A Handbook

ON

OPEN SPACE DEVELOPMENT

THROUGH

Residential Clustering

Prepared by the
Southern New Hampshire
Planning Commission

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- William W. Hoffman, Planning Consultant
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.  INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>II. BENEFITS AND GOALS OF OPEN SPACE SUBDIVISIONS</td>
<td>4</td>
</tr>
<tr>
<td>Environmental Benefits</td>
<td>4</td>
</tr>
<tr>
<td>Social and Recreational Benefits</td>
<td>5</td>
</tr>
<tr>
<td>Economic Benefits</td>
<td>5</td>
</tr>
<tr>
<td>III. IMPORTANT PROVISIONS FOR SUCCESSFUL CLUSTERING</td>
<td>7</td>
</tr>
<tr>
<td>IV. KEEP THE CONSERVATION IN OPEN SPACE DEVELOPMENT</td>
<td>13</td>
</tr>
<tr>
<td>Four Steps to Conservation-based Site Design</td>
<td>14</td>
</tr>
<tr>
<td>V. COMMON SPACE OPTIONS</td>
<td>18</td>
</tr>
<tr>
<td>VI. DESIGN ISSUES</td>
<td>22</td>
</tr>
<tr>
<td>Circulation</td>
<td>22</td>
</tr>
<tr>
<td>Pedestrian Amenities</td>
<td>23</td>
</tr>
<tr>
<td>Utilities</td>
<td>24</td>
</tr>
<tr>
<td>Setbacks and Densities</td>
<td>25</td>
</tr>
<tr>
<td>Siting in an Open Space Parcel</td>
<td>26</td>
</tr>
<tr>
<td>Relationship to the Existing Community</td>
<td>27</td>
</tr>
<tr>
<td>VII. WORKING TOGETHER: MEETING BOTH PLANNING BOARD AND DEVELOPER NEEDS</td>
<td>29</td>
</tr>
<tr>
<td>VIII. NEW HAMPSHIRE CASE STUDIES</td>
<td>32</td>
</tr>
<tr>
<td>Birchwood at Adams Pond Road - Derry, NH</td>
<td>32</td>
</tr>
<tr>
<td>Elmwood Estates, off Bridge Street - Salem, NH</td>
<td>33</td>
</tr>
<tr>
<td>Ganley Drive, off Town Farm Road - Salem, NH</td>
<td>35</td>
</tr>
</tbody>
</table>
Table of Contents (cont.)

VIII. NEW HAMPSHIRE CASE STUDIES (cont.)

Hawkins Glen - Town Farm Road -
Salem, NH.................................................................36

Holbrook Hill - Pulpit Road -
Bedford, NH.............................................................37

Hemlock Drive -
Bedford NH............................................................38

IX. WRITING OPEN SPACE
DEVELOPMENT REGULATIONS ........................................40

The Stratham Experience.............................................40

Guidelines for Writing Regulations ..............................42

BIBLIOGRAPHY ..................................................................49

APPENDICES

I. Evaluation Criteria for Open Space Subdivisions

II. Water Supply, Waste Water Treatment and Stormwater Management

III. Co-housing

IV. A Sample Zoning Ordinance Text

V. A Sample Open Space-Cluster Subdivision Regulations Text
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 open space subdivision 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.

- **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 home-
owners 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.
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.

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

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.

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-
minimum 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 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.

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.

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.

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.

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%
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.

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...
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.
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.

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.

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.

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.

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 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.

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.
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.

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

- In fifteen years the tree plantings will have grown sufficiently to soften the neighborhood’s 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 sub-division 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.

At first glance, this development does not look like a conservation sub-division. 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.

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

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

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.

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.

**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
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


APPENDIX I.

EVALUATION CRITERIA FOR OPEN SPACE SUBDIVISIONS

A good set of criteria for evaluating open space subdivision plans can greatly increase the likelihood of successful outcomes. Standards should be clearly stated, avoiding vague language. Following the criteria as consistently as possible can help planning boards avoid the problems that sometimes result from poorly planned open space development.

Clear evaluation criteria help applicants understand the planning board’s expectations, and make it easier for developers to implement the true intent of the ordinance. The objective is for applicants to use the criteria as a guide in designing open space subdivisions, which should enhance the design and function of open space developments.

The following summary of evaluation criteria offered for planning board consideration is from the highly recommended reference work, Conservation Design for Subdivisions by Randall Arendt.

