A Handbook

ON

OPEN SPACE DEVELOPMENT

THROUGH

Residential Clustering

Prepared by the
Southern New Hampshire
Planning Commission

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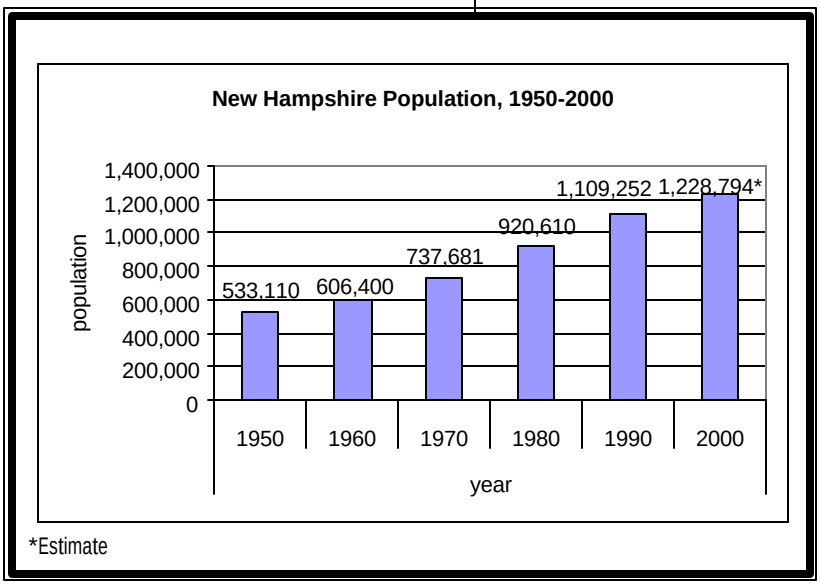
I. INTRODUCTION

The character and appearance of our rural landscape is changing rapidly. New Hampshire, the fastest growing state in New England, has doubled its population since the 1950s, and is projected to add another 350,000 people by the year 2020 (Office of State Planning Estimates, July 1996). The state's housing stock has grown by 55% in the past twenty years alone (OSP data, 1998).

Four southern and southeastern counties, accounting for less than one-third of the state's total land area, are projected to host most of this growth in population and housing. This population growth has severely eroded the open forest and farm lands that are a hallmark of New Hampshire's landscape and envied quality of life. An average of 15,000 acres of forest and farm land are lost annually to development.



In an attempt to slow this rapid pace of development, reduce densities, and spread out growth, towns often impose large lot-size requirements. However, the results are just the opposite: requiring large lot sizes consumes more land, increases sprawl, and reduces open space in the region. While minimum lot sizes of five or more acres preserve some land, the land becomes fragmented and impossible to use for conservation, agricultural, or recreational purposes.

All demographic and economic trends indicate that New Hampshire will continue to grow in population. Rather than attempt to prevent growth, communities should work to guide and direct growth. New Hampshire law gives communities the authority to institute innovative land use controls to direct development.

The cluster or open-space subdivision is one such innovative technique. Houses are clustered on smaller lots, and the remaining land is protected from further development by means of a conservation easement. Towns throughout the state developed cluster subdivision regulations, and many such developments have been built over the past 10-20 years. Some communities were disappointed with the results, and a few rescinded their ordinances. Other communities gave mixed reviews to their cluster subdivisions, and attempted to revise their ordinances.

Sprawl continues to be a major concern in nearly every community in the Northeast, sparking renewed interest in preserving open space and community character. Planning boards are considering revising their cluster subdivision regulations to get a better product from the developer.

For the community, the main goal of clustering homes is preserving open space. Unfortunately, some developers only looked to clustering when the limitations of a piece of property prevented application of the usual cookie-cutter subdivision. In most cases, the conservation of land was definitely not the first priority in the development, and it showed.

Recognizing that cluster subdivisions can indeed help to stem urban sprawl, communities that rescinded their cluster ordinances a few years ago are taking a new look at cluster development. The stigma associated with the word 'cluster,' and the need to send a clear message to property owners and developers about the intent and goals of clustering, call for new terminology. Changing the name in the ordinance from cluster subdivision to <u>open space subdivision</u> communicates these goals clearly to both the developer and the planning board.

Randall Arendt's excellent books on conservation subdivisions (see Bibliography) are valuable resources for any community that is planning or reviewing this type of development. This Handbook explores the challenges planners and planning board members face when applying the concepts outlined in Arendt's books

and other sources on planning to conserve open space and community character.

Applying these theories and concepts will not be easy for planning board members, who can soon be disillusioned by poor results. Examples of successful and not-so-successful subdivisions are offered for insight on how to develop and apply regulations, and on working with developers. This Handbook can also be a useful resource for developers who want to understand the rules and rationale of open space subdivision regulations.

II. BENEFITS AND GOALS OF OPEN SPACE SUBDIVISIONS

The primary goal of open space subdivisions is to preserve and protect tracts of undeveloped land to help maintain the character of a community. Open space subdivisions can achieve many benefits for both the region in which they are built and for the developer. The far-reaching advantages of these developments can enhance a community's economic, social, and recreational opportunities, and reduce the environmental impacts of development.

Environmental Benefits

By protecting and preserving open space and focusing on infrastructure, this approach to development offers several environmental benefits compared to conventional subdivisions. Open space subdivisions can help a community to achieve environmental goals identified in the master plan or conservation plan. Cluster housing offers an alternative approach to providing housing, while reducing the impacts on the environment.

Benefits -

- Habitat Protection
- Recreational Opportunities
- Lower Infrastructure Costs
- Lower Maintenance Costs
- Nonpoint Source Pollution Reduction

- Open space subdivisions can help *preserve open space and natural features* found within a community.
- The amount of pavement and road construction required is generally reduced because residential construction is limited to more compact areas. This *reduces the areas of impervious surface and the potential for polluted stormwater runoff*.
- Open space subdivisions can *provide buffers of undisturbed natural vegetation to protect wetlands, streams, ponds, and other adjacent open lands*.
- The natural environment also benefits from properly sited and managed open space subdivisions. Open space subdivisions can *protect wildlife habitat and corridors*. Quality habitat must meet wildlife needs for shelter, food, water, and reproduction. Ensuring that

open spaces in these subdivisions are usable by wildlife, and connected to adjacent open areas, protects wildlife corridors.

Social and Recreational Benefits

Open space subdivisions can provide numerous social and recreational benefits through compact development design and preserved parcels of land.

- Well-designed common spaces can provide attractive areas for residents to socialize, hike, walk, or bicycle.
- Community-wide greenway network plans, which can depend on developers providing critical links between natural features, can be implemented more easily through open space development than conventional development.
- Developers can often be persuaded to donate or dedicate a section of land in their developments to local authorities for various forms of leisure activities.
- The compact design of the residential lots and streets in open space subdivisions can also provide social benefits, encouraging walking and interacting by residents. The more compact individual yards require less maintenance, and thus allow residents to spend more time enjoying the surrounding environment with their neighbors.

Economic Benefits

Much of the cost associated with the high price of housing is related to the cost of creating the lot. Land clearing and grading and the construction of streets, sidewalks and sewers all contribute to the cost of establishing a buildable lot. Open space development provides economic benefits to residents and the larger community by enhancing quality of life and the variety and affordability of housing types available.

- Reducing lot sizes and clustering housing units reduces development and maintenance costs substantially. Service requirements are decreased in open space subdivisions compared to conventional

subdivisions, with reduced need for infrastructure such as roads, sewers, and water lines. Both homeowners and local governments can realize substantial savings.

