites were situated with great care to provide each one with an attractive, peaceful view. As one enters the development from Clarksville Pike, the tree-lined road is flanked on the right by an apple and peach orchards, and on the left by the community owned farm manager's home. The view ahead is a broader vista overlooking an eight-acre pasture accentuated by a new barn designed along traditional lines by Richard Wills of Royal Barry Wills, Inc., Boston. The view from the entrance road is clear and unobstructed, with horses kept inside the pasture by a stone retaining wall invisible from the entrance road (see photo [below](#), with the stables in the background).

The wall is known as a ha-ha because it fools the eye into believing that no barriers exist between the horses and the viewers. Its design is based on the work of the famous 18th-century English landscape designer Lancelot "Capability" Brown. This first pasture is one of seven, encompassing a total of 49 acres, which comprise the bulk of the property's 74 acres of undivided, protected open space.

Another innovative feature of Paternal Gift Farm is the self-financing nature of the open space. This is a working farm with revenues between \$40,000 to \$50,000 per year generated by the boarding stables (hosting up to 30 horses) owned and operated by the homeowners' association. Those revenues cover the half-time salary



The homes in the distance are located on one-acre lots but sold well and commanded premium prices because of their positioning adjacent to 74 acres of protected open space. Prior to Paternal Gift Farm, Howard County had mandated a sprawl pattern of three-acre lots in this rural district.



Income from the stables (on the left) covers the cost of maintaining all of the open space, effectively subsidizing the homeowners' association (thanks to the ingenuity of the landowner/developer, who believes that open space in conservation subdivisions should always be productive and functional, wherever possible).



This small, attractive shed functions as a state-of-the-art manure processing facility, converting fresh stable sweepings into dry usable compost in two short weeks.

of the on-site caretaker, who is also available privately for lawn maintenance, horse care and other services.

All 28 lots enjoy outstanding views over the pastureland and ponds, and several home sites are nestled under mature oak trees at the edge of protected woodland. The property contains 2,775 feet of new road maintained by the County (representing a substantial reduction in street length, compared with a standard plan with sprawling three-acre lots) and 1.75 miles of asphalt trails for walking or jogging, maintained by the HOA, in which membership is automatic upon purchase of a lot or house. A parallel network of bridle trails presents further recreational opportunities for equestrian use, and the main pond is stocked with large-mouth bass, blue gills, and red ears for fishing. The trail system links this conservation neighborhood with the county trail network running through nearby School Mill Park, and also with the village center at Highland Crossroads with its post office, grocery, pharmacy, and tack store.

Paternal Gift Farm is the recipient of state and national awards. In 1997 the Home Builders' Association of Maryland presented two awards to the Paternal Gift Community: the "1997 LDC Award of Excellence" for Excellence in Design, Planning and Construction of a Small Single Family Development and the "1997 Overall Project of the Year." The National Association of Conservation Districts in 1997 awarded Paternal Gift the "Outstanding Cooperator Award for

the environmentally sensitive way in which the property is subdivided and for being dedicated to responsible land management." In 1998 The Suburban Maryland Building Industry Association and The Northern Virginia Building Industry Association awarded Paternal Gift the "1998 Finest for Family Living Award." The Finest for Family Living judges consider a combination of "design excellence, value, and overall quality of living." The basic criterion for The Finest For Family Living award includes: sales price, lot size, concern for the environment, market acceptance and craftsmanship. Both the building industry and conservation community recognize the efforts in creating this rural community.

The best news of all is that this project demonstrates that unconventional subdivisions following none of

the more familiar, large-lot patterns for low-density rural development can definitely succeed in the marketplace. Despite the fact that there is a limited number of potential buyers in this area for lots in this price range (\$180,000 to \$240,000), all 28 lots sold within 29 months, exceeding the developer's expectations and also those of local realtors most of whom had little prior experience selling smaller lots in the three-acre district. However, once potential buyers understood that they were purchasing a building lot and an ownership share of a 75-acre farm, and also understood that the cost of maintaining 74 acres of permanently protected HOA open space would be paid with revenues from the horse boarding business, sales proceeded at a comfortable rate. The last eight lots all sold quickly for full price, \$235,000.



The entire woodland which existed on the farm prior to development has been preserved through conservation design, and is threaded with trails such as this one for the use and enjoyment of residents.

TERRA MARIA

Location: Howard County, MD

Developer: Synergy Development Corporation

Site Designer: LDR International, Columbia, MD

Development Period:
1993 to 2000

This project exemplifies the integration of two different but complementary approaches to land development: "New Urbanism" and "conservation design." Situated in a zoning district permitting two dwellings per acre called the "Residential-Environmental Development District," the regulations permit lots to be reduced to 4,000 sq. ft. and also allow attached units, within a site plan containing at least 25% open space.

This 55-acre site supports 103 single-family detached homes and was originally planned to include a number of complementary nonresidential uses such as a day care center, two retail and office buildings (with apartments above), a community building, and a tennis court. These uses were laid out to flank two sides of the principal neighborhood green, located near the project entrance from the Frederick Road (Rt. 144).

The property, two-thirds wooded at the outset, retains approximately 24 acres of trees, including most of the significant woodlands and several of specimen size along the edges of the central open space. Topographically the parcel consists of three predominantly level areas separated by two stream valleys. In addition to these natural features, the site contains several historic structures, including the well-preserved two-story ruins of a mid-19th century seminary built of

stone, plus two wood frame buildings formerly used as a theater and dining hall. These ties to earlier times have been skillfully incorporated into the layout, and now occupy visually prominent positions in or around the edges of the various village greens.