Planning boards may evaluate proposals to determine whether the proposed preliminary plan:

1. Protects all floodplains, wetlands, and steep slopes from clearing, grading, filling, or construction (except as may be approved for essential infrastructure or active or passive recreation amenities).

2. Preserves and maintains mature woodlands, existing fields, pastures, meadows, and orchards, and creates sufficient buffer areas to minimize conflicts between residential and agricultural uses.

3. Sites dwellings on the least prime agricultural soils, or, in those situations where development must be located on open fields or pastures because of greater constraints in other parts of the site, at the far edge of a field.
4. Maintains or creates an upland buffer of natural vegetation at least 100 feet in depth adjacent to wetlands and surface waters, including brooks, streams, rivers, lakes, and ponds.

5. Designs around existing hedgerows and treelines between fields or meadows. Minimizes impacts on large woodlands (greater than five acres), especially those containing many mature trees or significant wildlife habitat, or those not degraded by invasive, non-native vines.

Construction should be avoided on wooded areas of any size on highly erodible soils with greater than 10% slopes. However, woodlands in poor condition with limited management potential can provide suitable locations for residential development. When developing any woodland, care shall be taken in the design to avoid disturbing (for buildings, roads, yards, septic disposal fields, etc.) all large trees or obvious wildlife areas to the fullest extent practicable.

6. Leaves scenic views and vistas, particularly as seen from public roads, unblocked or uninterrupted.

7. Avoids siting new construction on prominent hilltops or ridges by taking advantage of lower topographic features.

8. Protects wildlife habitats of species listed as endangered, threatened, or of special concern by the U.S. Environmental Protection Agency or state agencies.

9. Designs around and preserves sites of historic, archeological, or cultural value and their environs, in order to safeguard the character of the feature, including stone walls, spring houses, barn foundations, cellar holes, and earthworks and burial grounds.

10. Protects the rural character of roadsides, and improves public safety and vehicular carrying capacity, by avoiding development that fronts directly on existing public roads.
11. Establishes buffer zones along the scenic corridor of rural roads including historic buildings, stone-walls, hedgerows, etc.

12. Landscapes common areas (such as community greens), cul-de-sac islands, and both sides of new streets with shade trees.

13. Provides active recreational areas in suitable locations with convenient access by residents, and adequate screening from nearby residences.

14. Includes a pedestrian circulation system designed to assure that residents can walk safely and easily on the site, between properties, and to activities or special features within the neighborhood open space system. All roadside footpaths should connect with off-road trails, which should link in turn with potential open space on adjoining undeveloped parcels.

15. Provides preserved open space that is reasonably contiguous. To the greatest extent practicable, this land should be designed as a single block with logical, straightforward boundaries. Long thin strips of conservation land should be avoided, unless the conservation feature is linear, or unless such configuration is necessary to connect with other streams or trails.

The open space should generally abut existing or potential open space land on adjacent parcels (such as in other subdivisions, public parks or properties owned by, or eased to, private land conservation organizations). Subdivision open space lands should be designed where possible as part of larger contiguous and integrated greenway systems.
APPENDIX II.

WATER SUPPLY, WASTEWATER TREATMENT, AND STORMWATER MANAGEMENT

An open space development proposal in an area not served by municipal sewer or water often brings out safety concerns about accommodating wells and septic systems on smaller-sized lots. Some communities have defeated the land-conserving purpose of open space developments by increasing their minimum lot sizes for clustering because of concern over sufficient separation of sewer and water systems. But many efficiency-gaining options are available. Developers and planners must determine the best choices for the specific situation and conditions of each site.

The whole idea of open space development is to allow greater flexibility, creativity, and efficiency in designing sewer and water systems and other development infrastructure for a specific parcel of land, so that a portion of the parcel can be preserved as open space. Depending on the site, one or more clusters of homes could share a well and/or septic and leach fields. Some developments have one community well to serve the entire development, with groups of two or three homes sharing a septic system.

In certain situations, shared leach fields can be located within the open space with little or no impact to that open space. The flexibility of clustering in an open space development gives the developer a wide variety of innovative options for providing water and sewer services.

The information in this Handbook is intended as a general introduction to these innovative systems. If you are considering implementing any of the innovative or alternative treatment and disposal facilities mentioned in this section, consult state and local codes and guidelines to determine which systems are permitted in the area. Expert guidance, fact sheets, and resource publications are available from the New Hampshire Department of Environmental Services.
**Water Supply**

A public water system, as defined by The Safe Drinking Water Act (SDWA), serves piped water to at least 25 persons or 15 service connections for at least 60 days per year. A public water system may be owned by a homeowner’s association, investor-owned water company, local government, or other entity. A private water supply system serves just one or a few homes, and is not connected to the public water supply.

