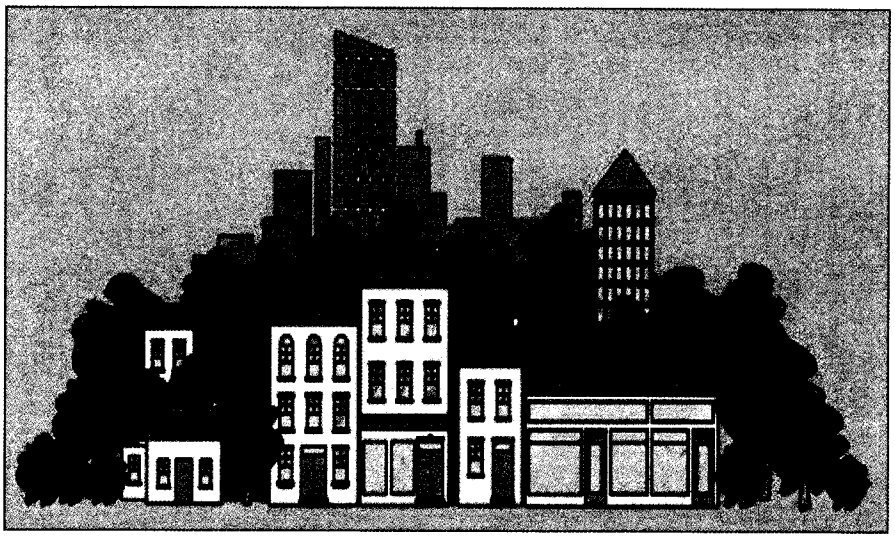
COMMUNITY CHOICES

Quality Growth Toolkit

Conservation Subdivisions



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ATLANTA REGIONAL COMMISSION

CONSERVATION SUBDIVISION ORDINANCES

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CONSERVATION SUBDIVISION ORDINANCES

I. Introduction

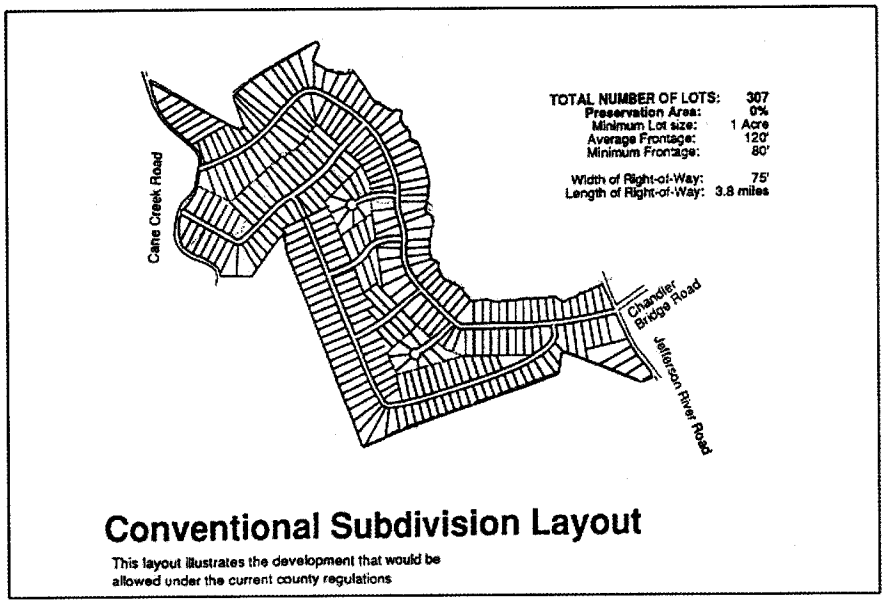
A. Problem Statement

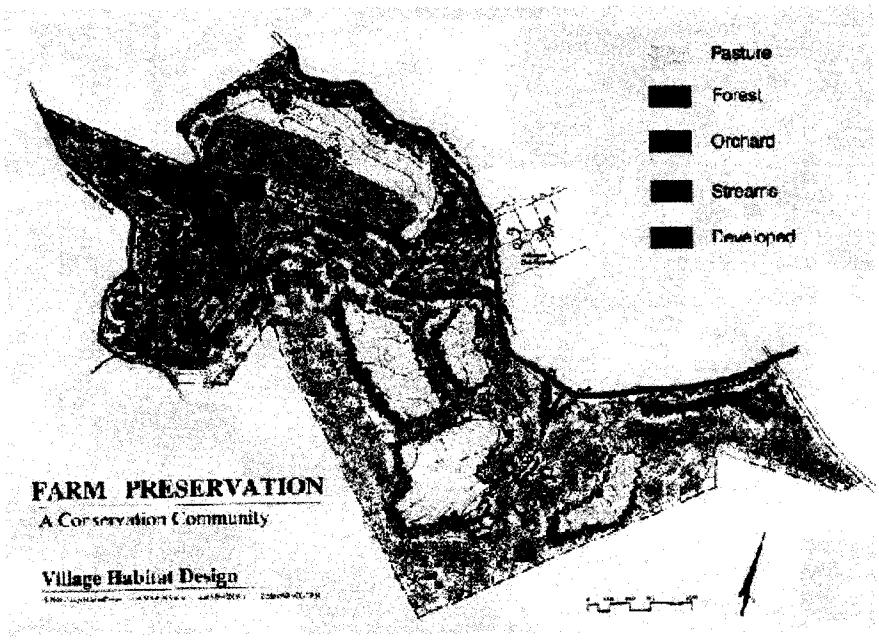
Today in Georgia, residential development is almost synonymous with sprawl. Across the state, farmland and natural areas are bulldozed to construct single-family homes on as large a lot as the buyer can afford. Open space vanishes as developers strive to maximize the number of homes that can be subdivided out of a property. While this pattern of development has proven financially successful, an increasing number of homebuyers are asking for something different—a way of building that protects natural green space and is less environmentally destructive. This desire for an alternative has led to the development of *conservation subdivisions*. Local governments are responding to the demand by passing ordinances to give developers the flexibility and incentives to build this type of environmentally-sensitive housing. Some regulations have proven more successful than others, however, and this tool draws from these experiences to give local officials the information they need to develop effective conservation subdivision ordinances.

B. What is a Conservation Subdivision?

Conservation subdivisions are residential or mixed-use developments in which a significant portion of the lot is set aside as undivided, permanently protected open space, while houses are clustered on the remainder of the property. They are similar in many respects to golf course communities, which are common across Georgia, but instead of a manicured golf course they feature natural forests, meadows, wetlands, and community gardens or farmland. They contrast with *conventional subdivisions*, in which all or nearly all of the parcel is subdivided into house lots and streets. Conventional subdivisions provide few green spaces for walking, little habitat for wildlife, and few opportunities for residents to interact with their neighbors. Conservation subdivisions, on the other hand, provide all of these things. In addition, they can be more profitable to build than conventional subdivisions, they tend to have lower infrastructure maintenance costs, and they reduce the demand for taxpayer-funded green space.

So why aren't Georgia developers falling over each other to build conservation subdivisions? The short answer is that in much of the state conservation subdivisions are not allowed. Or, to be more accurate, the zoning and subdivision codes of most local governments do not provide the flexibility to build anything other than conventional subdivisions, making it either impossible or difficult and time-consuming (and therefore expensive) for developers to have a conservation subdivision design approved. However, a number of pioneering developers have overcome the hurdles, obtaining the necessary permits and variances to build conservation subdivisions. What drives them is the promise of market demand. Experience has shown that at least some people desire alternatives to conventional development and will buy homes in conservation subdivisions when they are available.





Conventional and Conservation Subdivision designs for a Jackson County Subdivision (courtesy Village Habitat Design)

C. What is the Role of this Tool in Achieving Smart Growth?

A growing number of Georgia counties have passed conservation subdivision ordinances to reduce the barriers to non-conventional development. Some of these have been successful in fostering construction of conservation subdivisions; others have not. The purpose of this tool is to provide local governments with guidance in developing effective conservation subdivision

ordinances. This tool is written with government officials and staff in mind, but it is hoped that interested developers and citizens will read it and find it helpful as well. It is not a tool for conservation subdivision design and it does not deal with the design process, except insomuch as it interfaces with the regulatory process. Several excellent books provide a much more in-depth discussion of conservation subdivisions themselves, most notably Randall Arendt's Conservation Design for Subdivisions (Arendt 1996). Although this tool has drawn heavily on such publications, the content is focused on ordinances and the regulatory process.

D. Conservation Subdivision Benefits

Conservation subdivisions offer benefits to residents, developers, local governments and the community as a whole. These include:

A. Protected water quality
B. Protected wildlife habitat
C. Reduced infrastructure construction costs
D. Reduced infrastructure maintenance costs
E. Reduced demand for publicly funded greenspace
F. Means for expanding public trails and greenways

These are discussed in more detail in subsequent sections.

E. Georgia Community Greenspace Program

The Georgia Community Greenspace Program was announced by Governor Barnes in 1999, approved by the Georgia General Assembly in 2000, and funded for a second year in 2001. It provides seed funding to help local governments in the rapidly growing areas of the state to permanently protect 20% of their land as greenspace. From the outset, the Greenspace Program has recommended the use of conservation subdivisions as a tool for meeting this goal (Community Greenspace Advisory Committee 1999). Few local governments can afford to purchase 20% of their land base, but conservation subdivisions protect land as development occurs at little or no cost to taxpayers.

Not all open space qualifies under the Greenspace Program. Lands must be undeveloped or agricultural, and active recreational facilities such as ball fields and golf courses are specifically excluded. Furthermore, land must be protected under a conservation easement, certain types of restrictive covenants, or equivalent legal arrangement that provides a guarantee of protection in perpetuity. Public access, however, is not required. The ordinance provided in this tool has been designed to be consistent with these state requirements.

F. Environmental Benefits of Conservation Subdivisions

Major reasons for adopting a conservation subdivision ordinance are to protect natural resources and to preserve open space. This section discusses the environmental benefits of conservation subdivisions and makes recommendations about the specific types of areas that should be preserved as part of the protected open space.

1. Water Quality Protection

Conservation subdivisions can be a valuable tool for protecting water quality and wildlife habitat. There are two ways in which conservation subdivisions can benefit streams. First, because houses are clustered on only a portion of the land, conservation subdivisions tend to have less impervious surface coverage than conventional subdivisions. Impervious surfaces—which include roads, parking lots, houses and heavily compacted soil—are a problem because they alter the hydrologic cycle. Under natural circumstances, rainfall infiltrates into soil and slowly moves down slopes to feed streams, which gradually rise and fall after a storm. When much of the landscape is covered with impervious surfaces, however, the runoff generated reaches streams (usually via storm drains) much more quickly, causing them to rise to higher levels than under undeveloped conditions. These high flows scour out streams, causing bank erosion, downstream sedimentation, and degradation of aquatic habitat. The runoff also carries metals, oils and other pollutants directly to waterways. Reducing impervious surface coverage, therefore, tends to benefit water quality.

The second way conservation subdivisions can protect streams is by including riparian buffers, floodplains, wetlands and significant groundwater recharge areas in the permanently protected open space. Vegetated riparian buffers (the land adjacent to streams, rivers and lakes) and floodplains protect streams from the degrading effects of land use. Runoff that passes through these areas is naturally filtered, and simply maintaining a reasonable distance between streams and developments helps to protect water quality. In addition, buffers protect streams by shading the water (preserving natural water temperatures needed by fish and other organisms), providing inputs of leaves and debris that serve as food sources and habitat, and stabilizing banks. Studies have shown that riparian buffers should be at least 50 ft wide to be effective, and wider buffers are preferable (Wenger 1999). Wetlands and floodplains, which may lie within or extend beyond buffers, are especially effective at removing pollutants. In addition, all these areas are important habitat for a range of plant and animal species, including many endangered and threatened organisms. Protecting significant groundwater recharge areas from development will help maintain both the quantity and quality of groundwater. Groundwater is not only an important resource, but it is inextricably linked to surface water.