Neotraditional elements of the village design include its mixture of uses, its generally rectilinear layout of interconnected streets (without a single cul-de-sac, per se), modest lots with

narrow frontages and shallow setbacks, and its streetscapes dominated by porches and fences rather than driveways and garage doors. Although only 15 of the homes are designed with garages accessed from rear lanes (or alleys) due to concerns about market acceptance in this rural/suburban location, garages were visually subordinated through the simple expedient of locating them farther from the street, usually ten to twenty feet be-



This "foreground meadow" buffers village homes from a two-lane rural highway bordering the property. A portion of it might, in the future, accommodate a day care facility or a swimming pool.



The social aspect of village life is an important attraction for many couples with young children, and for numerous empty-nesters as well.

yond the plane of the house facades. Communities wishing to subdue the visual prominence of front-facing doors on attached garages need only adopt a minimum setback for such elements plus a maximum setback for the principal facade, with the former being larger than the latter. In another neotraditional touch, the site designer deliberately located the community center building so that it also functions as the terminal vista as seen from the development's two principal streets.

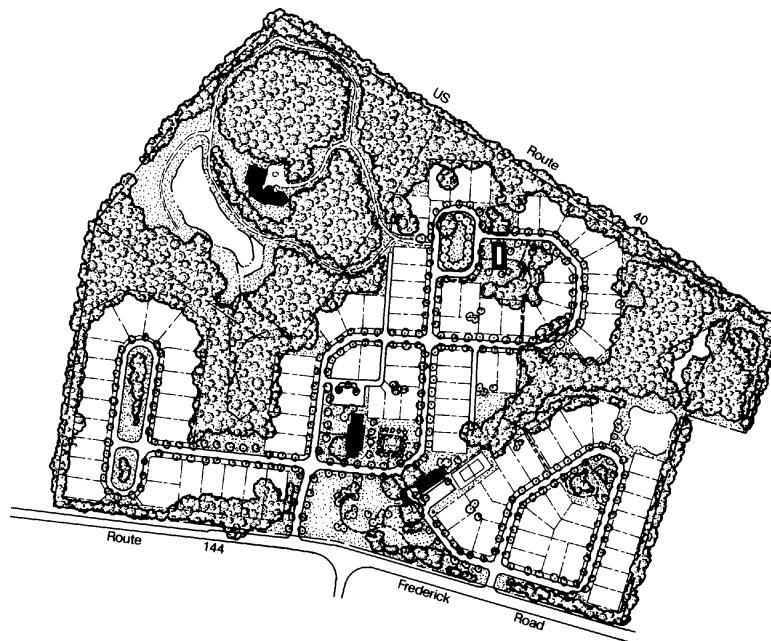
The most salient conservation feature of the design is the large woodland preserve, which encompasses substantial upland acreage of a buildable nature that could otherwise have been easily cleared, graded, and covered with more development. In other words, the conservation areas at Terra Maria comprise much more than the severely constrained land, small vil-

lage greens, and playgrounds typically associated with the New Urbanist approach. Its tight, compact form also enabled the developer to minimize site grading, which not only reduced environmental impacts but also lowered his costs. Of the protected open space, 12.4 acres are located with a large "conservancy lot" within which a pre-existing residence is situated. The remainder of the open space is owned and maintained by a homeowner association. In all, one-quarter of the site remains in natural open space, and five percent is in more formal public open space.

Although the County was supportive of the twin concepts of land conservation and neotraditional design, its ordinances were not yet completely in tune with these principles for the developer to proceed without impediment. For this reason, the development company bore the burden of

applying for variances to reduce road width and curvatures (which also calmed traffic speed), to combine different land-uses, and to create more compact houselots with homes set closer to the lot lines. Until such time that codes and regulations are updated to facilitate innovative projects of this kind, most developers can be expected to opt for the path of least resistance and to continue submitting proposals to subdivide properties into a land-consumptive pattern of large lots served by overly wide streets.

The developer also worked with a small, selected, group of homebuilders who were ready to build homes that would fit the site plan. The central section of the development reflects the benefits of this match compared with the later sections in which a tract builder's standard product was imposed onto the lots, with a significant loss of traditional streetscape character.



The formality of this village layout contrasts with the more organic lines of most conservation subdivisions, but illustrates clearly how "neo-traditional" design can also serve community goals for land conservation.



Using compact lots enabled the developer to minimize woodland clearance and construction. It also reduced costs of stump disposal, site grading, streets, and utilities, while also providing a marketing plus (based on improved quality of life).



It is not always necessary to pave a street directly in front of new homes when they are accessed via rear lanes. This design approach reduces asphalt coverage and stormwater runoff, while enhancing livability and sales.

SUGGESTED FURTHER READINGS

Arendt, Randall, 1996. *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*, Washington, DC: Island Press.

Arendt, Randall, 1999. *Growing Greener: Putting Conservation into Local Plans and Ordinances*, Washington, DC: Island Press.

Arendt, Randall, 1999. *Design Characteristics of Traditional Neighborhoods, Old and New*, Chicago: American Planning Association, Planning Advisory Service Report No. 487-488.



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