The state of New Hampshire also uses the SDWA definition of a public water system (PWS) as “a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or designed to serve an average of at least 25 people for at least 60 days each year.”

Open space developments have proven very flexible and adaptable in providing water supply, particularly in low-density, residentially zoned areas lacking a central water supply. Open space developments can offer practical alternatives to a central water supply. Groups of homes in a development may share community wells, which can be located where appropriate in the dedicated open space.

The flexibility of open space subdivisions allows for either on-site or central water supply. Where access to municipal water service is available, the development could make use of either or both types of supply.

**Wastewater Treatment**

Choosing to create an open space development allows a range of options in determining the most appropriate wastewater system for the specific development site. In the past, the choices were limited to either a municipal wastewater treatment plant or a decentralized septic tanks-and-drainfields approach.

Newer technology provides alternative approaches for decentralized systems. The first step in selecting a wastewater system for an open space development is to thoroughly review and evaluate available wastewater options, including alternative methods. The next step is
to identify the type of treatment that can best meet the needs and conditions of the particular situation.

Important considerations in choosing the most appropriate, cost-effective, and acceptable wastewater treatment system for a specific development include:

- where the wastewater will be discharged;
- type of collector sewer used;
- estimated volume of flow;
- site characteristics (including the land footprint and projected future use);
- system reliability and monitoring;
- system maintenance and personnel requirements; and
- adaptability to changes in system operation.

Soil type and wastewater volume determine the size of a wastewater treatment system. The volume of estimated daily sewage flow and a sizing factor based on soil texture and permeability determine the size and location of any soil treatment unit. The volume of sewage flow from a development can be estimated once site characteristics have been identified. This estimate is important to selecting the type of wastewater system. Selecting a treatment system requires balancing the desired treatment, the level of monitoring needed, and system costs.

Several examples follow of both on-site and off-site wastewater treatment systems that may be employed in open space developments. This is not intended as an exhaustive list, and further investigation is necessary to choose an appropriate system that best meets the needs of a particular community.
Sub-surface Systems

Common Septic System with Absorption Trenches

Assessing and selecting treatment options requires an evaluation of how different systems could fit into the subdivision plan. Shared or clustered treatment facilities are an option for open space subdivisions in areas without enough space for individual on-site wastewater treatment systems, or for those with multi-family units. Most shared or clustered wastewater treatment facilities are larger versions of individual on-site systems. Common or shared systems may be a cost-effective choice where subdivisions are too far from central facilities, and where the homes are too close together or soils are insufficient to support an on-site system on each lot.

A common septic system is a cost-effective method that replaces individual septic leaching areas with larger, jointly owned and maintained absorption areas. The septic tanks can be individually owned and maintained by homeowners, or the tank part of the system can also be larger and jointly owned and maintained.

Common septic systems are usually employed in situations on level land with no limiting soil conditions. This type of system involves level excavations, which are then over-laid with a layer of clean crushed rock. A distribution pipe is placed on top of this layer, and then covered over with soil. Biological, chemical, and physical processes in the soil treat the wastewater. Where soil conditions are limiting, systems such as sand filters, lagoons, or soil treatment mounds may be used to receive and treat the effluent discharged from a septic tank.

Soil treatment Mounds

Soil treatment mounds are an alternative strategy where soil conditions do not support the use of sewage treatment trenches. These structures can be individually owned and maintained, but a preferable option may be to locate a shared mound system in an area of the development where it will have less impact on the environment. Requiring each home to have its own septic
mound could be detrimental to the landscape and appearance of the development.

Soil treatment mounds extend the on-site capacity of septic systems, providing an option for sites with high groundwater, high bedrock, or compact clay soils. Effluent is pumped from a septic tank into a drainfield built into a mound constructed of a layer of sandy soil, covered with a layer of crushed rock, then covered over with soil. The effluent is treated as it filters downward through the sandy soil before moving into the natural soil.

**Bioretention**

Bioretention systems employ a range of pollutant removal mechanisms within an unutilized portion of the landscape. This makes them a practical alternative for some open space development situations. These mechanisms may include grass filters, mulch, temporary shallow ponding, plant uptake, sand filtration, and infiltration. All vegetative treatment systems have seasonal limitations that need to be taken into account in designing such systems. Constructed wetlands, grass filters, plant uptake, etc. do not treat during the winter months.