- Open space subdivisions can also add to a municipality's quality of life. Protected open space and recreational opportunities greatly enhance a community's character, and can help attract economic development. Businesses rank the attractiveness and quality of life of a community very high when choosing a location.
- Public land acquisition costs may be reduced if the green space set aside in open space subdivisions is dedicated for public parkland.
- Open space subdivisions can also streamline and facilitate the planning review process that is required for any new development. The entire process can be much smoother with open space developments, since many of the time-consuming and costly issues that can arise—such as maintaining the quality of life in the area, or preserving natural lands—are usually anticipated and addressed by site designers. Site planning that is sensitive to the conservation objectives of the town and interested residents can minimize problems and confrontations.
- The value of homes in open space subdivisions tends to increase faster than homes in conventional subdivisions, because homebuyers prefer lots close to, or facing, protected open space.
- A variety of housing types, from single-family-detached to attached units, can be more easily accommodated in an open space subdivision where permitted by zoning.
- Open space subdivisions help minimize the sprawl impacts of development. By protecting parcels of open space land through techniques such as conservation easements, and by clustering buildings and pavement, this approach can provide new housing in keeping with a community's master plan goals.

III. IMPORTANT PROVISIONS FOR SUCCESSFUL CLUSTERING

Cluster housing has been an available option to municipalities in New Hampshire since the early 1980s. The results include examples of both good and not-so-good subdivisions. Numerous planning boards throughout the state can ask themselves, "How did we let that happen?" Or, "The developer complied with every section of the ordinance, so why did it turn out so bad?" Some communities even repealed their cluster subdivision ordinances as a result of developments that didn't meet the town's expectations.

So what happened? A later chapter will examine several case studies that are considered successful, and several that the planning board wished could be modified. From studies of several subdivisions and interviews with planners and planning board members, several key issues were found to require careful attention.

1. Clearly state the goals and objectives of the regulation.
2. Clearly explain how much of the unbuildable land can be used towards the minimum open space requirement.
3. Require that the conservation land have good access and be well marked.
4. Provide performance standards to assure a quality development.
5. Ensure workable tax collection on common land.
6. Secure developer follow-through on plan commitments.
7. Clarify application requirements to encourage more desirable plans and avoid unnecessary costs for the developer.

Murphy's Law prevails in community development as much as in other areas of life: "What can go wrong, will go wrong!" The number of players involved in developing open space subdivisions—landowner, developer, real estate broker, site designer/engineer, technical planning staff, planning board, and conservation commission—adds to the challenges. In the most successful examples

of open space development, most—if not all—of these players were committed to the conservation and community goals of open space subdivisions. Even in less than optimal circumstances, a planning board can learn from the experience of others, and act to avoid some of the pitfalls.

Clearly state the goals and objectives of the regulation.

Since all of the players involved bring slightly different goals to the table, it is important for everyone to understand that the true purpose of open space subdivision regulations is to protect open space and conserve lands. When first introduced, many developers and land owners thought of a cluster subdivision as a way to get as many house lots as possible out a parcel of land that had some development limitations, such as wetlands or steep slopes. Many early cluster regulations allowed this unusable land to be included in the calculation of the amount of reserved open space for a clustered development. The planning board's hands were thus tied in attempting to protect developable land.

Making matters worse, members of planning boards often give the landowner or developer the benefit of the doubt when regulations are vague, rather than requiring more than what the regulations specify. Neither the planning board nor the developer can be expected to impose or accept design changes that are not clearly supported by the regulations.

Clearly explain how much of the unbuildable land can be used towards the minimum open space requirement.

Many ordinances allow some portion of the unbuildable land to be counted toward the required open space set-aside. A planning board must take care to ensure the protected land will not end up unbuildable and unusable. For example, the ordinance should specify whether water body areas are included in open space fulfillment. If the regulations do not clearly exempt water bodies, a developer can easily argue that a lake or pond is open space with scenic and recreational value. That

may be true, but water body acreage would not be developable in any case, and a development could end up with no public access to, or around, the water body. Provisions should mandate usable open space.

Require that the conservation land have good access and be well marked.

Even when the conserved land is usable, access is sometimes awkward or non-existent. In one example, the access was so poorly marked that users felt as if they were walking into someone's backyard to get to the conservation land. More successful examples provide access points to the open space that are clearly marked with fencing and/or trails. This can be achieved by requiring either broad rights-of-way throughout the development, or by creating obvious recreational areas.

Access to the conservation land is clearly marked in this Salem subdivision.

Provide performance standards to assure a quality development.

Nothing diminishes the appeal and overall acceptance of a cluster/conservation subdivision more than poor quality construction. Several examples can be cited as poorly built conservation subdivisions, or as ugly and unappealing places to live. Cluster design should not be blamed for the failure of these developments, but rather the poorly laid-out homes and drives, or the low standard of construction quality. Construction quality is often compromised in the name of affordable housing, when thorough and creative planning could improve the outcome.

Developers often seek to reduce costs by building private access roads. The homeowner's association will

assume responsibility for their maintenance when completed. This can lead to major problems down the road: (1) The private road is very poorly constructed, in constant need of repair, and seriously compromises the appearance and usefulness of the subdivision. (2) The owners become frustrated with the condition of the roads, and petition the town to take it over. While the town can refuse, the issue can become a nasty, no-win political situation.

One alternative is to require all roads to be constructed to town standards, whether or not they eventually become public or private. The cluster provisions can reduce the dimensional minimums for roads that service only a few homes. This would lower costs for the developer and homebuyers, reduce the amount of impervious surface in the development, and create neighborhoods of more appropriate scale.

This otherwise attractive home looks out of place due to the need to have most of its basement above the water table.

Judicious placement of homes makes a significant difference in the overall appearance of a cluster subdivision, even when building low and moderately priced housing. Poured slab construction is a better solution in high-water-table or shallow-depth-to-bedrock situations than raised basements. To achieve more of a sense of privacy between homes, vary setbacks and angles of the houses. Consider shared septic systems in order to save trees and create an infrastructure that could be connected to a municipal system if the option becomes available.

Ensure workable tax collection on common land.

The municipality is often concerned about who will be responsible for collecting the dues and paying the taxes on common property held by a homeowner's or condo-

minium association or tenant's group. In the case of one subdivision in a New Hampshire community, only four homes were constructed before the developer went bankrupt. The four property owners could not afford the taxes on common land that would have been shared by fifteen owners if fully built-out, so the town took the property for back taxes.

While this is not a common situation, it is avoidable. Individual property owners could be assessed for their share of the common land. The developer then pays the tax until each lot is sold, and the homeowners are paying their share, even if the developer fails.

Secure developer follow-through on plan commitments.

Ensuring that developers follow through with the commitments they make during the approval process is important to achieving the desired outcomes. This can be a problem, especially with an inexperienced developer. The most common solution is to require the developer to post a bond or letter of credit that will cover the cost of completion. This is extremely important for phased projects, where the developer may not install all the amenities shown in the completed site plan in an earlier phase.

Frequent inspections during site preparation and installation of services are also recommended, to ensure that the development is consistent with the approved construction documents. Prevention is the best cure, since towns are often hesitant to make a developer dig up an undersized drainage pipe that has already been laid, or to rebuild a roadway with the specified sub-base. Frequent inspections and bonding also protect the town in the event the developer fails, and the town is forced to take over the maintenance of the roads or utilities.

Clarify application requirements to encourage more desirable plans and avoid unnecessary costs for the developer.

While a town must protect its interests, it should avoid forcing a developer to jump through more 'hoops' than necessary. This costs everyone in time, money, or both.

The board should develop a specific process and checklist for submittals, based on the goals and objectives of the open space subdivision provisions.

Developers who are not fully informed of the board's expectations for an open space subdivision will formulate designs based on their own priorities. Then they are discouraged when the preliminary presentation of their plan to the board is deemed inadequate. Re-drawing site plans and altering engineered systems becomes very costly for the developer, and ultimately adds to the cost for the homebuyers. Rather than losing all the money they spent on preparing their initial plans, they make the smallest possible modifications in an attempt to salvage their initial work. The most likely outcome is for everyone to become worn down, and for a mediocre development to be approved.

The Appendices of this publication include suggested planning board procedures for considering open space development proposals.

IV. KEEP THE CONSERVATION IN OPEN SPACE DEVELOPMENT

New Hampshire communities have used cluster subdivision regulations for several years, with mixed results. Many factors affect the outcome of a development. However, the most likely reasons for community dissatisfaction are either that open space was not protected, or the protected land was of marginal quality. Renewed desire to control sprawl has led to recognition of open space subdivisions as a potential tool for preserving open space, protecting wildlife habitats, and maintaining the settings of historic resources.