The Center for Watershed Protection assessed the water quality benefits of conservation subdivisions compared to conventional designs. A simple model was used for calculating reductions in sediment and nutrients. The results showed that for a rural, low-density subdivision, phosphorus export was 50% lower and nitrogen export was 46% lower in the conservation subdivision, a result of reduced runoff and greater stormwater infiltration. In a medium density subdivision, phosphorus was reduced by 60% and nitrogen by 45% in the conservation design. Development costs were also estimated to be 12-20% lower for the conservation subdivisions (Caraco et al. 1998).

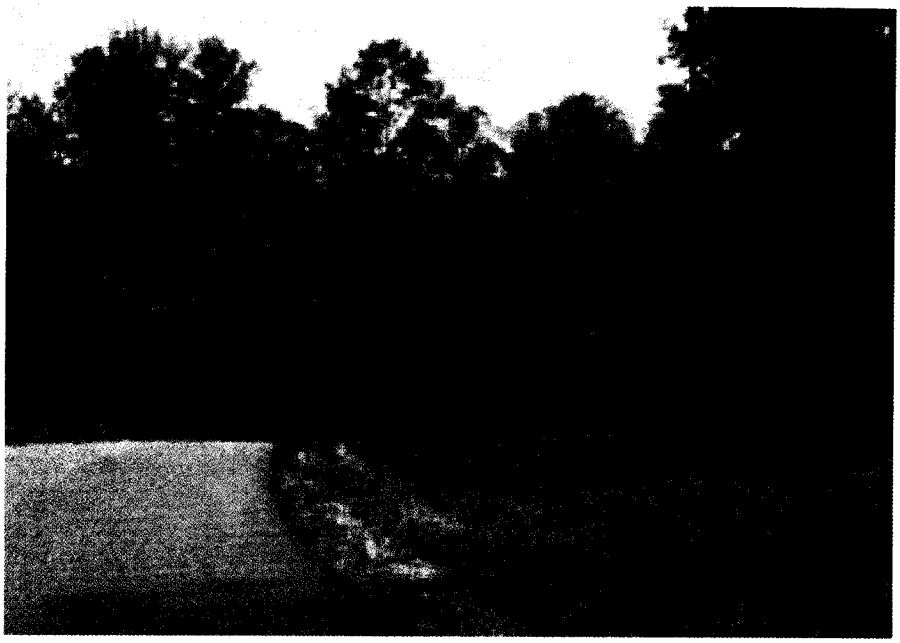
2. Terrestrial Habitat Preservation

Wildlife habitat, especially for non-game species, is a declining resource in much of Georgia. Forests that had increased in area following the decline in agriculture in the Georgia Piedmont are now rapidly disappearing due to development. Most critical are large patches of hardwood forests and corridors that connect these large patches. Although many species of birds, mammals and reptiles will tolerate small forested areas and narrow strips of trees, there are many organisms that can only thrive in what is known as "interior" forest habitat, located several hundred feet or more from development. Large conservation subdivisions have the potential to protect some significant blocks of wildlife habitat, and even smaller subdivisions can preserve corridors that facilitate movement of animals between these high-quality habitat areas. Of course, conservation subdivisions are not necessarily appropriate habitat for many large or wide-ranging organisms, such as black bears (nor would bear be welcome in most communities). But they can potentially support many woodland species that would rarely venture into conventional subdivisions—such as grey foxes, otter, and many songbirds. In addition, there are isolated populations of some rare and unusual plants that would be hard to preserve in a conventional subdivision design. A conservation subdivision ordinance provides the flexibility to protect significant botanical resources as part of the open space.

3. Maximizing Conservation Goals in a Conservation Subdivision Ordinance

To encourage the preservation of the most critical natural areas, the conservation subdivision ordinance should include a list of "Primary Conservation Areas," a concept introduced by Randall Arendt (Arendt 1996). These are areas that are especially valuable and are required to be incorporated into the protected open space (unless doing so would constitute an unusual hardship for the property owner). The list of primary conservation areas should include floodplains, wetlands, riparian buffers, steep slopes (which are highly erodible), and habitat for threatened or endangered species. The list of Primary Conservation Areas can also include areas with non-environmental value, such as important historic and archaeological sites. A list of "Secondary Conservation Areas" is also valuable. These are areas that should be included in the open space to the extent feasible, but may be too common to require blanket preservation. For example, large stands of forest and large individual trees should be on this list. Viewsheds, prime farmland and existing trails are also worth preserving when possible.

The geometry of the open space in a development is important, but sometimes different types of geometries are desirable and mutually exclusive. For example, a large area of forest is an important natural resource, but so is a narrower band of protected land adjacent to a floodplain. Furthermore, buffers along the outer perimeter of the site may be a political necessity to assuage the concerns of neighbors who are worried about the density of the new clustered subdivision being built next door. Some communities have struggled over the development of elaborate rules to meet all of these conflicting goals. Instead, the ordinance should simply include a requirement that the majority of the greenspace be in a contiguous tract. The exact geometry will need to be determined on a site-by-site basis.



Open space in Lumpkin County Conservation Subdivision (photo: Beth Gavrilles)

II. What are the Alternatives to Conservation Subdivisions?

The conservation subdivision ordinance presented in this tool is not intended to eliminate conventional subdivisions. After all, conservation subdivisions are not for everyone, and the thriving market for conventional subdivisions is unlikely to disappear in the near future. The purpose of a conservation subdivision ordinance is to provide more choices for consumers and more flexibility for developers, while simultaneously offering the environmental, social and economic benefits outlined above. Because there are few drawbacks to conservation subdivisions, some communities may decide that they may even want to require open space protection within some residential zones. Once the regulatory barriers are removed and developers begin to supply alternative types of housing, the market will determine to what extent conservation subdivisions are built. Outreach and incentives may be necessary to encourage the initial construction of conservation subdivisions in new markets.

Conventional Subdivision (Photo: Beth Gavrilles)

The conservation subdivision is also not necessarily the best development type for all circumstances. It is most appropriate in low- to moderate-density residential communities where the zoning density is low enough to allow sufficient clustering and open space preservation. In urban areas and development nodes, the better option may be a mixed-use development incorporating both residential and commercial uses in a design reminiscent of a village or neighborhood. These are sometimes called Traditional Neighborhood Developments (TND) or Neotraditional Developments, and although they are close cousins to conservation subdivisions they differ on some important points (refer to the TND Toolkit Topic). The optimal amount of open space to be preserved under these designs may be only in the range of 20-25%, since they

are urban in nature. Their mixed-use focus also sets them apart from most conservation subdivisions. Communities that wish to support these development types need to remove barriers to their use, just as for conservation subdivisions.

III. Things to Consider Before Implementing a Conservation Subdivision

1. What You Need First

Conservation subdivision ordinances are necessary in cases where the existing zoning and development codes effectively preclude the construction of this type of development. For local governments that lack zoning, there should be few barriers to conservation subdivisions and an ordinance should not be necessary. For local governments that have typical zoning and development codes, it should be a simple matter to adapt the model ordinance included with this toolkit. Once in place, the administrative burden should not be significantly greater than that necessary for approving conventional development proposals. However, if there are no land trusts or other independent organizations available to hold conservation easements, the jurisdiction may wish to establish a system for holding easements itself.

B. Relationship to the Comprehensive Plan

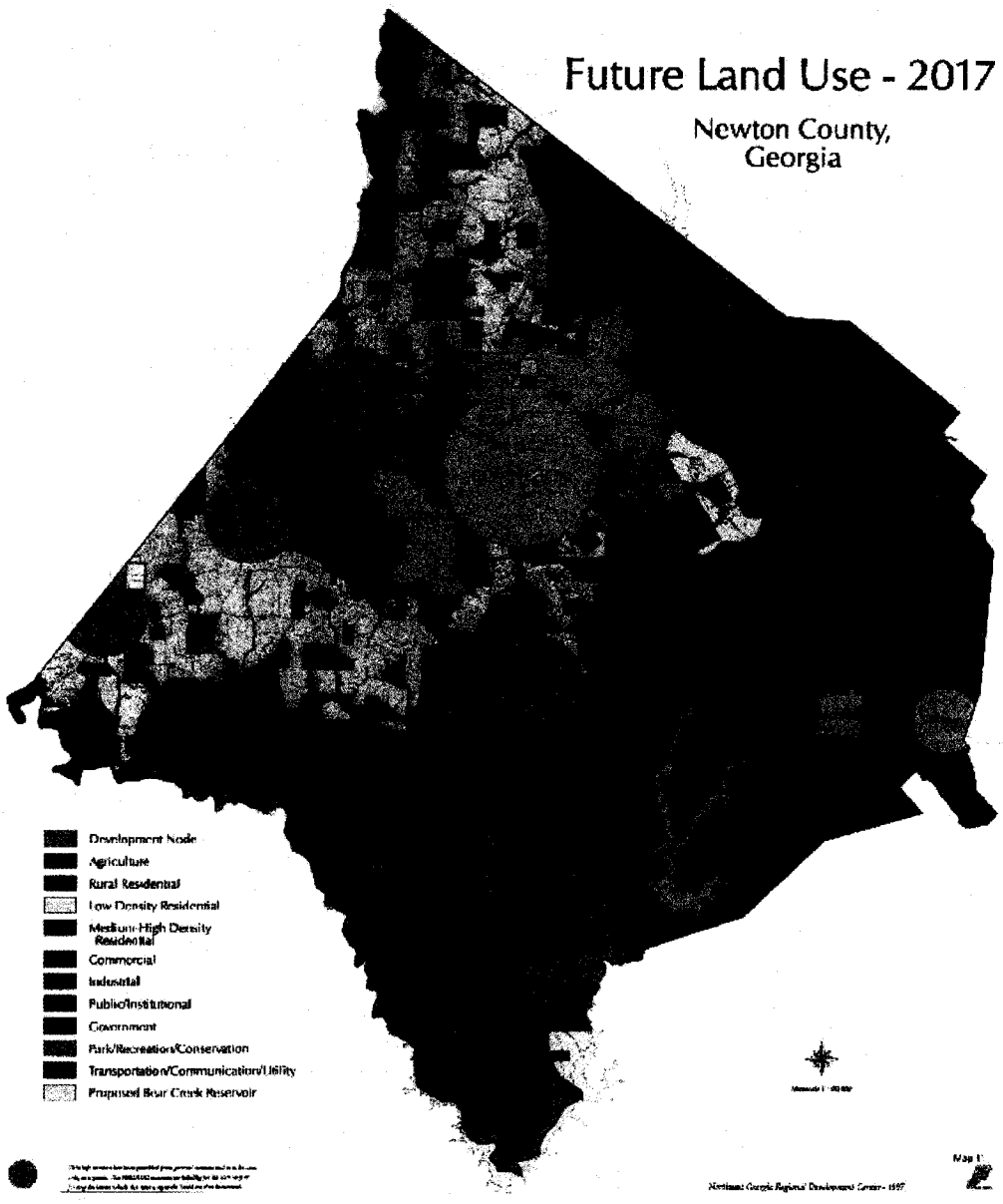
Conservation subdivisions are just one component of a comprehensive approach to protecting open space and natural resources. As discussed previously, a conservation subdivision ordinance alone is not enough to preserve good water quality, nor can it preserve all of the large tracts of open space that wildlife require, nor can it meet all of the public demand for recreation. To meet these goals, a local government needs to use a suite of tools, including a good stormwater management ordinance, a parks and greenway acquisition program, and a riparian buffer protection ordinance, among others. Most of these topics warrant their own toolkits and are not discussed here. However, there are some tools that are so closely tied to conservation subdivision ordinances that they require at least a brief presentation. These include *conservation planning, performance zoning*, and *design standards*.