Several of the following treatment methods or components may be a part of an integrated bioretention or other innovative treatment system. Check with the New Hampshire Department of Environmental Services for regulatory and design and implementation advice when considering these alternative treatment designs.

**Constructed Wetlands**

Constructed wetlands are a very flexible system that can be used to treat residential wastewater in small
communities. They have also proven useful in treating stormwater runoff in urban and agricultural areas. For wastewater treatment, constructed wetlands are most often used as a supplemental treatment of effluent from a series of septic tanks before discharging it into drainage fields. Constructed wetland systems designed for individual homes are usually about 300 square feet in area.

A shared constructed wetland may be considered as part of a wastewater treatment system, such as a bioretention system, for an open space development community. This type of system can work well where soils are not suitable for absorption and groundwater levels are high. However, constructed wetlands and all other systems relying on vegetative treatment do not function during the winter in cold climates like New Hampshire.

A constructed wetland is a man-made wastewater treatment system designed to treat wastewater by simulating the functions of a natural wetland. The constructed wetland treats effluent through the physical, chemical and biological processes of a natural wetland ecosystem. However, a properly designed man-made wetland cannot completely replicate all the ecological functions of a natural wetland.

Constructed wetland stormwater treatment systems store stormwater temporarily in shallow pools, creating favorable conditions for wetland plants, which help to remove pollutants. The plants and associated microbial activity of the constructed wetland filter sediments, take up nutrients, and breakdown carbonaceous materials.

**Sand filters**

Sand filters use sand to treat wastewater, similar to a soil treatment mound. However, sand filters are either open or buried, rather than built up like soil treatment mounds. While soil treatment mounds are used to
extend the use of on-site systems in areas with high groundwater, sand filters are applied in areas with more adequate soil conditions. Sand filters are an appropriate system for open space developments where soils are satisfactory and extension of an on-site system is not necessary.

Best suited for populations of 1,000 or less, sand filters are appropriate for rural communities and small clusters of homes. Sand filters are approved for use by individual homes, but can also be used in open space developments, either on individual lots or shared by households within the community.

After pretreatment in a septic tank, effluent is pumped or flows over a sand filter—a bed of sand laid over a drainpipe collection system. After passing through the sand, the effluent drains from the gravel and pipe network below the filter. The effluent then discharges into the disposal system, or directly into the environment.

**Above Surface Systems**

**Spray Irrigation**

The basic components of a spray irrigation system are a septic tank, a sand filter, and a disinfection unit within a spray applicator. Soil permeability, depth to saturated soil, availability of a buffer zone, and land slope determine a site’s suitability for a spray irrigation system. Three general methods of land application for spray irrigation systems are slow rate, overland flow, and rapid infiltration.
The slow rate approach uses vegetation to absorb moisture and nitrogen. This system requires careful balancing of effluent volume and nutrient content with the crops grown, soils, geology, and climatic conditions. The slow rate system can be used to irrigate and fertilize crops in either arid or humid regions, and is used in states like New Hampshire.

The overland flow method of spray irrigation land application cleanses pretreated wastewater through filtration, biological oxidation, and sedimentation processes as it trickles down a vegetated slope of land. The treated runoff is collected in drainage channels or ditches at the base of the slope, for discharge to subsurface disposal areas.

All land treatment systems require pretreatment, ranging from primary clarification to a one-day aeration in a containment cell. Both the slow rate and overland flow irrigation systems can be used in cold winter climates. The slow rate system has been used successfully at a development in Francestown, New Hampshire, and the overland flow method has been used successfully in Hanover, New Hampshire.

The three types of spray irrigation land application systems can be combined in an integrated system. Rapid infiltration, which is used with highly permeable soils, can follow overland flow, or vice versa. The treated effluent can then be pumped by means of recovery wells for application to the land through slow infiltration.

For individual home spray irrigation systems, requiring disinfection and fencing may be advisable. Spray irrigation systems require more land than other wastewater treatment alternatives. However, where ample land is available at a reasonable price, spray irrigation can be a viable, cost-effective system in a residential area.

Spray irrigation systems differ from conventional wastewater treatment methods in that spray irrigation applies wastewater to land, instead of discharging it into a river, lake, or ocean. Spray irrigation treatment sites include woodlands, agricultural fields, golf courses, and residen-
tial yards. In open space developments, the treated wastewater may be applied on the preserved open space land where appropriate—whether the land is used for silvicultural, agricultural, recreational, or some other use.