Because the state has relatively few urban centers, many New Hampshire residents don't view themselves as living in suburbia, but rather in small towns. However, tremendous growth has transformed parts of the state over the past decade, especially the southeast and south-central region. Residential and commercial development has consumed vast amounts of farmland and woodland, severely threatening the small-town character of our state.

Suburban sprawl abounds. For example, an estimated 85% of the Town of Bedford has been developed, and only 7.6% of the total land area is protected open space. This rapid development has occurred over the past fifteen years.

Communities seeking to control and limit growth must consider innovative land use controls for preserving open space. A successful open space development can be an effective tool to reduce loss of open space, reduce habitat fragmentation, provide recreational opportunities, and ensure that the protected space is usable and accessible.

The key concepts in regulating open space development are *flexibility* and *performance*. Randall Arendt argues that the details matter little, as long as a design works well for environmental protection, public safety, and rural resource conservation.

Four Steps to Conservation-based Site Design

The first thing a developer wants to know when considering a new subdivision is the maximum number of units that can be constructed on the parcel. A developer is likely to apply this same business approach to the design of an open space development, focusing first on houses and streets, and giving less attention to the land and its qualities. As a result, planning boards get designs for proposed conservation subdivisions based on profit potential, rather than on potential for conserving resources.

Curbing sprawl development and preserving open space for the community to enjoy are the primary reasons for encouraging clustered subdivisions. If the open spaces preserved are not accessible, connected to existing conservation areas, or usable in some way for recreation, the purpose of this type of development is lost.

A community's open space development regulations must clearly articulate the goals of the regulation, and inform the developer of the process to follow when designing a conservation subdivision.

Planner and author Randall Arendt has developed a **four-step process** that helps everyone involved in the project focus on the goals of the ordinance. He has fully explained this process in his three publications: *Rural by Design*, *Conservation Subdivisions*, and *Growing Greener*. All offer valuable examples of how open space development can effectively help protect a community's rural or agricultural character. A brief summary of Arendt's four-step process follows.

Step 1: The design process for an open space conservation subdivision must start with identification of the critical conservation areas where no development would be permitted—regardless of the configuration of the subdivision. Wetland, steep slopes, and designated wildlife habitat are examples of such critical conservation areas.

This first step also includes identification of secondary conservation areas, those portions of the parcel that have value as conservation areas, relate to existing resources, or have some historical significance. Possible examples include a good fishing stream, an historic farmstead, or a valuable agricultural field. The integrity of the site's conservation significance becomes the starting point for planning the development, allowing the potential development areas of the site to emerge.

Step 1: Identify primary and secondary conservation areas, and potential development areas

Step 2: Determining and arranging the number of houses allowed on the site should begin with a 'yield plan,' or conceptual sketch of a traditional subdivision layout for the parcel. The planning board should require the developer to submit such a yield plan with every lot sited according to the district's zoning requirements. In areas without sewers, the applicant should submit evidence that 10% of lots could support septic systems, with local officials selecting the most unlikely-to-pass lots for testing. Lots that fail would be eliminated, with another 10% tested until all those in the sample pass.

Step 2: Arrange the number of houses allowed on the property

The yield plan should also show non-buildable areas and the location of roads. Calculate the number of homes allowed by subtracting the acreage of critical conservation areas from the total area of the parcel, subtracting a percentage for roads and utilities, and

then dividing the result by the minimum lot size allowed in the zoning district. This results in the number of homes that can be placed on the parcel.

"Experienced developers recognize the importance of siting the homes before street alignments have been set, because they realize that their principal sales products are the homes and not the street system or the lot boundaries."

Randall Arendt

Conservation Subdivisions

Then the designer can arrange that number of homes in the developable areas identified in step one. Important considerations in arranging the homes in an open space development include the qualities of the open space, and finding ways for as many home sites as possible to benefit from some aspect of the protected land.

Step 3: The third step in the design process, linking the homes on the site together with roadways and pathways, is directly based on the results of steps 1 and 2. Depending on the conditions of the site, a main feeder road may branch off with either small cul-de-sacs or shared driveways to service small clusters of homes. Another option is narrow roads with homes on just one side of the street, with open greens between roadways. Arendt's publications illustrate many appealing choices for locating roadways.

Step 3: Link homes together with roadways and pathways

Keep in mind any new road's relationship to existing street systems, and possible connections to future development on adjacent lands. Also consider the residents' access to the open space land and the appropriate locations of any trails and recreation facilities. Trails, like the roadways, should connect to larger trail systems in the community where possible.

Step 4: Laying out the lots and defining the commonly held land is the final step in the design process. For a traditional subdivision this would be the first step, typically strongly influenced by zoning ordinance requirements, and with much less emphasis on design of the neighborhood.

Step 4: Lay out lots and define commonly held land

Conservation of open space is the first priority and the first step in designing clustered open space development. Many planning officials have commented that applying this process to an actual parcel of land is much more difficult than it sounds in theory. With so many individuals involved in the design and decision-making process, the project can shift and change through each stage in the process. Planning boards should not be discouraged or diverted from the goal of preserving valuable and usable open space. Staying focused on the primary goal of preserving open space and community resources should result in a development that will be a welcome addition to the community.

V. COMMON SPACE OPTIONS

Where the common space in an open space subdivision is located can make a significant difference in the success of the development. Developers seldom focus on the location of, or access to, the open space. Therefore, the planning board must carefully consider how the preserved open land functions, and how it relates to the rest of the subdivision. The open space can consist of woodlands, open fields, other wildlife habitat, or recreation areas including bike trails. The open space should be accessible, usable, and effective in its purpose. Consider the site from a community and regional perspective, including whether the open space protected can become an integral part of a larger tract of open space land.

Relation to the Town's Open Space Plan and Other Natural Resource Inventories

The open space that is set aside in a proposed open space development can serve multiple functions, but it should primarily contribute to an overall conservation and/or recreation plan. Connecting to a larger tract or conservation plan can resemble fitting pieces into a giant jigsaw puzzle. Even when the subdivision parcel includes no obvious large resource (such as a wetland or a stream), the town's conservation and recreation plans should always be checked to see if this parcel could help meet the plans' goals.

Usable Land Requirements

A common complaint from communities is that the dedicated land that was set aside is not usable because it is wet, steep, fragmented, or inaccessible. This usually is the result of allowing too much of the unbuildable land to be counted toward the dedicated open space. A commonly used standard requires 25% of the parcel to be dedicated open space, and 50% of that must be usable land. That standard does not appear to provide for enough usable open land.

The minimum standard needed to create significant usable land is 50% dedicated open space, of which 50%

should be usable. A preferable standard would be to allow only 25% of the required open space to be wet or unbuildable.

Open Space and Recreational Amenities

The concept and definition of usable open space has stimulated much discussion. That debate should focus on the anticipated values of the protected land. Preserving open space can contribute a variety of rewards and benefits: scenic vistas, wildlife habitat, preservation of unique flora, woodland paths and trails, bike and/or hiking trails, recreation areas, opportunities for fishing or hunting, etc.

A neighborhood park provided at the end of a cul-de-sac.

How does a planning board evaluate the usability of the open space for a cluster subdivision that does not specifically relate to the town's conservation plan? Consider the potential benefits for the preserved open land on several levels:

- First, does the open space benefit the greater community in some way? This could include retaining a rural appearance along a roadway, maintaining a scenic vista from afar, buffering or protecting a watershed, or providing a visual buffer for the development.
- Second, can the land provide passive recreation opportunities for the residents or greater public? Ask the developer to show public access points and the general layout of potential trails. Are these easily accessible by all residents of the development?
- Third, even if the property is not a unique habitat, will the dedicated land provide some benefit to native wildlife or local flora? While some may question the value of an open space development that only preserves a few acres of open space, the benefit will be revealed as the cumulative impacts of these developments begin to emerge.