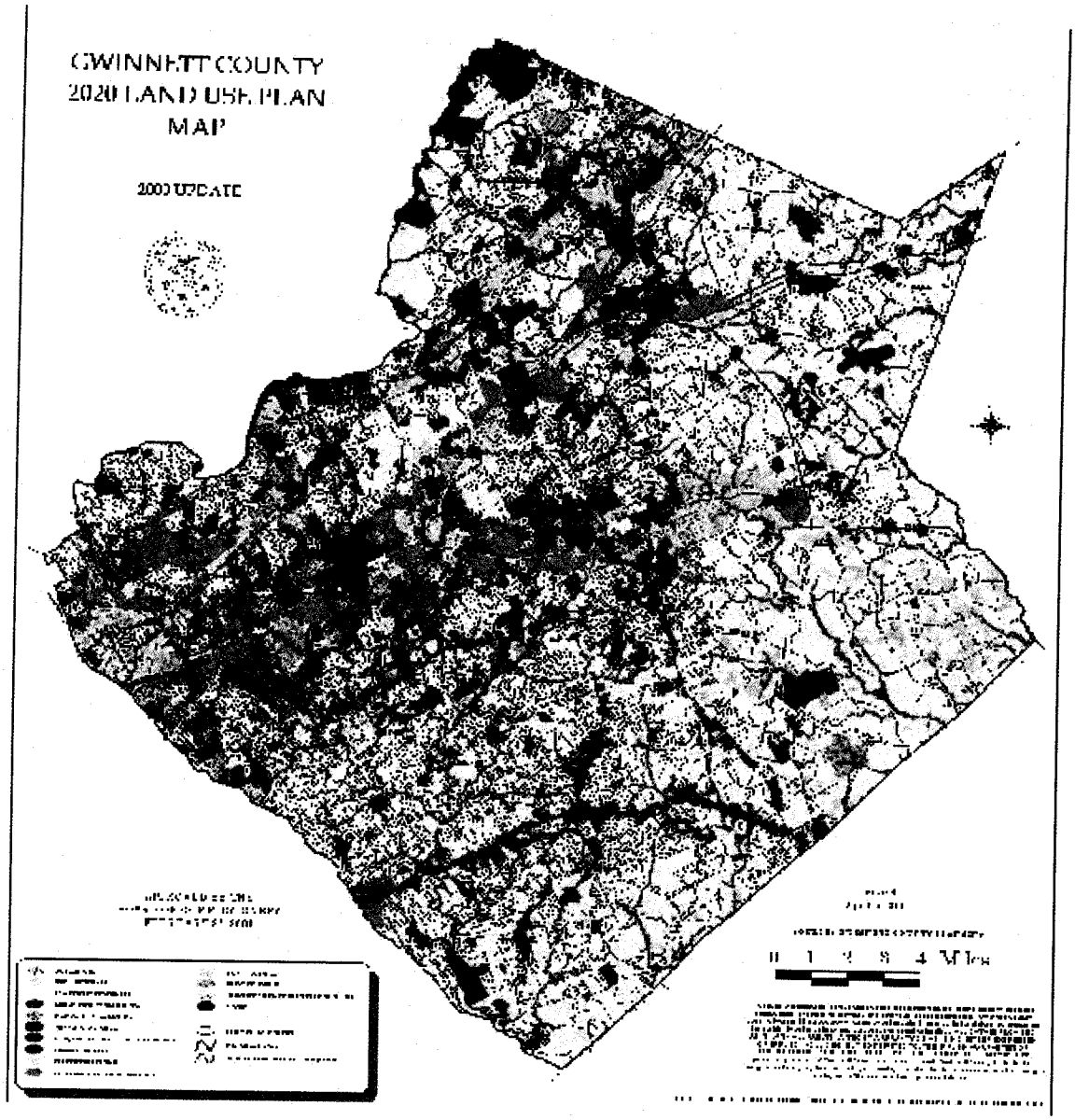
1. Conservation Planning

Conservation planning means using the comprehensive planning process to meet conservation goals in an integrated manner. This entails identifying priority areas for protection and establishing linkages between open spaces at the county scale. Conversely, it requires identifying areas that are appropriate for more intense development—a potentially contentious but nevertheless essential step. It is important that municipalities and counties cooperate in this process: the scale of cities and towns is too limited, and counties cannot fully achieve their goals if the municipalities are not on board. Even better is cooperation involving multiple counties and their municipalities to fully protect important regional natural resources. In any case, plans must be supported by appropriate zoning ordinances.

Although local governments are required by state law to catalog certain types of natural resources in their comprehensive plans, this is insufficient. Counties that fail to identify, plan for and manage patterns of growth implicitly accept uniform sprawl. As an example, Figure III-1 shows

the future land use maps for two Georgia counties, Gwinnett and Newton. Gwinnett County has not identified nodes of development or areas for protection, while Newton County has attempted to target development in certain areas while protecting farmland in other areas. The outcome is that Gwinnett is projected to lose much of its remaining open space and farmland to low density housing lots, while Newton has reserved the possibility for retaining a mix of land uses. While both of these can be viewed as valid approaches to growth, there are some economic costs associated with sprawl. A recent Georgia study showed that node-based growth helps to preserve water quality (Brown and Caldwell et al. 2001), and there is a body of literature that shows that it costs more to service sprawl development than it does to service more compact development or farmland (For example, James Duncan and Associates et al. 1989; Nelson and Dorfman 2001; Siemen, Larsen & Purdy et al. 1990).





Newton County and Gwinnett County Future Land Use Plans (Courtesy Newton County Department of Planning and Zoning/Gwinnett County Department of Planning and Zoning).

A comprehensive conservation plan also makes it possible to link the greenspace in individual conservation subdivisions into large-scale networks of wildlife corridors and greenways. Mapping potential greenways in advance makes it easier for developers to incorporate them into site plans, and it greatly facilitates the process of obtaining recreational access easements, where desired. It is much easier for a local government to obtain such an easement when a site is being

subdivided than it is to go back and try to negotiate public access later, even if the trail passes through an existing greenspace in a conservation subdivision. People tend to view proximity to an existing greenway as an amenity (National Park Service 1994), but see the addition of a new greenway as a threat to their security.

2. Performance Zoning

Currently, most zoning in Georgia is prescriptive in nature: it imposes specific requirements on developers. For each zone there is a minimum lot size, a minimum lot width, a maximum building height, a minimum setback from the road, etc. Variations from these requirements are only allowed through use of special exceptions, such as Planned Unit Developments or Modified Residential districts. Although the designation of these districts allows greater flexibility, local governments and concerned residents often use the process of approving these alternatives to impose even more restrictions.

Local governments should limit their regulations to compelling public purposes such as public safety and natural resource protection. These purposes can be met by setting broad performance goals, which developers have the flexibility to achieve by whatever means are cost-effective and meet the market demands. Minimum standards should be imposed only when needed to guarantee that safety and environmental health are not compromised, and to guarantee that new developments are not a nuisance to neighboring ones. For developers who prefer an expeditious approval, local governments can provide templates for meeting the performance goals—in fact, these templates could mirror existing prescriptive rules. In other words, developers can be given a choice of following prescriptive rules or finding more effective ways of meeting the same goals.

Rules on street widths, setbacks and similar design considerations are discussed in the next section on design standards. The most critical residential zoning regulation, however, is the minimum lot size. Rather than mandating a minimum lot size, local governments can specify a maximum tract density. For example, a low-density residential zone with a minimum lot size of one acre could be converted to a zone with a maximum of one home per acre. The developer can achieve this goal by building one-acre lots, or by building half-acre lots and preserving 50% open space, or by building quarter–acre lots and preserving 75% open space. This achieves many of the goals of conventional zoning while offering greater flexibility to developers and providing open space protection. This is the most critical component of a conservation subdivision ordinance, and it can in fact be incorporated into every residential zoning district.

3. Site Design Standards

Site design standards typically govern such elements as street width, cul-de-sac size, number of parking spaces, use of sidewalks, and protection of trees and open space. These standards serve a number of purposes, including increasing public safety, maintaining consistency in development, and providing aesthetic benefits. Rarely, however, are they intended to promote better environmental protection or encourage pedestrian travel. In fact, overly restrictive site design standards may impede good conservation subdivision design by requiring excessive use of

impervious surfaces and discouraging anything but automotive-based travel. Some conservation subdivision ordinances include improved site design standards that apply only to those developments. Local governments should amend their standards across the board so that developers of conservation subdivisions, conventional subdivisions and commercial development can all have the flexibility to create environmentally sensitive designs.

Table III-1 shows typical minimum design standards for many Georgia communities along with alternative recommendations from the Center for Watershed Protection (Center for Watershed Protection 1998). Non-residential standards are included to emphasize that rules affecting commercial and residential development should also be revised.

Table III-1. Typical Georgia minimum design standards and values recommended by the Center for Watershed Protection.

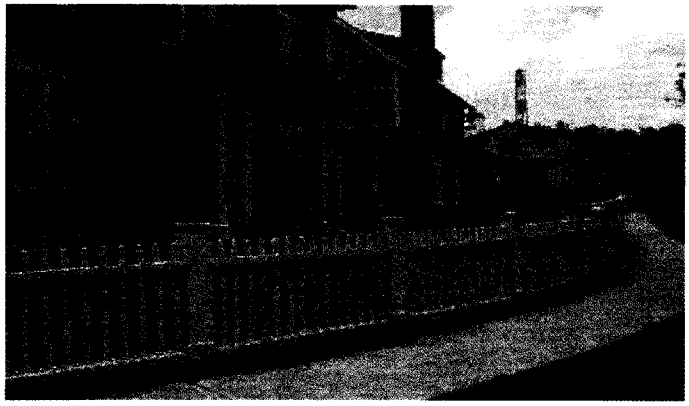
Development Parameter	Typical	Recommended
Low-density residential street width	24 ft	$\leq$ 22 ft
Minimum cul-de-sac radius	50 ft	$\leq$ 35 ft
Alternative turn-arounds	Prohibited	Encouraged
Curb and gutter required	yes	no
Min. parking ratio for shopping ctr. (spaces/1000 ft^2)	5	$\leq$ 4.5
Min. parking ratio for office building (spaces/1000 ft^2)	3.5	$\leq$ 3
Min. width for parking space (ft)	10	$\leq$ 9
Min. width for sidewalk (ft) (if required)	4.5	$\leq$ 4
Min. setback for 1/2 acre res. lot	40	$\leq$ 20

Streets and Cul-de-sacs. Streets should not be wider than is necessary to meet projected traffic demands and to provide emergency vehicle access. Wider streets not only create more impervious cover, which increases runoff and reduces water quality, but they also are generally less safe for both motorists and pedestrians because traffic tends to move faster. They also cost more to maintain. Besides reducing minimum required street widths, local governments should encourage the use of alternatives to cul-de-sac turn-arounds, such as "hammer heads" (T-shaped turn-arounds at the end of a street), that cover less area. Finally, street and parking lot design standards should specifically allow porous paving in areas where it is technically feasible. Porous paving allows rainwater to infiltrate to the soil beneath, providing an effective and cost-effective means of managing stormwater and preserving water quality.

Curb and Gutter. Vegetated swales should be encouraged as an alternative to curb and gutter. These slow the movement of runoff from roads, permitting some infiltration and providing for natural cleansing of runoff. They also are cheaper to build, but may require some periodic maintenance.

Parking. Minimum parking requirements should not require developers to over-build parking lots beyond what is required to prevent a nuisance of excessive parking on public streets. In fact, maximum parking lot limits can also be imposed. Parking requirements should not demand spaces wider than nine feet.