**Lagoons**

In northern regions, where cold winter temperatures limit the spraying of treated wastewater, larger holding lagoons can be used to treat wastewater. These heavily aerated lagoons do not create odor problems, and hence do not have to be placed long distances from residences. Lagoons receive pretreated discharges from septic tanks, constructed wetlands, or other pretreatment systems. The waste is broken down further through the extended retention in the lagoon, combined with exposure to sunlight. The effluent evaporates, seeps into the soil, or receives additional treatment through spray irrigation.

Unlike constructed wetlands, which treat wastewater by bacterial decomposition, settling, and filtering, lagoons are simply receiving basins for pretreated or untreated wastewater. Because lagoons usually require considerable space, open space subdivisions would most likely utilize shared or common lagoon systems.

**Stormwater Management**

Stormwater management systems are classified as either major or minor. Flooding, convenience, and water quality are the main factors in the design of stormwater systems. The paths taken by runoff from very large storms comprise major systems. Minor systems are comprised of storm sewers and other facilities designed to quickly collect and discharge the peak flow of runoff from streets and sidewalks. Runoff can carry pollutants such as sediments, nutrients, and chemicals from fertilizer, oil, gasoline, and other contaminants. These
pollutants carried by stormwater can seriously degrade water quality.

Conventional subdivisions cover entire parcels with house lots, in most cases requiring the servicing of each lot by streets with curbs, gutters, and storm sewers. The roofs and large areas of pavement in conventional developments create a high percentage of impervious surfaces, drastically reducing the amount of rainfall that can be absorbed into the ground. When water falls on impervious surfaces, it runs off much more quickly than when it falls on vegetated soil. This in turn creates problems such as erosion, water pollution, and flooding. Little can be done under conventional zoning to minimize or prevent these adverse effects.

Even though open space zoning allows the same number of houses as conventional zoning, the design requirements for open space developments offer an opportunity to manage stormwater more effectively than in conventional developments. The areas of impervious surfaces are reduced in open space developments because preserved areas of the site are larger, lots are smaller, and roadways can be designed more efficiently. As runoff flows more slowly over ground with vegetative cover, more water is absorbed into the soil, and more pollutants are filtered out before reaching lakes, rivers, and streams.

When designing a stormwater management system for an open space development, a developer may find the protected land advantageous. Steep slopes, natural drainage ways, and areas of prime vegetation useful to stormwater management may be found in the open space. The smaller, narrower lots of open space developments are another advantage for stormwater management, because paved areas for driveways and walks are reduced.

Open space developments use drainage devices such as ditches and swales—man-made depressions with vegetative cover into which stormwater can drain—to manage stormwater. Where such systems can replace storm sewers, development costs are reduced.
If the public works department is not responsible for the system, provision must be made for maintenance of a development’s stormwater management system. This could be managed by the homeowner’s association, or by a private utility or corporate organization.

Despite the worries of many individuals about inadequate or unsafe water supplies and sewage systems, open space developments offer developers a variety of innovative and cost-saving water and sewer service options.
Co-housing is a kind of development that is planned for residents who share a philosophy of community life. The goals of this cooperative housing alternative are to provide housing flexibility, promote neighborhood cohesiveness, and revive some traditional aspects of community life.

Often designed as a specialized type of open space development, co-housing also aims to provide housing while preserving open space for the benefit and enjoyment of the community. Co-housing developments usually feature a variety of clustered housing types, and maintain a portion of the site as open space for pathways, gardens, and recreation. The co-housing concept has slowly gained interest in the United States. Examples of co-housing communities in the Northeast can be found in Norwich, Vermont; Amherst, Massachusetts and Ithaca, New York. A co-housing development is being proposed in Barrington, New Hampshire.

This type of cooperative housing was first developed in the 1970s in Denmark and the Netherlands. The idea soon caught on in other northern European countries and, by the late 1980s, co-housing began to appear in North America. Co-housing communities vary in size, design, and ownership structure. While they will make use of planners and architects when designing a co-housing community, for the most part the residents themselves organize, plan, and manage the community.