- Fourth, can the residents and others appreciate the preserved open space? This is especially important in situations where the land proposed for development has few distinguishing characteristics, such as an open field. Instead of situating the homes facing each other in a traditional grid or cul-de-sac fashion, site the homes so that a majority can enjoy some aspect of the open space. For example, consider clustering homes around an open square or common that could be used for gatherings or ball games. This arrangement can effectively break up the appearance of increased density and add value to more of the homes in the development.

Ownership and Control of the Common Space

Both the developer and town officials sometimes have difficulty with issues that arise around privately held communal property. The chief concern is over who will pay the taxes.

Probably the most common approach is to establish a homeowner's or condominium association for holding common land in the association's name. The association collects fees from the homeowners, and pays the taxes and any other expenses incurred in the routine maintenance of the common land and facilities. This has worked well in most cases, especially when the subdivision has been fully built and the homeowner's association is active.

Problems have occurred when the association fails to be active and collect the fees, or when only a few houses are built and the developer reneges on the deal by deeding over the land to the association.

Another approach is for the town to assess the open land, divide that figure by the number of house lots in the subdivision, and add the resulting share to the tax bill of each home in the development. This ensures that the town will get its tax monies even if the association is inactive. Until all lots are sold, the owner/developer is

Methods of Ownership and Control of Common Open Space:

- Establish a homeowner's association that can hold common land in its name.
- Divide the assessed value of the common land by the number of house lots in the subdivision and add the result to the tax bill for each home.
- Extend lots into the preserved open space and place a conservation easement on the property.
- Deed the land to the Town.

responsible for the portion of the taxes on the common land associated with all unsold lots.

In cases where the land will become part of a larger open space corridor system or recreational plan, the land may be deeded to the town. Town ownership should be avoided in most other situations, to prevent interpretation of "taking" by the courts. For example, a community would be in an extremely questionable position if it had a mandatory cluster ordinance, and the planning board made transfer of privately owned open space land to the town a condition of approval. However, the conservation commission **is** an appropriate body to hold and monitor a conservation easement on protected land in an open space development.

VI. DESIGN ISSUES

The design of an open space development can spell the difference between success and failure for the subdivision. The planning board must examine important design factors—such as circulation, pedestrian amenities, utilities, setbacks and densities, and common space access for the subdivision residents. Poor design decisions have led to disappointing results for several developments, even though they were constructed in compliance with their communities' general criteria for open space development. When evaluating the characteristics of a proposed project, the board must also consider the relationship of the development to the larger community.

Circulation

Circulation is one of several essential aspects of open space development design. Links within the development should connect residences with amenities such as open space, parks, and schools, as well as commercial developments.

Creative design can enhance the benefit of an open space subdivision compared to conventional development in reducing impervious surfaces. The more compact design of open space development should result in narrower road widths and shorter road lengths. This can be further enhanced by relaxing the road standards, or by allowing the roads to remain private. Placing homes on only one side of the street may appear to be inefficient and to create more paved surfaces. But the amount of pavement is the same or slightly less than for most standard subdivisions, because road width can be reduced.

A well-landscaped island with appropriate lighting in a cul-de-sac turnaround.

Cul-de-sacs are popular with developers to minimize road networks. However, the turn-around area at the end of a cul-de-sac, typically 120 feet in diameter, presents a bleak open space if entirely paved. Consider a landscaped island in the center, or locate a drainage system retention basin in the space. Either option would reduce the area of paved surfaces in the development.

Another road design alternative uses a standard sized access road, with narrower cul-de-sacs or shared driveways to serve four or five homes. This can reduce paved surfaces, while still providing an access road for residents that is maintained by the community and adequate for emergency vehicles.

Where appropriate, roads within a development should connect to adjacent developments and street patterns. Narrow one-way roads servicing a group of homes can be used to create a large open space reminiscent of the traditional New England village green. Despite being narrower than most streets in the community, the physical construction of the roads within these open space developments should visually relate to the curb design, sidewalks, paving materials, etc., of existing roads.

Pedestrian Amenities

Sidewalks play a vital role in open space development design. Although some people associate sidewalks with more 'urban' settings, they help to clearly separate the spaces used by pedestrians and automobiles. Sidewalks thus improve safety in the development, and make neighborhoods more inviting for residents to walk around and meet neighbors.

The setback allows for more grass and tree-lined streets.

Well-designed sidewalks use materials and edge treatments appropriate to the

local setting. Setting them back from the edge of the roadway allows for grassed and tree-lined streets. Sidewalks can be narrow, and made of concrete, asphalt, cinders, or wood chips. The sidewalk network should provide residents with access to the main road, the conservation land, parks or recreation areas, or even nearby commercial areas.

Sidewalks located on just one side of the street can still provide safety for residents. For some developments, sidewalks may be appropriate throughout the neighborhood, especially when the development links directly to an established neighborhood.

Utilities

Many New Hampshire towns require that utilities for new developments be placed underground. This has great aesthetic benefits in a cluster subdivision, since the close placement of homes could result in a dense array of overhead wires. If the community does not require underground utilities, consider locating the services in the least intrusive manner possible. For example, where residences are laid out in blocks, utilities could be located along the rear property lines and enter the homes from the rear.

The fire pond provides an attractive amenity for neighboring homes.

Most municipal subdivision regulations include lighting requirements. These requirements are generally based on the existing conditions in the community. If streets are lit in other parts of town, then subdivisions should also be illuminated. Lighting provides comfort and security to the residents, and can thus encourage more pedestrian activity. Lighting should be designed so that it will not negatively affect homes or conserved land areas.

Some developers have installed fewer, but brighter fixtures that are mounted higher. Unfortunately, this type of lighting excessively 'washes' over surrounding

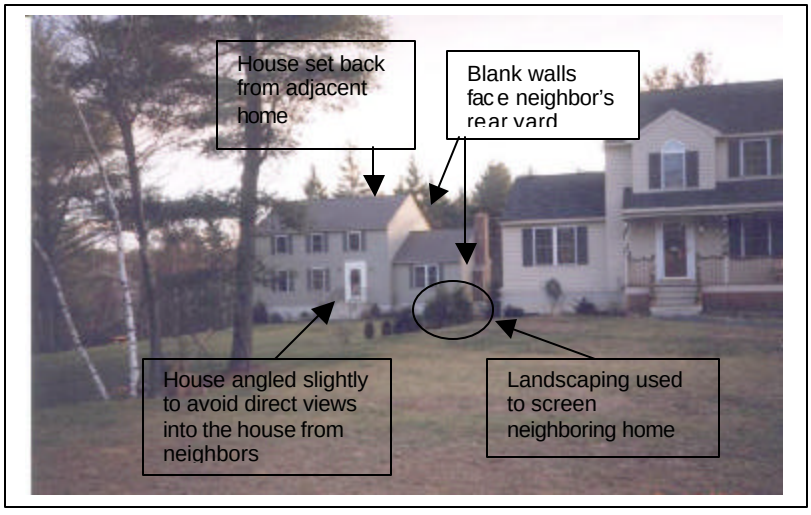
property, resulting in glare and over-illumination. Light should be directed downwards from fixtures placed on low poles, to limit illumination to the immediate area and limit the potential for light pollution. The planning board could require the developer to submit a lighting plan with pole locations and candlepower levels, depending on the extent of the development.

The location of infrastructure such as fire ponds and septic fields poses more design considerations. On a wooded parcel, providing each house with a separate septic system will result in the loss of an abundance of trees. A shared system could save trees and be located in a way that creates an open field and some visual variety. The flexibility of open space development design provides an opportunity for a developer to use alternative methods for waste disposal, some of which are discussed in the Appendices.

Fire ponds are often required for development in rural areas, but water resources that function as a fire pond can also be used for winter skating. This simple consideration can greatly enhance the aesthetic and recreational appeal of the neighborhood.