Sidewalks. All local governments should either require or encourage sidewalks and walking paths to make communities accessible to pedestrians. These requirements should be flexible and minimal, however, to discourage over-building. If a minimum width is specified, it should be no more than four feet. Furthermore, developers should not be required to provide sidewalks on both sides of the street unless high foot traffic demands it. Note that special consideration may need to be given to the use of both sidewalks and vegetated swales.



Good site design features in a Cobb County conservation subdivision (Photo: Beth Gavrilles)

C. Administrative and Enforcement Issues

1. Legal framework: Mechanisms for Permanent Protection

There are at least two major tools available to provide permanent protection for open space in conservation subdivisions: conservation easements and restrictive covenants (of certain types). Other tools may achieve the same goals, but at the time of this writing these are the acceptable methods of meeting the requirements of permanent protection under Georgia's Community Greenspace Program.

Conservation Easements

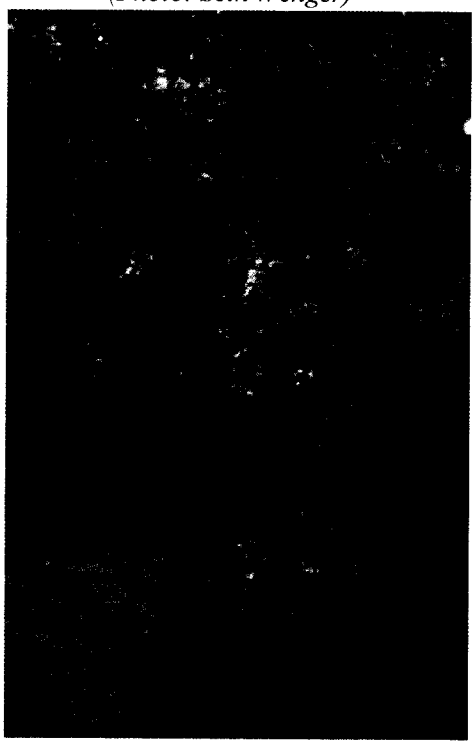
A conservation easement is a legally binding agreement between a property owner and a second party (the easement holder) that restricts the use of the property. The deed of conservation easement can be permanent and binding on all future property owners. It is the responsibility of the easement holder, either a government body or a private conservation organization (usually a land trust), to monitor the property routinely to ensure that the agreement is not violated and to pursue legal or other recourse to compel compliance if necessary.

Georgia's Uniform Conservation Easement Act, O.C.G.A. §§44-10-1 et al., authorizes and promotes the use of conservation easements in Georgia "to retain or protect natural, scenic or open space values; assure availability for agricultural, forest, recreational, or open space use; protect natural resources; maintain or enhance air or water quality; and preserve the historic, architectural, archeological or cultural aspects of real property."

The terms of the conservation easement specify which activities are permitted and restricted on the property. The conservation subdivision ordinance should require that an easement placed on the open space include all of the restrictions specified in the ordinance itself, as well as any other restrictions that the developer chooses to add. Enforcing the easement need not be burdensome and can be as simple as an annual site visit and meeting with the homeowners' association. Note the difference in responsibilities between the holder of the easement and the owner of the open space. The easement holder is not involved in the day-to-day maintenance, management and use of the property, only becoming involved in such activities if there is a violation of the terms of the agreement. The owner bears the expense and responsibility of the normal management of the open space.

The use of conservation easements in the state of Georgia is steadily increasing. Most of these properties are in private ownership, with the easement held by a federal agency (such as the Corps of Engineers or the U.S. Fish and Wildlife Service) or by a nongovernmental land trust. At this writing, the City of Alpharetta is the only local government that has accepted a conservation easement in the state, although Newton County is in the process of establishing a quasi-governmental land trust and several other cities and counties are considering doing so. There are currently 48 nongovernmental land trusts in Georgia ranging from the Nature Conservancy, which is national in scope, to local land trusts such as the Broad River Watershed Association which focuses on protecting land in one particular watershed. Several land trusts have already

(Photo: Seth Wenger)



accepted or are currently negotiating conservation easements on conservation subdivision properties. Some easement holders may request stewardship fees—funds to ensure that the holder will be able to monitor and enforce the easement conditions in perpetuity. These are discussed under "costs," below.

Restrictive Covenants

Under Georgia law (O.C.G.A. 44-4-60 and other sections), a restrictive covenant can be binding in perpetuity if it is written in favor of, or for the benefit of, any federal, state or local unit of government or any corporation, trust or other organization holding land for use of the public. There has been no case law in Georgia interpreting the phrase "holding land for use of the public," so this concept remains somewhat ambiguous. Clearly, however, a restrictive covenant that prohibits development and specifies that the general public may access conservation subdivision open space for hiking and biking purposes would qualify. It is less clear whether a covenant that prohibits development in order to protect water quality or wildlife habitat—and does not specifically provide for public access—would be considered "for use of the public." Any covenant that does not satisfy the "use of the public" requirement may be terminated by a majority vote of the affected landowners after 20 years in counties or cities which have adopted zoning laws. Thus a local government should rely on restrictive covenants to provide permanent protection of open space only under those conditions where it is sure that the covenant will meet the "use of the public" test.

2. Political Concerns

The primary political concern that must be addressed in regards to a conservation subdivision ordinance is potential opposition by residents concerned with the possibility of increased density. Although such opposition may be unfounded it is necessary to address it from the outset. This is discussed in Section IV-J.

3. Administrative Complexity

A conservation subdivision ordinance should be relatively straightforward to administer. Existing staff should be able to perform the necessary functions, although they will need to be able to review some additional materials submitted by applicants. The recommended process is discussed in more detail in Section V-H.

4. Market Demand

It is a well-documented phenomenon that people will pay more for a home located adjacent to parks, greenways and other protected areas of open space. A study in Boulder, Colorado found that properties adjacent to a greenbelt are worth an average of 32% more than those located 3,200 feet away (Correll et al. 1978). Similarly, properties in Worcester, Massachusetts adjacent to a public park were found to be worth $2,675 more (1982 dollars) than similar homes located 2,000 feet away (More et al. 1988). It is typical for developers to charge more for lots that are immediately adjacent to greenspace than for more distant lots (Arendt 1996).

Georgia developers have confirmed that homes in conservation subdivisions tend to sell faster and for higher prices than homes in nearby conventional subdivisions. East Lake Commons, a conservation subdivision in Dekalb County designed by Village Habitat Design, was entirely pre-sold. Macaulay Properties' Legacy Park, in Cobb County, has been one of the fastest-selling developments in the region since it was constructed. The demand for the kinds of homes provided by conservation subdivisions is a nationwide phenomenon: in a mid-1990s poll of over 800 housing consumers, the Washington Post reported that 77% of those surveyed wanted plenty of natural open space opportunities for interactions with their neighbors (Harney 1995).

Even in areas with few conservation subdivisions, there is anecdotal evidence that a market exists for this type of development. Recent migrants to fringe suburban areas, such as Cherokee, Forsyth and parts of Gwinnett County, frequently cite proximity to nearby open space as an important factor in their home buying decision. In recent years they have translated this preference into approval of bond issues and special purpose sales taxes to purchase and permanently preserve open space. If people are willing to tax themselves to buy open space which may or may not be close to their homes, they can also be expected to consider buying homes in conservation subdivisions, where there is open space immediately adjacent to their residences.

5. Costs

Site Preparation. Building a conservation subdivision can be substantially less expensive than building a conventional subdivision because site preparation activities are limited to only a portion of the tract. Grading costs can be extraordinary and the potential savings are commensurate. Randall Arendt reports that one Texas conservation subdivision saved $250,000 in grading costs compared to what it would have taken to build a conventional development on the same site.

Infrastructure. Because the homes are clustered and part of the parcel is undeveloped, conservation subdivisions generally have lower infrastructure costs compared to conventional subdivisions. Roads, sidewalks, water lines and other utility lines can all be reduced in length, to the economic benefit to the developer. These savings are modest if small amounts of open space are preserved but increase dramatically the more homes are clustered and the more space is left untouched. On the high end is Cane Creek, a planned 380-acre project in Jackson County with 90% open space. The designer, Village Habitat Design, estimated that the infrastructure costs of the clustered development were nearly 60% lower than those of a conventional design accommodating the same number of people. The Center for Watershed Protection estimated that building a low-density conservation subdivision would cost about 12% less than a low-density conventional subdivision; a medium density conservation subdivision would be 20% less than its conventional counterpart (Caraco et al. 1998). Infrastructure savings are believed to be the primary reasons developers now favor conservation subdivisions in Cherokee County. In the long run conservation subdivisions also reduce costs for local governments, which don't have to pay as much for maintenance of the subdivision roads they accept for ownership.

Appreciation. Several studies have demonstrated that homes in conservation subdivisions appreciate in value more rapidly than homes in conventional subdivisions. In Amherst, Massachusetts, homes in a cluster development initially sold for an average of $600 more than homes in a nearby conventional development; 21 years later, they sold for an average of $17,100 more—this despite the fact that the conservation subdivision homes were on lots half the size of the conventional homes. A similar trend was observed in Concord, Massachusetts. Homes in a conservation subdivision appreciated at a 21% average annual rate, compared to an 18.4% rate in a nearby conventional subdivision with lots *five times as large* as those in the conservation subdivision (Lacy 1990). Conservation subdivisions are relatively new in Georgia so there is not a body of information on appreciation rates, but it can be expected that they will follow the trends observed elsewhere.

Regulatory. According to interviews with Georgia developers, the greatest cost associated with conservation subdivisions, compared to conventional designs, is in obtaining rezonings, variances, and permits to allow for clustering. For example, Village Habitat Design spent four months and $10,000 working to obtain variances and approval for the Cane Creek project. Steve Macaulay stated that even under Cobb County's Planned Village Community designation—the most progressive zoning classification with which he has worked—he needed 20-30 variances to build his Ridenour project. Inflexible zoning and overly restrictive design standards are the biggest problem, but rules on wastewater management can also present barriers in areas without sewer service (see below). Many developers and designers of conservation subdivisions have said that removing these impediments and speeding up the approval process was one of the most effective incentives that local governments can provide for conservation subdivisions. The proposed model ordinance included with this document is designed to address many of these roadblocks. To further shift the balance in favor of conservation subdivisions, disincentives can be placed for the use of conventional subdivisions.

Permanent Protection. There is a modest cost associated with using conservation easements or restrictive covenants to permanently protect open space, mostly associated with drafting the legal document itself. These costs have been variable for the early conservation subdivisions in Georgia due to varying degrees of familiarity of parties with the use of easements on subdivision open space. For example, Macaulay Properties paid high fees for negotiating and drafting the easement on its Walden Park subdivision because the Nature Conservancy, holder of the easement, initially wanted to use forms designed for isolated, undisturbed natural areas. As the number of conservation subdivisions and the number of experienced land trusts in Georgia grow, this process should simplify; average costs should be limited to about 10 hours of legal fees, according to attorney Connie Heywood, who negotiated the Walden Park easement.

Some land trusts may also require a stewardship fee from the developer to fund the long-term costs of monitoring and enforcing the easements that they hold. These costs may include periodic site visits, negotiations with property owners if there are violations, and as a last resort legal action to enforce the provisions of the easement. Since violations of easements are relatively rare, these costs may not be very high; in fact, Carol Hassell of the Gwinnett Open Land Trust

claim that her organization is prepared to accept easements on conservation subdivision open space with no stewardship fees at all. Chris Sinclair of the Chattowah Land Trust said that a typical fee requested by that organization might be approximately $5000. Other land trusts with limited resources may not be able to accept easements without a more significant endowment. One way to minimize the need for stewardship fees is for the local government to maintain a *third party right of enforcement* on the easement. This allows the local government to perform the tasks of monitoring and enforcement on behalf of the easement holder. Of course, the local government can also hold the conservation easement itself or be a party to the restrictive covenant, in which case it would also have enforcement responsibility.

Density Bonuses. Some conservation subdivision ordinances incorporate density bonuses as an incentive to encourage developers to use this option. The model ordinance, while essentially density neutral, will likely provide a slight density bonus due to the way densities are calculated. Even one or two extra homes on a property can provide a big financial windfall to a developer. On the other hand, some jurisdictions may wish to keep the ordinance absolutely density neutral to minimize potential opposition from neighbors.

IV. Lessons Learned

Past experiences with conservation subdivisions have brought to light several issues, some of them contentious, associated with conservation subdivisions. Government officials and others should prepare in advance to deal with these potential stumbling blocks on the road to successful implementation of a conservation subdivision ordinance. Recommendations for handling these concerns are included.

A. Determining Density

If conservation subdivisions are to be encouraged, there needs to be a simple mechanism for calculating the maximum number of the homes allowed on a given property under the open-space design. It is important that the ordinance be density neutral or nearly so—i.e., that the density of the conservation subdivision be approximately the same as the conventional subdivision that could be built on the same site. This assures the developer that he will receive as good a return on his investment as if he had built a conventional subdivision. It also assures the public that the site will not be developed *more* densely.

Randall Arendt and others have suggested requiring developers to first create a conventional yield-plan for a property to determine the actual maximum number of homes that can be sited there (Arendt 1996). If floodplains and other unbuildable areas are permanently protected in open space, then the developer receives a partial credit or bonus to the density. While creation of a yield plan is undoubtedly an accurate way to determine site density, it requires the developer to go through the trouble of creating two separate site designs, and staff to review the two plans. Alternatively, a simple formula can be used that eliminates the need for a yield plan or extra bonus calculations. The maximum density is calculated by simply multiplying the minimum lot size in the underlying zoning by the size of the parcel, not counting areas that are considered "unbuildable." For example, consider a 20-acre tract zoned for 1/2 acre lots that

includes two acres of wetlands and three acres of steep slopes. This property could accommodate up to 30 homes as a conservation subdivision ((20-5)*2). Although this is simple and basically density-neutral, it doesn't take into account several factors that can slightly increase or decrease the number of homes that can be built in a conventional subdivision. First, some lots are lost to inefficiency: due to the nature of the site, some lots will end up larger than the minimum size, resulting in some waste. Second, some space is taken up by roads and possibly stormwater management facilities. These two factors will reduce the total number of lots that can be built in a conventional subdivision, so using the above formula will result in a slight bonus for conservation subdivisions.

On the other hand, in a conventional design it may actually be possible to either develop so-called "unbuildable" areas or to include them within lots—so not counting these areas could result in an underestimate of the total number of lots (a bonus for conventional subdivisions, compared to conservation designs). Unbuildable areas are typically defined to include wetlands, steep slopes, floodplains, open water and other areas that are either impossible or very expensive to build upon. Note, however, that in actual practice in much of Georgia few areas are absolutely off-limits to development. One can build on wetlands, if sufficient mitigation is performed, and few communities in Georgia actually ban floodplain development (floodways, however, are off-limits). It is legal to build on many steep slopes as well, although the cost can be quite high—or the slopes can be bulldozed. Further, larger lots can actually include unbuildable areas in the back of the lot. So should these areas be counted after all? One solution is to allow developers the choice to create a conventional yield plan rather than use the simple formula, if they think it results in a higher number of lots; this assures that conservation subdivisions are an attractive option even on properties with significant unbuildable areas. After all, these sensitive natural features are what conservation subdivisions are designed to protect. This approach, which is used in the model ordinance, will tend to result in a slight *de facto* density bonus for conservation subdivisions (because the developer can choose the more favorable option), but still should be close to density-neutral. Another solution, recommended by Bill Ross in a proposed ordinance for Morgan County, Georgia, is to require protection of all significant natural areas in *all* subdivisions. This reduces the bonus for conventional subdivisions, making conservation subdivisions more attractive as an option. A third option is to modify the simple formula to count only a portion of the unbuildable areas—although the amount would depend on lot sizes, site-specific characteristics, and other factors, making the simple formula not so simple.

B. Wastewater Management

In areas without sewer service, wastewater management is an issue that has the potential to limit the use of conservation subdivisions. Georgia state standards require lot sizes of no less than 21,780 square feet for unsewered homes. The requirement can be greater depending on soil type and whether a well is also present on the property. This can be acceptable if the zoning on the property requires a minimum lot size greater than this, but at higher densities this restriction effectively prohibits the use of conservation subdivisions by mandating excessive lot sizes. There are three ways to deal with this problem: (a) allow the septic drain fields to be constructed within the open space; (b) allow a portion of the private lots to be counted as open space; or (c) construct an on-site small centralized wastewater treatment facility. In any case, to alleviate concerns about

system failures, it is recommended that the homeowners' association require mandatory pumpouts of septic tanks to minimize the possibility of drain field clogging (except in the rare cases where the local government requires this already).

Under the first approach, the drain fields are located in the protected open space, or at least the locations for back-up (secondary) drain fields are located there. This is only an option if there are appropriate soils for such purposes in the open space, which is not the case for most of the Primary Conservation Areas. Note that the septic tanks should still be located on private lots. This option will require approval of the local sanitarian. Failing this, the second option is to dedicate a portion of the individual homesites adjacent to the open space for permanent protection. In other words, each lot includes a permanently protected area that abuts the commonly owned open space. This approach was used in Appalachian Heritage Properties' Fern Park subdivision in Lumpkin County.

(photo: Beth Gavrilles)

The third option is to construct a small centralized treatment system to serve the conservation subdivision. This is sometimes called a cluster system or a community septic system, depending on the type. This can be the most difficult solution, technically, but may be the most effective in terms of wastewater treatment, especially if much of the property lacks the appropriate soils for septic drain fields. Although there is a perception in some counties that community systems are prohibited by the state, in fact they are legal, although they do require approval of the Department of Natural Resources Environmental Protection Division. Representatives of Wastewater Management Systems say they had little difficulty in obtaining state approval for a community system for a subdivision in Valdosta. A larger hurdle may be the county sanitarian, who may be

wary of alternative systems and may require lot sizes sufficient to construct backup septic systems. This, naturally, eliminates the major benefit of the cluster system. The biggest problem of all, however, is likely to be operation and maintenance. All cluster systems require, at a minimum, regular inspection and preventive maintenance by a trained professional. Unless the system is large enough to justify the expense of hiring someone for this purpose, the only realistic solution is to transfer ownership to an established wastewater utility that will operate the system as a profit-making venture. Although some local utilities (for example, Walton County Water and Sewer) are willing to take on this role, many others (for example, Gwinnett County Public Utilities) are not. Rural counties with limited sewer service areas and low densities are more likely to be amenable to this option than urbanized counties with extensive sewer systems.

C. Property Taxes on Open Space

If a conservation easement or equivalent legal arrangement is placed on the open space, property taxes on the open space should be very low or non-existent. This is for the simple reason that the land is no longer developable, and the highest and best use is limited to passive recreation or other activities specified in the protection document. A reassessment is not automatic unless the local government adopts a policy to this effect, or requires it as part of the conservation subdivision ordinance. If no economic use of the land is permitted under the terms of the protection document, then it is recommended that the local government assess the open space at a value of zero—i.e., collecting no property taxes off of the open space. Because the number and value of homes is approximately the same in conservation and conventional subdivisions, the overall tax revenue should likewise be the same. Therefore there is no net tax loss to the county, despite the fact that the open space itself may be untaxed.

D. Liability

Under the Georgia Recreational Property Act (OCGA 51-3-20), property owners are shielded from liability for injuries to people who use their land for recreational purposes without charge. In addition, the Georgia Uniform Conservation Easement Act (OCGA 44-10-1) shields public entities and charitable groups from liability for injuries that occur on land on which they hold easements. Therefore, both a homeowners' association that manages open space and a land trust that holds the easement on the open space are protected from lawsuits by people who access the land.

E. Incentives

Most conservation subdivision ordinances incorporate some types of incentives to developers in the form of density bonuses or other give-aways. The model ordinance, while essentially density-neutral, includes a small *de facto* density bonus, as discussed above. Such a small bonus is warranted because it may be necessary to give a developer incentives to deviate from conventional subdivision design. However, additional incentives are probably unnecessary and undesirable. This is especially true of density bonuses, which can potentially fuel the concerns of neighbors over the density of conservation subdivision projects. Conservation subdivisions provide other, inherent incentives in the form of lower infrastructure costs and higher sale prices that should make them attractive to developers.

The exception to the no-incentives rule is in cases where local governments wish to negotiate public access to a property. Based on the Supreme Court decision in *Dolan v. Tigard,* such access cannot generally be mandated without raising the risk of a claim of takings. In other words, local governments must pay for a public access easement in some fashion. This can either take the form of actual monetary payment or a developer incentive of some kind. The payment or bonus need not be excessive since proximity to an existing public greenway is generally viewed as an amenity by homebuyers—in addition to access to the subdivision greenspace, these homeowners will have access to a whole trail network.

F. Conservation Subdivisions and Affordable Housing

Conservation subdivisions can be built for virtually any housing market. Although homes in conservation subdivisions may sell for slightly higher amounts than conventional ones, the difference by no means prohibits them from being affordable. Several conservation subdivisions in Georgia have targeted moderate to lower income families, including the East Lake Commons conservation subdivision in Dekalb County. Conservation subdivisions should not be any more or less affordable than conventional subdivisions, and can be included in any program designed to ensure a stock of inexpensive housing in a community.

G. Methods for Regulating Subdivisions

Most conservation subdivision ordinances in Georgia are optional, permitting either conventional development or open-space development within the specified zones. At the time of this writing at least one Georgia county is considering a mandatory approach, however, and mandatory programs have been used extensively in other parts of the country (Arendt 1996). Under this approach the local government creates a zoning classification that allows only conservation subdivisions. The key to making this legally and politically acceptable is to preserve the net density of properties converted to the new classification, so property owners have no reduction in total yield (i.e., keep it density neutral). It is also important to make the transition to the new zone consistent and fair, so that all properties of a given residential zoning classification are converted over to the new classification with no exceptions. It would be difficult to legally sustain a challenge to such an ordinance on the grounds of a takings, since there is no reduction in the profit that can be made on the property—only rules on how the lots are laid out. In fact, it is likely that the new ordinance could also include a downzoning without raising takings claims (if the downzoning is modest). However, it is suggested that communities that wish to pursue such a policy separate the two actions, to avoid potential legal challenges and misdirected opposition to conservation subdivisions.

Among optional subdivision ordinances there exist several models. First, a distinct conservation subdivision zoning district can be established but only be available upon a rezoning request. This is *not* recommended because it adds the burden of a public hearing for every conservation subdivision project. Second, an overlay zoning district can be created and applied to a portion of the jurisdiction, so that either conservation subdivisions or conventional subdivisions may be constructed within the area of the overlay zone. Third, conservation subdivisions can be established as a use by right in some or all residential zones. This differs from the overlay zone

in that the use of conservation subdivisions is not limited to a separately defined geographic area, but can be used on any properties zoned with the specified residential classifications. Both the second or third approaches are reasonable, as long as the conservation subdivision option is set up to be as easy to use as the conventional subdivision option.