Setbacks and Densities

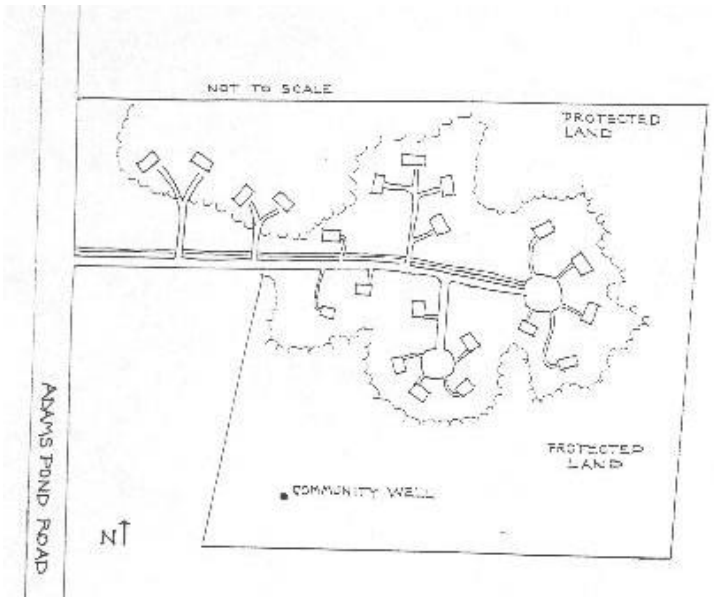
A sense of privacy between neighbors may be an important concern with the generally higher densities of open space subdivisions. Successful open space developments show careful consideration in the placement of the homes.



Homes can be staggered with varying setbacks, or angled to avoid direct views into the neighbor's windows. Homes may be custom designed to carefully site garages and limit window openings on walls that are close to the neigh-

boring property. The planning board should encourage careful consideration of the placement, setbacks, and private yards for homes of all scales and price ranges.

This is one example of an open space subdivision plot plan in the Town of Derry. Note the homes near the main road are set back in the trees, screening them from the road.



Some less successful examples of open space development could have been prevented with more thought given to the placement of the homes. Lots with very small building envelopes and practically unusable rear yards due to steep slopes or poorly drained soils are not popular. In one development where homes were placed in a straight-line fashion on an open piece of land, each property owner felt compelled to erect a fence to achieve some sense of privacy.

Siting in an Open Space Parcel

Developing an open piece of land for a standard subdivision is a challenge. Applying the densities of an open space development adds to the challenge and the complexity. The density allowed in an open space subdivision appears to be intensified when applied to a wide-open piece of land. However, some developers give much thought to the placement of the homes, clustering them around a green or common, or shaping the land with small berms to create more sense of privacy for residents in their yards.

Property owners will likely plant ornamental trees in their yards. But the planning board could require the developer to plant street trees that will soften the environment as they mature. Fencing, walls, rocks, and other landscaping features can also provide relief from the barren look of an open field. Some of the most successful open space cluster developments feature professional and creative landscape designs and plantings that enhance the aesthetic appeal and privacy of the homes and neighborhood. This also increases the cost of the homes.

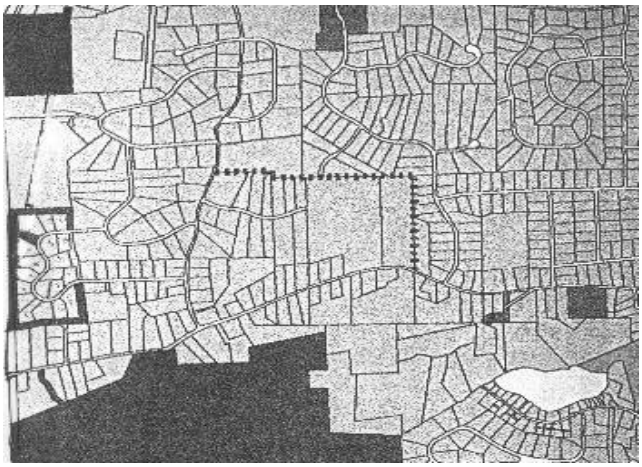
Fencing, berms, shrubs, and new trees help to break up this barren parcel.

However, each development should be designed around the specific site—to highlight the open space, recognize its quality and features, and provide visual and physical access to the conserved land for all home sites.

Relationship to the Existing Community

The relationship of an open space subdivision to the existing community must also be considered when planning the development. Citizens often complain that open space or cluster developments do not fit well with the character of the surrounding community, and have failed to harmonize with their environment. An open space development must be designed to create a positive relationship between the new and established sites.

The open space development at the left shows that the buffer required by the ordinance consumed the dedicated open space quota and resulted in the creation of less usable land.



The overall design of an open space development should be consistent with the

character, surrounding landscape, and traffic patterns of the surrounding community. This may require recognizing that the subdivision was designed to protect as much undeveloped land as possible, resulting in a built subdivision that may appear isolated and less visible from the main road. In other cases, the new development can logically become an extension of the adjacent neighborhood, even if the lots are smaller. Similar building setbacks and road treatments can help achieve this.

Perceptions that an open space development might negatively affect surrounding property values can also be an issue. One way to address this concern is to use buffer strips wherever the downsized lots adjoin standard-sized lots. Buffers can provide privacy, separate conflicting uses, contain trail and habitat corridors, and enhance visual appeal. However, buffer strips usually count toward the required open space, and in situations with a low set-aside minimum, the results can be disappointingly short on usable open space.

Many realtors have found that all lots within well-designed open space developments almost always enjoy higher property values because of the developments' permanently protected open space. But if the ordinance requires buffers in all situations, the buffer can end up being the only land set aside, and seldom provides a valuable parcel for recreational use.

Other abutter issues can arise when there is an active farm located near the new development. Buffer strips of existing or newly planted woodlands can be placed between the two land uses to prevent tensions that might occur between new residents of an open space development and the existing adjacent agricultural operation.

In an agricultural or rural setting, the new homes could be designed, located, and grouped to provide a visual continuation of the agricultural character of the land. The design of an open space development greatly influences the success of the project, and its long-term benefits to the community.

VII. WORKING TOGETHER: MEETING BOTH PLANNING BOARD AND DEVELOPER NEEDS

Gaining the most successful outcome for an open space subdivision requires the cooperation of all stakeholders. Developers need to know exactly what the town expects and requires. A developer often assumes that if all forms are filled out and all information on the checklist is provided, then a proposed development will be *approved*. The developer may expect approval to be forthcoming as long as all criteria are met, even if the planning board voices concerns or questions about the proposal, or desires to change it. The developer wants to know the rules of the game from the start—how to achieve approval. To help the planning board members and the developer stay focused on the goals of open space development, the planning board needs to provide a clear and detailed outline describing:

1. The goals of the conservation ordinance;
2. The complete application requirements for the developer;
3. Planning board concerns and priorities in reviewing proposals; and
4. A timetable for completing the process.

Understand the Developer's Needs

Most developers say they are willing to consider open space development as long as this approach offers a good business investment.

Developers are in business to make a **profit**. Many are more than willing to add amenities, redesign the layout, or set aside more open land—as long as the community is willing to work with them so they can still make a profit.

Developers need assurance of **a profitable market for the final product** from an innovative development. When accused of contributing to urban and suburban sprawl, developers will argue that they are just building houses that the public wants and demands. While no single housing choice will satisfy all homebuyers, a community can educate the real estate community about the market potential of building open space developments, and about the long-term benefits for the community. Homes in sensitively designed developments that pre-

serve open space are popular. Because of their attractive settings and access to recreational opportunities, they appreciate in value more rapidly than homes in conventional developments.

Timely review and approval of a project can strongly affect profitability. Developers will avoid building open space conservation developments if the approval process is longer than for conventional developments.

Incentives

To induce developers to build open space subdivisions instead of conventional subdivisions, communities should consider offering a density bonus. A simple bonus would be two additional units above whatever the maximum number of homes would be approved if the subdivision were designed in a conventional configuration. The bonus can be applied across the board, or limited to certain housing types such as low-income or senior citizen housing.

Some communities fear this kind of incentive would result in density inappropriate for the town or zoning district. However, if all other conditions are met, increasing the density is often not noticed. If the homes are clustered in a way that provides some sense of privacy, if a reasonable amount of usable and accessible open space is preserved, and if circulation at the site is well designed, then additional dwelling units will have little impact on the development.

Working with the Engineer

An understanding of the goals and the differing approach of open space conservation development is also important for the engineer who designs the infrastructure, roads, and sometimes the homes themselves. The engineer often accompanies the developer to meetings with the planning board. Engineers and developers may have difficulty embracing the open space development concept, and the ways in which road, drainage, and septic solutions can differ substantially from those of a conventional development.

Trying to apply conventional development systems and designs to an open space subdivision can create serious problems for both the developer and the community. Application of a standard subdivision system to a clustering situation can defeat the purpose of preserving open space, resulting in "conserved" land that is inaccessible and/or insignificant.

While the developer may think that using conventional plans will reduce costs, the supposed savings may be considerably less than the efficiencies that can be gained from narrower streets, shared drives, and shared water and septic systems. While the soft costs (engineering, design, and administration) may be higher for an open space development, construction costs are often lower. Better still, developers discover they have a more marketable and appealing product.

Everyone benefits from working together. The community especially benefits when it can preserve some of its distinctive character. To achieve the desired results, the community must prepare regulations that guide developers and engineers through the design process in a logical and thorough manner. Consider including:

- A clear checklist of the basic information needed for the submission;
- A draft build-out analysis for a conventional development of the site;
- Randall Arendt's four-step process for site development (see page 14); and
- A description of the approval process.

Turn to the Appendices for examples of zoning ordinance language and site plan review regulations. A checklist of evaluation criteria for reviewing an open space subdivision can be found in Randall Arendt's *Conservation Design for Subdivisions*.

VIII. NEW HAMPSHIRE CASE STUDIES

BIRCHWOOD at Adams Pond Road Derry, NH

The Town of Derry repealed its cluster subdivision provisions after some disappointing developments. However, the Birchwood development stands out as an exception that succeeded in most of the goals and purpose of open space conservation development. Thirty home sites are arranged around short cul-de-sacs and shared driveways leading from the main feeder road of this 53-acre subdivision. Most of the open space land is located behind the residences at the end of the rectangular parcel.

Homes clustered around a shared driveway, note the sidewalk in the foreground. Birchwood development in Derry, N.H.

The town planner attested to the beauty and usefulness of the protected land, although it lacks trails or other amenities. The homes are close together, but gain privacy through varied placement within the clusters. Utilities are located underground, and sidewalks border the central feeder street. A community well, located in the protected southern area of the parcel, supplies water to all the homes. Two to four homes share septic fields, many of which are also located in the protected areas.

Birchwood demonstrates how an open space subdivision can be designed and laid out to effectively maintain an area's rural character. Only the sign at the subdivision entrance is visible from the main road. Two homes located near the entrance are set back in a grove of trees. Birchwood includes both homes located on individual lots and clustered homes with shared driveways. The shared driveways have markedly reduced impervious surfaces, and have provided attractive sites

for the homes. The well-kept homes appear well built and proportioned to their surroundings, and are placed to preserve privacy between neighbors.

ELMWOOD ESTATES, off Bridge Street Salem, NH

When this old farm was developed, the original farmhouse and barns were kept intact on Bridge Street. New homes were built on former hay fields and pasture. A long access drive was built between open space land on one side, and a low-lying wetland utilized as a retention pond on the other.

The original house and barn are located on the left, the two new homes that were constructed are just to the right. The pond in the foreground is used for skating in the winter.

Unfortunately, the developer subdivided two lots out of the original parcel along Bridge Street and built two homes to help finance the access roads and the first phase of the rest of the development. The construction of these two homes on Bridge Street compromised the visual quality of the farm context and setting of the development, which otherwise was set back from the road and conserved some nice open land behind the farmhouse.

The rest of the homes were built in treeless fields—a challenge for any type of subdivision built on previously farmed land. This example underscores several design decisions that resulted in a somewhat bleak appearance.

- The town did not require underground utilities, and without trees the telephone/utility poles are the tallest and most visible structures in view.
- Families have erected a variety of fences to create some privacy for homes clustered close together on

small lots, while the open space surrounds the perimeter. These fences add to the visual clutter.

- In fifteen years the tree plantings will have grown sufficiently to soften the neighborhood's appearance.

Placement of the homes did not take advantage of the conservation land. The lack of trees adds to the open field development appearance.

- While the lots are somewhat small, they are similar to an earlier development that connects by way of Elmwood Avenue.
- The larger area of the open space lacks clear delineation, improvements, or trails. Located behind the houses on Adams Court and Elmwood Avenue, the land is flat and borders a brook. There is a clear right-of-way from Elmwood Avenue, but little evidence that the land is actively used. The site would be suitable for a baseball or soccer field, although neighbors immediately adjacent might object to this recreational use. People skate on the small pond near the entrance to the development in the winter.

Overall, Elmwood Estates falls short of the goals of clustering. Preserving the farm's historic and scenic setting would have had value to the town. The stream bank was protected, but the remaining space is underutilized and could have been better incorporated into the neighborhood. An alternative layout of streets could have conserved more open space in the interior of the development, and relieved the high-density feeling.

Planting trees and placing utilities underground would improve overall appearance.

GANLEY DRIVE, off Town Farm Road Salem, NH

This small subdivision of eleven homes was developed on a very oddly shaped lot. Three homes were built at the entrance off Town Farm Road, from whence a long drive leads to the rest of the houses. Houses are uniformly placed, and the original cul-de-sac turning area has been extended into a four-house standard subdivision ending at the utility right-of-way.

The preserved open space lies between the first three homes and the rest of the development, and along the rear of the homes built on the south side of the street. The open space access is from the bend in the road, but is not clearly marked. Electric and phone utilities were placed underground.

Two homes were built at the entrance to the development and intrude on the rural character of the road. The wetlands are to the right and the remainder of the development lies beyond.

At first glance, this development does not look like a conservation subdivision. Similar to the last example, the developer built three homes on the existing road frontage to pay for road construction to reach the remaining lots.

- A provision in the ordinance preventing development of lots along the main road could have preserved the rural character of the road.
- The open space between the two sections is mostly wetland, unsuited for recreational use by the residents. A different arrangement of protected land could have protected the wetlands and provided open land usable for passive recreation. A strip of

conserved land behind the house lots on the south side is usable only by the abutting homeowners.

- The remaining open space is neither well defined nor usable, because the developer was allowed to use some of that space for the drainage retention basin.

HAWKINS GLEN – Town Farm Road Salem, NH

Distinctly different, the Hawkins Glen open space conservation subdivision is located almost directly across the street from Ganley Drive. Landscaped berms and low plantings help screen the 44-lot cluster development, which is set well back from Town Farm Road. The property borders both Spicket River and Hawkins Pond. The homes are located on small lots clustered in four areas along two cul-de-sacs. The larger cul-de-sac, Hawkins Glen Drive, connects in two places to an older subdivision to the east.

No large trees exist on this old gravel mine site. Electrical utilities are underground, and the homes are served by shared septic systems and public water. Attractive landscaping features of this property include sidewalks, benches, fencing, and planted turn-arounds. House designs are similar yet distinctive, and homes were placed to ensure privacy. As of this writing, twelve homes had been built on Hawkins Pond Lane, and foundations poured for eleven more on Hawkins Glen Drive.

The attractive and distinctive design of the homes set far back from the road in this subdivision make this an appealing and attractive open space development.

Although this subdivision was built on a barren parcel of land, the results are markedly different from Elmwood Estates. Hawkins Glen seems to meet most of the goals of open space development. The homes are situated far from the road, in a manner that takes advantage of the views and natural resources of

the nearby pond. The conservation land offers potential for walking or jogging paths, and visual appeal.

The developer placed utilities underground, arranged the homes in cluster nodes, and integrated open space throughout the development. The result is a diverse and compact development that does not feel or appear crowded. Homes designed especially for this development enhance the ambience, in contrast to Elmwood's unimaginative ranks of standard two-story prefabs. Homes in Hawkins Glen are more expensive than at Elmwood Estates, but successful open space development design should not necessarily increase housing costs.