H. Remedial vs. Holistic Approach

The model ordinance included with this document is written to be readily adaptable to existing zoning codes in Georgia. It is not the only way to incorporate conservation subdivision provisions into a zoning code, and in fact can be viewed as a "remedial" approach to provide the conservation subdivision option in the most expedient way. An alternative, more holistic approach is to rewrite the zoning code from scratch with the goal of providing increased flexibility, more livable communities and increased protection for natural resources. The elements of the model ordinance can be included in the most appropriate places in the code. The essential components to be included in this approach are:

- Density-based zoning for all classifications
- Standards for permanently-protected open space
- Environmentally sensitive design standards
- Minimum level of open space for each zoning classification (possibly ranging from zero to 50%), with incentives for additional open space and permanent protection

Under such a system developers could supply whatever amount of open space is appropriate for the individual property, the location, and the market demand. A full discussion of this approach, which has not yet been employed in Georgia, is beyond the scope of this publication. It is mentioned here because ultimately it may be the most effective means of achieving the goals of a conservation subdivision ordinance.

I. Support of Developers and Lenders

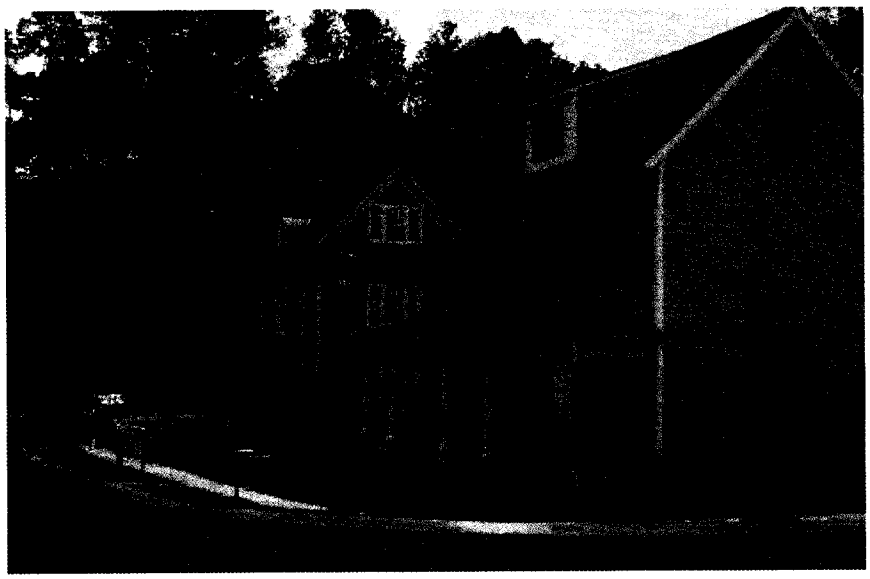
After investing time and energy into developing a conservation subdivision ordinance, most local governments are likely to want to see the ordinance actually used by developers. Developers, however, tend to be a conservative group. With potentially millions of dollars at stake in a project, they are inclined to build the kinds of tried-and-true products they know will sell. Local officials should make efforts to engage developers in a dialogue early on in the development of the conservation subdivision ordinance. Note that this doesn't mean letting the developers write the ordinance or providing excessive incentives (which would likely be unacceptable to the public), but it does mean making sure that the conservation subdivision ordinance addresses regulatory concerns and is a sufficiently attractive option to be used.

Lenders are even more conservative than developers, looking askance at new projects that lack local precedent. However, lender opposition should be minimized if they are provided with information on successful conservation subdivisions in Georgia (such as several mentioned in this toolkit). Secondary mortgage buyer Fannie Mae (FNMA) has a policy of supporting "smart growth" programs and has no policies against mortgages for conservation subdivisions, and the same should be true of local lenders, once they have the opportunity to learn about this development type.

J. Support of the Public

If there is one single factor that can make or break the success of a conservation subdivision ordinance, it is public support. There is a very widespread misconception among suburban Georgia homeowners that a dense cluster of homes on a nearby parcel will reduce the home values of neighboring properties. In fact, it can be demonstrated that a well-designed conservation subdivision will enhance the property values of nearby parcels because of the spillover benefits of protected greenspace. Overcoming this misconception is a daunting task, however.

As discussed in the case studies, at least one Georgia community—Cherokee County—appears to have overcome this hurdle. Many other local governments have not. Probably the single most important element in making this jump is to build good quality conservation subdivisions where people can see them. As neighbors have the opportunity to drive past these developments and see that they offer no danger to their home values or lifestyle, their level of comfort will increase. This requires positive engagement of quality developers, as discussed above, so that outstanding designs appear on the marketplace first.



(Photo: Seth Wenger)

The second thing local governments can do is to make efforts to reach out to the public to raise awareness of conservation subdivisions. Surprisingly, few local governments make this effort. At a minimum, a brochure or fact sheet should be created and widely distributed to explain the benefits of conservation subdivisions, with special focus on the positive effects of protected open space on neighboring parcels. A planning or parks and recreation staff member can also conduct a speaking tour among local social service organizations, such as Rotary Clubs, and various

neighborhood associations. This is an excellent way to reach the neighborhood leaders who might otherwise spearhead opposition to a conservation subdivision project.

Finally, a properly designed ordinance will itself minimize opposition. If opposition to density bonuses is expected, the conservation subdivision ordinance should be absolutely density neutral. Other factors in the proposed model ordinance are designed to address common public concerns. For example, the requirement that some developable land be included in the open space heads off the criticism that developers are only protecting what they can't develop anyway. The minimum open space requirement guarantees that there is sufficient open space to provide wide buffers along the outer edge of the property. Sometimes this is all that is needed to assuage the concerns of neighboring residents. County staff should thoroughly familiarize themselves with the conservation subdivision ordinance so they are ready to answer questions and respond positively to any criticisms.

V. Implementation Guidelines

A. Purposes

The conservation subdivision ordinance should begin with a list of purposes. As in any good ordinance, a list of purposes provides justification for the regulation, helps to clarify later sections of the law and can make the ordinance more defensible in the event of a legal challenge. The purposes should be as inclusive as possible without being repetitive. Table V-1 lists a number of purposes that can be included within a conservation subdivision ordinance; not all of these are necessary, and others can be added to the list.

Table V-1. List of Purposes for a Conservation Subdivision Ordinance

- To provide a residential zoning district that permits flexibility of design in order to promote environmentally sensitive and efficient uses of the land.
- To preserve in perpetuity unique or sensitive natural resources such as groundwater, floodplains, wetlands, streams, steep slopes, woodlands and wildlife habitat.
- To preserve important historic and archaeological sites.
- To permit clustering of houses and structures on less environmentally sensitive soils which will reduce the amount of infrastructure, including paved surfaces and utility easements, necessary for residential development.
- To reduce erosion and sedimentation by minimizing land disturbance and removal of vegetation in residential development.
- To promote interconnected greenways and corridors throughout the community.
- To promote contiguous greenspace with adjacent jurisdictions.
- To encourage interaction in the community by clustering houses and orienting them closer to the street, providing public gathering places and encouraging use of parks and community facilities as focal points in the neighborhood.
- To encourage street designs that reduce traffic speeds and reliance on main arteries.

- To promote construction of convenient landscaped walking trails and bike paths both within the subdivision and connected to neighboring communities, businesses, and facilities to reduce reliance on automobiles.
- To conserve scenic views and reduce perceived density by maximizing the number of houses with direct access to and views of open space.
- To protect prime agricultural land and preserve farming as an economic activity.

B. Minimum Open Space Requirements

How much open space needs to be protected in a conservation subdivision? Existing ordinances have minimum open space requirements ranging from 20% to 50% or more. Some developers in Georgia have claimed that if the requirement is above 20%, then no one will choose the option; others, especially those that have actually constructed conservation subdivisions, say that 50% requirements are fine. As long as the ordinance is density-neutral or includes density bonuses, then there is no reduction in the developer's equity and no particular reason for the developer not to protect at least the minimum amount. In other words, assuming market demand, the developer can make at least as much profit from a conservation subdivision as he could with a conventional subdivision. Since from an environmental perspective a relatively high minimum requirement is desirable, the model ordinance requires a minimum of 40%. The only time when a lower open space requirement should be considered is for zoning classifications that already specify small minimum lot sizes, such as 10,000 square feet or less. For such zones, or for mixed-use town-center zones, a 20-30% requirement may be considered. Of course, the conservation subdivision is a really a tool for low-moderate density suburban areas; it is not particularly appropriate for areas zoned as dense development nodes.

Some ordinances take the approach of establishing a low minimum open space requirement (say, 20%), but then restricting the types of land that can be counted toward this goal. For example, floodplains and other "unbuildable" lands may not be counted. This may be counter-productive, because those types of sensitive areas are exactly the sorts of land that ought to be afforded permanent protection—and if they are given permanent protection, the developer should be permitted to count them as open space. It makes more sense to set a higher minimum standard for open space and allow all protected areas to count as part of this. The next section discusses what constitutes acceptable types of open space.

C. Acceptable Open Space

A conservation subdivision ordinance should include an explanation of the kinds of lands that can or must be included open space. Primary Conservation Lands are those that must be included because they are of very high environmental or historic value. In addition, the ordinance can designate Secondary Conservation Lands: areas that ought to be preserved whenever possible or to the extent feasible. Suggested Primary and Secondary Conservation Lands are listed below:

Primary Conservation Areas

- The 100-year floodplain
- Riparian zones of at least 75 ft width along all perennial and intermittent streams

- Slopes above 25% of at least 5000 square feet contiguous area
- Wetlands that meet the definition used by the Army Corps of Engineers pursuant to the Clean Water Act
- Populations of endangered or threatened species, or habitat for such species
- Archaeological sites, cemeteries and burial grounds

Secondary Conservation Areas

- Important historic sites
- Existing healthy, native forests of at least one acre contiguous area
- Individual existing healthy trees greater than 8 inches caliper, as measured from their outermost drip line
- Other significant natural features and scenic viewsheds such as ridge lines, peaks and rock outcroppings, particularly those that can be seen from public roads
- Prime agricultural lands of at least five acres contiguous area
- Existing trails that connect the tract to neighboring areas

Much of the land that falls within the category of Primary Conservation Land is, by its nature, poorly suited to development. A criticism sometimes leveled against conservation subdivisions is that they reward developers for protecting areas that they couldn't economically develop anyway. To ensure the preservation of some buildable land with conservation value, the ordinance can include a requirement that a proportion of the open space consist of these types of lands. This is not included in the model ordinance.

Land occupied by structures, parking lots, roads or other impervious surfaces should not count toward the minimum open space requirement. Historic structures can be exempted from this rule.

D. Permissible and Prohibited Activities

The ordinance should include a list of activities and uses that are appropriate within the open space and a list of prohibited activities and uses.

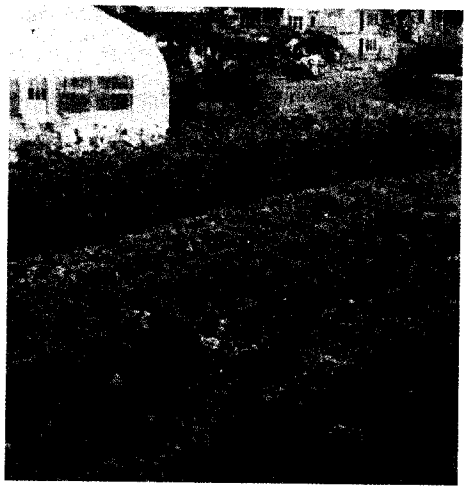
Permissible Activities

In general, permissible activities are those that are in accordance with the purposes of the ordinance. These will generally include conservation uses, passive recreational activities, unpaved trails or trails constructed of porous paving materials, preservation of archaeological and historic sites, and other low-impact activities. Some communities may wish to allow agricultural, horticulture, silviculture or pasture uses, but these should be required to follow all applicable best management practices to minimize environmental impacts. The incompatibility between certain forms of agriculture and residential land uses should also be borne in mind; concentrated animal feeding operations and some other types of farming are not well tolerated by many residential neighbors. Communities may want to prohibit such activities and possibly place other restrictions on agriculture (allowing only organic farming, for example). While leasing open space out for use as farmland requires restrictions on the access of residents, it relieves the homeowners of the responsibility for maintenance of the open space and may generate a small income. In addition,

the residents still partake of the rural or scenic views of undeveloped open space and still have the satisfaction of knowing development of the area will never occur.

Active recreation areas may be permitted but should be restricted to a small part of the open space—preferably no more than 10%, and never within Primary Conservation Areas. Active recreation areas may include impervious surfaces, although this portion of the open space will not count towards meeting Georgia Community Greenspace goals. Active recreation areas in excess of this limit must be located outside of the protected open space. This is not because active recreation isn't important, but it is a higher-impact land use that is not entirely consistent with all of the goals of a conservation subdivision.

Landscaped stormwater management facilities, community wastewater disposal systems and individual wastewater disposal fields may be appropriate in the open space, provided they are located on soils particularly suited to such uses (which excludes most Primary Conservation Areas). Land application systems and certain other wastewater treatment facilities may need to be located in areas of restricted access for health reasons. Drainage, access and underground utility easements may also be acceptable.



Organic garden at East Lake Commons conservation subdivision
(courtesy of Village Habitat Design)

Prohibited Activities

Roads, structures and other impervious surfaces should be prohibited within the protected open space, except for a small amount that may be connected with active recreational facilities. Impoundments—dams, reservoirs, ponds and lakes of any kind—should be prohibited because of the devastating effect these have on aquatic systems. While these may make nice amenities, such environmental harm is inconsistent with the goals of conservation subdivisions. Communities may also want to prohibit aboveground utility lines.

Golf courses are also specifically prohibited within the model ordinance. Randall Arendt notes that while golf courses preserve large areas of open space, "those green areas are managed for only one kind of activity, and they typically convert all previously natural areas (except wetlands and steep slopes) into intensively managed lawns that are off limits to everyone but golfers and that are uninviting to most forms of wildlife (except the more tolerant animals, such as geese)." In Georgia, golf course construction and maintenance is suspected of playing a role in the degradation of many waterways. Many of the largest requests for variances from state stream buffer regulations come from golf course developers; one such request justified the need to strip trees from nearly 9,000 feet of marsh and stream banks "so that each hole could have different elemental influences thus increasing quality of play." Another golf course developer asked permission to pipe, fill or impound 3,920 feet of stream because "four holes must be placed within the buffer" (both requests were granted). Golf courses also rely heavily on the use of chemical fertilizers and pesticides which may pollute surface and groundwater. Overall, golf courses run contrary to the purposes of a good conservation subdivision ordinance, and it would undermine public confidence in the term "conservation subdivision" if it could be applied to such environmentally damaging projects. If standards for environmentally friendly golf courses are developed,

E. Ownership and Management of the Open Space

One of several potential parties can be designated to have responsibility for owning and managing the open space of a conservation subdivision. In some cases the developer may wish to turn over management of the open space to the local government for dedication as a public park. In other cases the open space, or a portion of the open space, can be donated in fee simple to a land trust or other nonprofit conservation organization. Most of the time, however, the open space will be dedicated to the subdivision's homeowners' association (HOA). The ordinance can either present a menu of options for land ownership or allow only one option; the model ordinance specifies an HOA because of the advantages inherent in this mechanism.

Most local governments have little interest in owning and managing the relatively small parcels of open space connected with conservation subdivisions. There may be exceptions, in cases where the open space contains natural, historic or archaeological features of great interest that the community would like to make available to the public. If the subdivision is an infill development in a region with few public parks, acquiring the open space may be the best option for providing recreational opportunities to the public. However, there is a perception among many homebuyers and developers that a home adjacent to an area of open space with restricted access is more desirable than one adjacent to a public park. In addition, the management interests of the local government may not always coincide with those of the neighbors in the future. These same difficulties may also plague ownership by private non-profits. Furthermore, the non-profits may also require a substantial amount of money to provide for the ongoing maintenance of the property.

Homeowners' associations are the best option, provided that they meet certain requirements. Membership in the association must be mandatory for all members of the subdivision, so that the

association must be given powers to place liens on members' properties to collect dues. This may sound draconian, but this provision helps to ensure the continued successful existence of the HOA, even if this power is never exercised. The ordinance should also provide for the rare contingency in which the HOA should cease to exist as an entity.

The owner of the property is responsible for all ongoing operation and maintenance expenses. Such expenses tend to be much lower for passive recreational facilities than for active recreational areas. Walking paths will need periodic maintenance, limbs may need to be trimmed, and meadows may need to be mowed occasionally. The land can even be leased to a farmer for agricultural activities conducted according to acceptable terms. In any case, there are significant differences between operation and maintenance responsibilities associated with ownership and the enforcement responsibilities of the holder of a conservation easement or restrictive covenants.

F. Permanent Protection

Acceptable methods for permanently protecting the open space must be included within the conservation subdivision ordinance. A discussion of the tools available is provided in section IIIC.

G. Application and Approval Procedures

A conservation subdivision application may require a few additional procedural steps for approval, although every effort should be made to streamline the process. The applicant must submit an Open Space Management Plan to assign ownership and management responsibilities for the open space. A legal tool dedicating the open space to permanent protection should be prepared prior to or concurrent with the issuance a land disturbance permit.

It is also recommended that applicants be required to submit a site analysis map at the same time they submit a site concept plan. In fact, communities should require this for all subdivision and building permit requests, not just for conservation subdivisions. The purpose of the site analysis map is to ensure that the important site features have been adequately surveyed and identified, and this information has been or will be incorporated into the site design. This also gives planning staff the information they need to intelligently review the concept plan and make recommendations for changes before the applicant has invested in the final site design. The site analysis map should show:

a. Property boundaries;
b. All streams, rivers, lakes, wetlands and other hydrologic features;
c. Topographic contours with intervals of 10 ft or less;
d. Each Primary and Secondary Conservation Area labeled by type, as described in Section 1.4 of this Article;
e. General vegetation characteristics;
f. General soil types by group;
g. The planned boundaries of protected open space;
h. Existing roads and structures;

i. Greenspace and trails traversing or adjacent to the site, whether existing or planned. Any other site information that the planning staff would find helpful, and would not be too onerous to obtain, should be required as well.

VI. Additional Resources

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B. Other Links and Contacts

University of Georgia Institute of Ecology Tools for Quality Growth Website. Available at *http://outreach.ecology.uga.edu/tools.html.*

VII. Appendices

Appendix A: Case Studies

Presented below are brief case studies of two conservation subdivision ordinances. Cobb County's ordinance is used as an example of an ordinance that has not achieved widespread acceptance. It is not the intent to single out Cobb County for criticism, but to use it as an example of a phenomenon that can be observed in several jurisdictions: a reasonably good ordinance has not lived up to its promise. The Cherokee County ordinance has been the most successful of Georgia's conservation subdivision ordinances in that it has been widely used by developers and moderately well accepted by the public.

Case Study #1: Cobb County

Cobb County first passed a conservation subdivision ordinance in the late 1990s. The ordinance provided a large density bonus to developers—in fact, it allowed for a near doubling in net density, according to officials at the Cobb County Zoning Division. Attempts by developers to build projects under the rules met with such stiff opposition by neighboring residents that all the projects were scrapped and the ordinance was repealed. In 2000, Cobb County tried again with a second version of the ordinance, called an Open Space Community (OSC) Overlay. This version was density neutral with only small density bonuses for certain special design features.

The OSC can be applied to residential zones ranging from R-80 down to R-15. It reduces the minimum lot sizes in each case to 10,000 square feet, except for the R-15 which is reduced to a minimum 8,000 square feet. It provides up to a 10% bonus for such design features as exceptionally wide riparian buffers, use of native plant species, creation of contiguous (not fragmented) open space, and addition of trails. A point system is used to calculate the bonus. Ownership of the open space is by a mandatory homeowners association. Permanent protection by a restrictive covenant is required. According to a Cobb County Planner, the ordinance is partly designed to make it easier for developers to comply with the county's restrictive riparian buffer ordinance, which requires buffers as wide as 100-200 ft on certain waterways.

The new version of the ordinance has also faced great community opposition, apparently due to the perception that density is still increased. As in many communities, neighbors opposed subdivisions that appeared different from theirs on the grounds that they could reduce their home values—even if the planned homes were more expensive than their own. Part of the difficulty may be that the OSC is not a use by right, so projects require a special review that involves a public hearing. Only a few projects have been approved under the OSC, which county officials attribute to the reluctance of developers to face opposition from residents.

Case Study #2: Cherokee County

Cherokee County passed a conservation subdivision ordinance in September of 1998, based on recommendations from graduate students and faculty with the University of Georgia's Institute of Ecology's Etowah Practicum. The ordinance is relatively simple. It provides increased flexibility to cluster homes at greater densities in every residential zone, with a maximum density determined by the underlying zoning and the presence or absence of sewer service. The open space in the subdivision can be owned by the homeowners' association, the county, or a land trust. There is no minimum amount of open space that must be preserved. The ordinance also lacks extensive rules on activities that are permissible and prohibited in the open space.

The ordinance has been well received by the development community, and many new residential developments in Cherokee County now take the form of conservation subdivisions, according to the director of planning. He noted that "open space is a thing that's attractive to homeowners, especially those with children." He also added that the ordinance gives developers the flexibility to work with the hilly terrain that covers much of the county. The amount of open space in these developments is modest—typically in the range of 25%. One county commissioner said developers prefer the conservation subdivisions because it allows them to save money on infrastructure.

There has been some opposition to conservation subdivisions from neighbors who don't like the appearance of the higher density. A county commissioner said that this problem could be solved by requiring a buffer zone between conservation subdivisions and neighboring conventional subdivisions. In addition, she has suggested some other changes to the ordinance, including removal of the minimum lot size ("so developers can build whatever kinds of development the market will bear"), and a better definition of what constitutes open space. She also suggested eventually making the ordinance mandatory, so developers would have to construct conservation subdivisions or traditional neighborhood developments. Not everyone favors significant changes to the ordinance, however. Others have noted that the ordinance has been successful in its fundamental goal of encouraging the development of conservation subdivisions, and the county needs to take care that any changes to the ordinance don't discourage its use or raise overwhelming opposition.

Additional Example in Metro-Atlanta: Gwinnett County

Gwinnett County amended their zoning ordinance in 2001 to include a Conservation Subdivision Overlay District. The overlay district permits variation in lot size and subdivision design within the R-100 and R-75 single-family zoning districts, while requiring preservation of open space and protection and enhancement of environmental, historical, archeological and aesthetic features.

The purposes of this overlay district are as follows: To encourage the development of residential communities, that are density neutral based upon the Comprehensive Plan, designed to preserve and protect environmental resources, scenic vistas, and natural and cultivated landscapes; to enhance land, water, air and tree resources by minimizing the area of land disturbance, reducing impervious surface, optimizing stream buffers, preserving tree cover and encouraging the provision of open space; to reduce infrastructure maintenance costs as a result of efficient community design; to provide open space and pedestrian linkages and wildlife corridors among residential communities and to encourage recreation opportunities; to preserve significant historical and archeological features; and, to preserve and protect contiguous undeveloped areas within the development.

The Conservation Subdivision Overlay District may be overlaid only upon the R-100 and R-75 districts utilizing the public sanitary sewer system. Of special note in the Gwinnett County example, is that the overlay district shall be a use ***by right*** for those properties zoned R-100 or R-75 as of the effective date of the adoption of the overlay district. Any conditions of zoning or special use approval of the underlying district shall also be observed, with the exception of lot area, width or quantity.