More open space would have been conserved in the Hawkins Glen development, but the developer was allowed to include the area of the pond in the open space calculations. While attractive and somewhat usable for canoeing in the summer and skating in the winter, water bodies are generally not included in calculating conserved land, since they could not be developed under a conventional development plan. Nevertheless, even when fully built, this development promises to be a good example of open space conservation development design.

HOLBROOK HILL – Pulpit Road
Bedford, NH

The Holbrook Hill cluster development looks like a neo-traditional neighborhood, with its small lots, shallow front yard setbacks, and block-like street pattern. The 79-home subdivision in the remote northwestern corner of Bedford is compactly laid out, and preserves valuable acreage that is usable for both active and passive recreation. Some wetlands and a small pond are also protected. The slightly hilly terrain gives the homes attractive views of the neighborhood and surrounding protected land. Access to the open space is not clearly marked, but is somewhat obvious even to a visitor.

The town planner described this subdivision as a success. This is a rare New Hampshire example of an open space development in the neo-traditional

neighborhood style that is a feature of several new communities in the country. Both town and residents seem pleased with the results.

In his book on conservation subdivisions, Randall Arendt noted that a neo-traditional neighborhood and conservation subdivision have the potential to work very well together, despite differing goals. Holbrook Hill illustrates how a compact, walkable neighborhood with usable open space for recreation, and a large amount of protected land, can help preserve the rural character of a town.

The pond protected in this subdivision is surrounded by protected land and easily accessible to residents of the site.

The only complaints have arisen from homeowners with very deep lots protected at the rear by a conservation easement. About one-third of the lots are in this situation. Even though the owners may be aware of the easement, they may become frustrated to discover they are prohibited from building on or altering this protected portion of their property.

HEMLOCK DRIVE
Bedford, NH

Hemlock Drive is a recent cluster development built at the end of an existing conventional subdivision. The land has some very steep slopes and fairly shallow depth to bedrock. One of the 20 lots proposed for the development was used to gain access to the protected land. The developer was able to account for all of the required open space with the 200-foot buffer that wraps around the entire development. Thanks to the topography of the parcel, most of the homes are isolated and have some privacy. The utilities were placed underground.

A visitor cannot easily identify Hemlock Drive as a cluster subdivision with conserved land. Hemlock Drive shows what can result when a developer merely follows

the minimum requirements of a cluster subdivision ordinance. Poorly planned dedicated open land provides little benefit to residents or the community.

Many of the homes in this development are isolated and set well back from the road.

This property had limited development potential from the start. The designer appears to have drawn in the required buffer and access, and then widened it slightly to meet the minimum set-aside acreage. The house lots were planned in a traditional format, with the primary focus on getting services (road, sewer, and water) to each house. The conserved strip of land of undulating topography surrounding most of the development is of little use for either active or passive recreation.

IX. WRITING OPEN SPACE DEVELOPMENT REGULATIONS

New Hampshire RSA 674:21 gives communities the authority to adopt innovative land use controls such as open space development. The statute allows communities to designate any board to review and approve open space developments—including the planning board, board of selectmen, or zoning board of adjustment. However, the statute requires that the planning board have an advisory role in the review process if a board other than the planning board is given responsibility for review and permitting. The sample ordinance provided in this Handbook authorizes the planning board to grant conditional use permits for open space-cluster developments.

The Stratham Experience

The open space development regulations from the Town of Stratham, in New Hampshire's seacoast region, are provided as an example in this Handbook. Clayton Mitchell, then with the Rockingham Planning Commission, and Stratham Planning Board member Michael Keane wrote the regulations, with help from Mike Garrepy, Stratham Town Planner, and other Stratham Planning Board members. Interested citizens and local developers also participated in the process from the earliest stages. Planning Board Chair John Hutton notes that Stratham was an early adopter of cluster development, and has continuously revised and updated its regulations. He believes the innovative developments generally benefit the community compared to developing the same parcels conventionally.

Two components of these regulations are found in the Appendices: (1) the zoning ordinance section outlining the purpose and procedures for granting a conditional use permit for an open space subdivision, and (2) the section of the town's subdivision regulations that explains all the requirements for a proposal, and the criteria on which the subdivision will be judged.

Open space subdivisions provide communities with an alternative and innovative approach to development. Flexibility and creativity are needed to protect natural and cultural resources and develop livable neighborhoods, but certain regulations are necessary to administer and guide the creativity of the development process.

Mike Garrepy reports that the Stratham regulations are working well. He maintains their greatest strength results from the Stratham Planning Board's involving the interested public and local developers and engineers from the beginning. "You can put all kinds of effort into an open space ordinance as an alternative to conventional development, but if developers think it's a crock, it's a waste of everyone's time," Garrepy noted.

Stratham's yield plan and density bonus incentives have helped "keep developers interested in innovative open space development," Garrepy says. "Innovative open space bonus" density may be awarded for plans that permanently protect 50% or more of the total parcel as open space; that grant public pedestrian access; or that protect and provide for continuing agricultural use of valuable agricultural lands.

Stratham's ordinance works well for single-family residential open space developments, concurs Stratham developer Mark Stevens. However, the newer version of the ordinance does not promote diversity of housing types in multi-family condominium developments, he argues. "In order to make the numbers work, because density is pretty minimal, you have to get a lot of 2-3 bedroom units to make multi-family work," he explains.

Promoting only single-family cluster development saves land, but does not provide alternative residential communities or more affordable housing, Stevens notes. Smaller 1-2 bedroom units can add to the tax base without the higher service costs of single-family or larger multi-family units. From the developer's point of view, multi-family open space developments are higher risk, harder to finance, and more work to design, get approved, and implement.

Stevens likes a lot of the Stratham ordinance's density bonus incentives. However, he would prefer bonuses on a bedroom, rather than per-unit basis, awarding a bonus for 1-2 bedroom units. The frontage density bonus works effectively, he adds, making it economical not to develop a front lot.

Guidelines for Writing Regulations

Regulations to guide open space development should be clear and easily understood. This will reduce or avoid confusion and misinterpretation. Regulations need to be adapted to the specific needs and characteristics of each community.

Statement of Purpose

The statement of purpose is the key to defining an open space development ordinance. The purpose should be stated in clear, direct, and specific language, free from ambiguity or uncertainty. The statement of purpose should explain the objectives and the advantages of open space development.

An open space development is a flexible, alternative type of housing development that is consistent with the character of the surrounding community, and protects contiguous parcels of open space that have value for wildlife habitat, other natural or cultural resources, or public recreation areas. This land use option can potentially preserve large areas of open space land for agricultural and/or recreational uses, and preserve important viewscapes or visual buffers from existing roads and residential development. Open space developments should also feature flexibility of road design, diversity of housing types, and creativity of clustered placement to reduce privacy and property ownership issues.

Review Procedures

A conditional use permit is an option for communities interested in promoting open space development in all residential zoning districts.

Approval of Applications

Before an application can be approved, the applicant must obtain a conditional use permit from the planning board, based on the application's compliance with the requirements outlined by the board in the assigned documents. Once the application meets the requirements of the conditional use permit, a building permit can be issued.

Definitions

Clearly stated and explained definitions in open space development regulations are essential. Definitions clarify and explain terms used in the regulations that may be vague or confusing. The definition section of the regulations should include all terms used throughout the entire regulation that may not be included in the general definition section of the zoning ordinance. The following definitions are just a few of the terms that must be clearly and explicitly spelled out in open space development regulations.

Buffer: A piece of land used to create a visible separation between two distinct land areas, or between parcels of land that have different land use intensity, and to minimize the impact of one differing use upon the other.

Common Area: Land within an open space development set aside for the benefit and enjoyment of the residents and/or the general public, which is not individually owned and cannot be further subdivided. Accessory structures and improvements for recreational purposes may also be located in a common area.

Conservation Land: Land that is permanently protected from development through methods such as conservation easements or deed restrictions, or transfer to a public or private body dedicated to conservation of forest or other natural lands. This land will be maintained in its original condition

Developable Land: The land that remains in a parcel after all the undevelopable land (e.g. floodways, wetlands) has been deducted.