As mentioned in the previous examples, increased density or the perception of increased density, is often a contentious issue. Unincorporated Gwinnett County maintains relatively low densities. The Comprehensive Plan establishes recommended residential density not to exceed 3 units per acre in many areas of the county. Consequently, subdivisions in the overlay district may not exceed a maximum net density in the underlying district, and must provide at least the percent of open space, as follows:

> R-100. 2.3 units per acre with 40% open space; or 3.0 units per acre with 50% open space.
>
> R-75. 3.0 units per acre with 40% open space.

Subdivisions in this overlay district must be a minimum of 10 contiguous acres. There is no minimum lot area, except that each building lot cannot contain more than 20% of its area within the 100-year floodplain elevation.

Ownership of open space is by a mandatory property owner's association. Open space is permanently protected by the developer's conveyance of an undivided fee simple interest in the open space to both the property owner's association and to each of the lot owners.

Appendix B: Conservation Subdivision Model Ordinance

The model ordinance provides for the use-by-right of conservation subdivisions in residential zones. Most of the provisions of the ordinance have been discussed in the text. Text in [brackets] indicates terms that need to be written specifically for the local jurisdiction, such as the jurisdiction name. Definitions are generally not included, but may need to be added to the appropriate portion of the local code if they are not elsewhere used or if they are used in a different context. Depending on the structure of the local code, some elements of the ordinance may need to be inserted into the zoning code and others may need to be added to the subdivision or development ordinance.

CONSERVATION SUBDIVISIONS

SECTION 1.1 PURPOSES

A. To provide a residential zoning district that permits flexibility of design in order to promote environmentally sensitive and efficient uses of the land.

B. To preserve in perpetuity unique or sensitive natural resources such as groundwater, floodplains, wetlands, streams, steep slopes, woodlands and wildlife habitat.

C. To preserve important historic and archaeological sites.

D. To permit clustering of houses and structures on less environmentally sensitive soils which will reduce the amount of infrastructure, including paved surfaces and utility easements, necessary for residential development.

E. To reduce erosion and sedimentation by minimizing land disturbance and removal of vegetation in residential development.

F. To promote interconnected greenways and corridors throughout the community.

G. To promote contiguous greenspace with adjacent jurisdictions.

H. To encourage interaction in the community by clustering houses and orienting them closer to the street, providing public gathering places and encouraging use of parks and community facilities as focal points in the neighborhood.

I. To encourage street designs that reduce traffic speeds and reliance on main arteries.

J. To promote construction of convenient landscaped walking trails and bike paths both within the subdivision and connected to neighboring communities, businesses, and facilities to reduce reliance on automobiles.

K. To conserve scenic views and reduce perceived density by maximizing the number of houses with direct access to and views of open space.

L. To protect prime agricultural land and preserve farming as an economic activity.

SECTION 1.2 GENERAL REGULATIONS

A. Applicability of Regulations. This Conservation Subdivision option is available as a use by right in all residential zoning districts, including [list of applicable zoning districts]. Applicant shall comply with all other provisions of the zoning code and all other applicable laws, except those that are incompatible with the provisions contained herein.

B. Ownership of Development Site. The tract of land to be subdivided may be held in single and separate ownership or in multiple ownership. If held in multiple ownership, however, the site shall be developed according to a single plan with common authority and common responsibility.

C. Housing Density Determination. The maximum number of lots in the Conservation Subdivision shall be determined by either of the following two methods, at the discretion of the applicant:

1. *Calculation:* The maximum number of lots is determined by dividing the area of the tract of land by the minimum lot size specified in the underlying zoning. In making this calculation, the following shall not be included in the total area of the parcel:
   a. slopes over 25% of at least 5000 square feet contiguous area;
   b. the 100-year floodplain;
   c. bodies of open water over 5000 square feet contiguous area; and
   d. wetlands that meet the definition of the Army Corps of Engineers pursuant to the Clean Water Act.

2. *Yield Plan:* The maximum number of lots is based on a conventional subdivision design plan, prepared by the applicant, in which the tract of land is subdivided in a manner intended to yield the highest number of lots possible. The plan does not have to meet formal requirements for a site design plan, but the design must be capable of being constructed given site features and all applicable regulations.

SECTION 1.3 APPLICATION REQUIREMENTS

A. Site Analysis Map Required. Concurrent with the submission of a site concept plan, Applicant shall prepare and submit a site analysis map. The purpose of the site analysis map is to ensure that the important site features have been adequately identified prior to the creation of the site design, and that the proposed Open Space will meet the requirements of this article. The preliminary site plan shall included the following features:

1. Property boundaries;
2. All streams, rivers, lakes, wetlands and other hydrologic features;
3. Topographic contours of no less than 10-foot intervals;
4. All Primary and Secondary Conservation Areas labeled by type, as described in Section 1.4 of this Article;
5. General vegetation characteristics;
6. General soil types;
7. The planned location of protected Open Space;
8. Existing roads and structures;
9. Potential connections with existing greenspace and trails.

B. Open Space Management Plan Required. An open space management plan, as described in Section 1.4, shall be prepared and submitted prior to the issuance of a land disturbance permit.

C. Instrument of Permanent Protection Required. An instrument of permanent protection, such as a conservation easement or permanent restrictive covenant and as described in Section 1.4, shall be placed on the Open Space concurrent with the issuance of a land disturbance permit.

D. Other Requirements. The Applicant shall adhere to all other applicable requirements of the underlying zoning and the [subdivision code].

SECTION 1.4 OPEN SPACE

A. Definition. Open Space is the portion of the conservation subdivision that has been set aside for permanent protection. Activities within the Open Space are restricted in perpetuity through the use of an approved legal instrument.

B. Standards to Determine Open Space.

1. The minimum restricted Open Space shall comprise at least 40% of the gross tract area.

2. The following are considered Primary Conservation Areas and are required to be included within the Open Space, unless the Applicant demonstrates that this provision would constitute an unusual hardship and be counter to the purposes of this article:

   a. The 100-year floodplain
   b. Riparian zones of at least 75 ft width along all perennial and intermittent streams
   c. Slopes above 25% of at least 5000 square feet contiguous area
   d. Wetlands that meet the definition used by the Army Corps of Engineers pursuant to the Clean Water Act
   e. Populations of endangered or threatened species, or habitat for such species
   f. Archaeological sites, cemeteries and burial grounds

3. The following are considered Secondary Conservation Areas and should be included within the Open Space to the maximum extent feasible.

   a. Important historic sites
   b. Existing healthy, native forests of at least one acre contiguous area
   c. Individual existing healthy trees greater than 8 inches caliper, as measured from their outermost drip line
   d. Other significant natural features and scenic viewsheds such as ridge lines, peaks and rock outcroppings, particularly those that can be seen from public roads
   e. Prime agricultural lands of at least five acres contiguous area
   f. Existing trails that connect the tract to neighboring areas

4. Above-ground utility rights-of-way and small areas of impervious surface may be included within the protected Open Space but cannot be counted towards the 40% minimum area requirement (exception: historic structures and existing trails may be counted). Large areas of impervious surface shall be excluded from the Open Space.

5. At least 25% of the Open Space shall consist of land that is suitable for building.

6. At least 75% of the Open Space shall be in a contiguous tract. The Open Space shall adjoin any neighboring areas of Open Space, other protected areas, and non-protected natural areas that would be candidates for inclusion as part of a future area of protected Open Space.

7. The Open Space shall be directly accessible to the largest practicable number of lots within the subdivision. Non-adjoining lots shall be provided with safe, convenient access to the Open Space.

C. <u>Permitted Uses of Open Space</u>.

1. Uses of Open Space may include the following:

    a. Conservation of natural, archeological or historical resources;
    b. Meadows, woodlands, wetlands, wildlife corridors, game preserves, or similar conservation-oriented areas;
    c. Walking or bicycle trails, provided they are constructed of porous paving materials;
    d. Passive recreation areas, such as open fields;
    e. Active recreation areas, provided that they are limited to no more than 10% of the total Open Space and are not located within Primary Conservation Areas. Active recreation areas may include impervious surfaces. Active recreation areas in excess of this limit must be located outside of the protected Open Space.
    f. Agriculture, horticulture, silviculture or pasture uses, provided that all applicable best management practices are used to minimize environmental impacts, and such activities are not conducted within Primary Conservation Areas;
    g. Landscaped stormwater management facilities, community wastewater disposal systems and individual wastewater disposal systems located on soils particularly suited to such uses. Such facilities shall be located outside of Primary Conservation Areas;
    h. Easements for drainage, access, and underground utility lines;
    i. Other conservation-oriented uses compatible with the purposes of this ordinance.

D. Prohibited uses of Open Space

1. Golf courses;
2. Roads, parking lots and impervious surfaces, except as specifically authorized in the previous sections;
3. Agricultural and forestry activities not conducted according to accepted Best Management Practices;
4. Impoundments;
5. Other activities as determined by the Applicant and recorded on the legal instrument providing for permanent protection.

E. Ownership and Management of Open Space.

1. Ownership of Open Space. A homeowners association representing residents of the conservation subdivision shall own the Open Space. Membership in the association shall be mandatory and automatic for all homeowners of the subdivision and their successors. The Homeowners' Association shall have lien authority to ensure the collection of dues from all members. The responsibility for maintaining the Open Space and any facilities located thereon shall be borne by the Homeowner's Association.

2. Management Plan. Applicant shall submit a Plan for Management of Open Space and Common Facilities ("Plan") that:

a. allocates responsibility and guidelines for the maintenance and operation of the Open Space and any facilities located thereon, including provisions for ongoing maintenance and for long-term capital improvements;
b. estimates the costs and staffing requirements needed for maintenance and operation of, and insurance for, the Open Space and outlines the means by which such funding will be obtained or provided;

c. provides that any changes to the Plan be approved by the Board of Commissioners; and
d. provides for enforcement of the Plan.

3. In the event the party responsible for maintenance of the Open Space fails to maintain all or any portion in reasonable order and condition, [the jurisdiction] may assume responsibility for its maintenance and may enter the premises and take corrective action, including the provision of extended maintenance. The costs of such maintenance may be charged to the Homeowner's Association, or to the individual property owners that make up the Homeowner's Association, and may include administrative costs and penalties. Such costs shall become a lien on all subdivision properties.

F. Legal Instrument for Permanent Protection.

1. The Open Space shall be protected in perpetuity by a binding legal instrument that is recorded with the deed. The instrument shall be one of the following:

   a. A permanent conservation easement in favor of either:

      (i) a land trust or similar conservation-oriented non-profit organization with legal authority to accept such easements. The organization shall be bona fide and in perpetual existence and the conveyance instruments shall contain an appropriate provision for retransfer in the event the organization becomes unable to carry out its functions; *or*

      (ii) a governmental entity with an interest in pursuing goals compatible with the purposes of this ordinance.

      If the entity accepting the easement is not [the jurisdiction], then a third right of enforcement favoring [the jurisdiction] shall be included in the easement.

   b. A permanent restrictive covenant for conservation purposes in favor of a governmental entity.

   c. An equivalent legal tool that provides permanent protection, if approved by [the jurisdiction].

2. The instrument for permanent protection shall include clear restrictions on the use of the Open Space. These restrictions shall include all restrictions contained in this article, as

well as any further restrictions the Applicant chooses to place on the use of the Open Space.

G. Tax Assessment of Open Space. Once a legal instrument for permanent protection has been placed upon the Open Space, [the jurisdiction tax assessment office] shall be directed to reassess the Open Space at a lower value to reflect its more limited use. If the Open Space is used purely for passive recreational purposes and the terms of the instrument for permanent protection effectively prohibit any type of significant economic activity, then the assessment shall be at a value of zero.