Homeowner's Association: A private nonprofit association or other nonprofit legal entity established by the developer for the benefit and enjoyment of the individual owners in the open space subdivision. Membership in said association shall be mandatory for property owners and made a required covenant in any deed issued or passed. It shall provide voting and use rights in the common area when applicable, and may charge dues to cover expenses, which may include tax liabilities of the common area, recreational, or utility facilities. Articles of Association or Incorporation must be acceptable to the Town Counsel and any other municipal, county, state agency, body, commission or department required by law to approve such Articles.

Open Space Easement: A legally binding restriction of landowner rights to develop the land, which is tied to the title to land, regardless of subsequent ownership. The landowner retains all rights to the property not restricted by the terms of the easement. The easement may be worded to permit or restrict public access, to allow or disallow recreational development, and similar provisions.

Determining Density

The regulations should clearly state the minimum amount of land to be conserved as open space within the subdivision. Because open space developments allow the same number of lots as if the parcel were to be developed conventionally, the board needs an accurate conventional density number.

Important Aspects about a Development to Include in a Yield Plan:

- Basic topography
- Wetlands
- Steep slopes and areas inappropriate for building
- Roads and rights-of-way that correspond to existing state and federal laws

A yield plan is most commonly used to determine the maximum density of an open space development. A yield plan shows the density that would be allowed under the subdivision regulations and zoning ordinance for conventional development of a parcel. Open space development regulations usually include the procedures for determining a yield plan.

The yield plan should include important information about the development, such as soils, basic topography, wetlands, steep slopes, and areas that might not be appropriate for building or installing septic systems. Roads and rights-of-way that conform to state and federal laws and local regulations must be incorporated in the yield plan, since the plan should comply with all standards governing a conventional subdivision.

Density Bonus

When certain criteria are met, density bonuses may be applied to the development. For example, a density bonus—additional units of housing—may be awarded to an applicant for designating a certain percentage of units as affordable housing, or for dedicating some land for public purposes. The planning board should adopt regulations for awarding density bonuses in accordance with the density bonus section of the ordinance.

Any density bonuses awarded should be relative to the number of lots achievable in the development yield plan. For example, one additional house would be granted to a ten-house open space development that fulfills the requirements for a 10% density bonus incentive for including affordable housing. Density bonus regulations should include maximum limits to prevent overcrowding. The density approved for any development must meet the New Hampshire Department of Environmental Services (DES) requirements for water supply and sewage disposal.

Minimum Open Space Requirements

The minimum open space requirement for open space subdivisions ensures that significant tracts of land that cannot be subdivided are preserved and maintained within the developments.

The minimum open space regulation should specify the percentage of land required to be preserved; how the land will be preserved; how types of land that are unsuitable for building must be deducted from the total; how much of the land may be used for recreation, septic

systems, or other uses; and the plans for ownership, governance, and maintenance of the preserved land.

An open space subdivision regulation, for example, may require that a minimum 35% of the total land in the parcel be preserved as dedicated open space through conservation easements or deed restrictions approved by the planning board. The regulation should set criteria for the open space requirement, limiting or excluding certain types of land.

Land to be limited or excluded includes wetlands, slopes exceeding 25%, street rights-of-way, and all of the floodway and floodway fringe within the 100-year floodplain. Certain wastewater systems—such as spray irrigation and individual or community septic systems—may be accommodated in a portion of the minimum open space, but some restrictions may apply depending on the specific system. The regulation may limit the sum total of all such limited types of land and uses to no more than, for example, 50% of the required minimum open space. No portion of land previously under permanent easement, such as utility easements, shall be considered part of the required minimum open space.

A minimum 25% of the dedicated open space should be usable and available for recreational uses. The preserved open space shall be owned and managed by either a mandatory homeowner's association or a public body designated prior to approval by the planning board.

Uses

The uses section outlines the permitted uses for an open space development. A regulation allowing only residential uses in an open space development must spell out in detail the permitted types of housing. The permitted types of residential uses could be listed, for example, as single-family detached homes, multi-family homes up to 5 units per building, and single-family joined-array units that are attached and share a common yard and/or fence. Dimensional specifications may also be given, e.g., attached homes shall not

exceed four joined units per lot, and the space between lots shall be at least 15 feet wide.

Setbacks and Other Dimensions

Open space subdivision regulations generally provide for modifications in the setbacks and dimensional aspects of the lots. The allowed changes would depend on the development and the community in which the subdivision is located.

Some examples of *possible* requirements for setbacks and other dimensions in open space developments include:

- Frontage requirements shall be 50 feet for single-family units; 125 feet for joined-array single-family homes; and 75 feet for duplex and multi-family homes.
- Setbacks from exterior property lines of the entire parcel shall be 25 feet for single-family detached units, and 40 feet for multi-unit structures. There shall be a 30-foot setback from the edge of the pavement for roadways within, and part of, the development.
- All single-family structures in the development will be separated by 40 feet, while a 50-foot setback will separate multi-family housing and all other structures. All structures shall have a 10-foot setback from all lot lines.
- Some form of lot delineation will be established within the development, designating equitable amounts of land to each housing structure.

Utilities

The utilities serving open space developments are usually placed underground. The planning board may waive this requirement in situations where utilities are located along lengthy entrance roads that are visually separated from the clustered housing units, but not when the utilities are located within the subdivision itself.

Review Criteria

Criteria for review need to be specified in the regulations to ensure consistency with the purpose and intent of the open space development ordinance. The review criteria serve as a guide for the planning board in reviewing open space development proposals, as well as providing clear communication of expectations to developers.

Open Space Ownership and Management

This section of the open space development regulations must clearly state requirements for ownership and management of the development.

Open space development standards can provide for one or several options for maintaining preserved open space. All or portions of the dedicated open land can be kept for agricultural use; left in its natural state; managed only with approved wildlife or forestry plans; mowed regularly; prepared as a recreational facility; or kept in other ways. Either the homeowner's association or an organization that holds the conservation easement can be given responsibility for maintenance of the land.

Regulations can mean Success or Failure for Open Space Development

Open space regulations are an important aspect of any open space development proposal. Effective regulations clearly state the purpose of open space development, and provide the standards and guidelines needed to implement that purpose. Effective open space regulations follow local planning policies and priorities, and are created, adopted, and applied in accordance with the directives of the local community.

Bibliography

Arendt, Randall. 1997. *Growing Greener: Putting Conservation into Local Codes*. Pennsylvania: Natural Lands Trust.

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

Arendt, Randall. 1994. *Rural by Design: Maintaining Small Town Character*. Chicago, IL: Planners Press.

McCamant, Kathryn, and Charles Durrett. 1988. *Cohousing: A Contemporary Approach to Housing Ourselves*. Berkeley, CA: Ten Speed Press.

New Hampshire Department of Environmental Services. 1999. *State of New Hampshire Department of Environmental Services Water Supply Engineering Bureau Drinking Water Program Compliance Annual Report*. http://www.des.state.nh.us/wseb/annualrpt.htm.

New Hampshire Office of State Planning. 1999. *New Hampshire Planning and Land Use Regulation 1999-2000 edition*. Charlottesville, VA: Lexis Law Publishing.

New Hampshire Office of State Planning. 1996. *New Hampshire Office of State Planning Estimates*. July.

Southern New Hampshire Planning Commission. 2000. *Land Use Update 1999*. May.

Town of Bedford New Hampshire. 2000. *Strategic Master Plan Update 2000: Bedford, New Hampshire*. March.

Town of Stratham New Hampshire. 1999. *Open Space-Cluster Subdivision Regulations*. April.

Town of Stratham New Hampshire. 1998. *Zoning Ordinance: Section VIII Residential Open Space Cluster Development by Conditional Use Permit*. December.

US Environmental Protection Agency. 1992. *Small Wastewater Systems for Small Communities and Rural Areas.* May. 830/F-92/001.

US Environmental Protection Agency. 1987. *It's Your Choice: A Guidebook for Local Officials on Small Community Wastewater Management Options*. September. EPA 430/9-87-006.