Co-housing is comprised of a group of unrelated people who form an intentional community, choosing to have their own private dwellings while sharing common areas and resources. These families develop as separate families amongst a larger family. For the most part, families in co-housing communities desire a deeper sense of community and aspire to meaningful social relationships. Each family decides how involved to become in co-housing community life.
While some of the defining characteristics of co-housing are similar to those of open space subdivisions, some are distinct.

1. The residents join together to organize and plan the co-housing development. Design and governance decisions for the proposed co-housing venture are made through a participatory process. All financial decisions are the responsibility of the group of residents.

2. The co-housing development is designed with the expressed intention of promoting a strong sense of community, as well as preserving and maintaining open land and natural features. Co-housing shares this commitment to protecting open space with open space development design.

3. An important goal in co-housing neighborhood design is to create extensive common facilities to supplement private living areas and to promote a more closely-knit community life. This is similar to the open space development goal of providing areas where residents feel safe and comfortable socializing or enjoying the surrounding environment.

   FEATURES OF CO-HOUSING:

   1. Residents come together to organize and plan the development.
   2. Co-housing is designed with the intent of promoting a strong sense of community while preserving and maintaining land and natural features.
   3. An effort is made to incorporate extensive common facilities as a supplement to private living areas.
   4. The development is managed either through a homeowner’s association or a condominium association.

4. The residents of the development can organize their management structure either as a homeowner’s association or a condominium association. The preserved land and common utilities and facilities in open space subdivisions are similarly managed through a homeowner’s association or condominium association of the residents of the development.
Numerous issues must be addressed, as with any type of development, beginning with the proposal and design of a co-housing subdivision, through completion of the project. Legal requirements, making sure the physical design of the subdivision fits the needs of the incoming residents, and the form of governance and management are among the questions to be answered in the process of creating a co-housing development.

The Physical Aspects of Co-housing

An important and distinctive aspect of co-housing development is the physical design, which reflects the primary purpose of promoting and encouraging strong neighborhood connections. Creating opportunities for social interaction and enhancing the social environment are integral to the physical design of co-housing developments.

In choosing the location of a co-housing subdivision, an important consideration is how it will relate to the surrounding neighborhood, and how it will function within the larger community. Most co-housing groups have made compromises in selecting their location, choosing a suburban district or small town where fairly affordable sites allow easy access to services, community facilities, and recreational open space.

Design flexibility is another characteristic of co-housing developments. In theory, a co-housing community can be created with any form of housing. Co-housing developments have been formed with detached single-family houses, attached row houses, dwellings clustered around courtyards, rehabilitated factories and schools, and even high-rise buildings. This flexibility of the physical design allows a co-housing development to incorporate several different subdivision types.
Because of this flexibility and inclusion of compact housing forms, co-housing developments can use land more efficiently. For example, a co-housing community can incorporate clustered housing to preserve common open space, which might be used for playgrounds or fields. Clustering is popular for co-housing communities because it provides both privacy and a sense of community.

A co-housing community can use design techniques to better integrate the development with the surrounding community. For example, placing shared recreation areas, links to neighborhood pathways, or public plazas at or near the development’s physical boundaries can reduce insularity of the co-housing community from adjacent neighborhoods.

Co-housing designers make great efforts to plan their community so that it provides diversity in housing without sacrificing architectural aesthetics. The sizes of houses and layout design in co-housing communities can vary to accommodate individuals with diverse family and economic circumstances.

The Legal Aspects of Co-housing

Some of the legal issues that individuals involved in co-housing developments must address are quite similar to those faced in planning open space subdivisions. One issue for co-housing is provision of appropriate documentation for establishing an umbrella or core group of individuals who can legally represent the development. A second necessary step is to research the regulations and zoning applicable to the land to be purchased. In most cases, the existing zoning must be examined, and then changed to allow co-housing to occur. Option agreements and contracts for the purchase and sale of land for the development must also be drafted and negotiated.

The bylaws are among the most important corporate documents in forming a co-housing development. Co-housing bylaws are usually private, governing the fundamental internal affairs of the corporation. The bylaws establish how membership is initiated and
terminated, delegations of authority, and how group meetings are conducted and decisions made. The bylaws contain provisions essential to the function and stability of the group.

In addition to the bylaws, the co-housing group creates and maintains a body of rules governing the internal affairs of the corporation. Decisions made by the members in their group meetings are summarized and recorded. These rules are often the most detailed and frequently consulted of the co-housing corporate documents.

Ownership structure is another legal issue to consider in establishing a co-housing community. Ownership is usually structured as either a joint venture or a partnership. A partnership is a legal agreement among individuals stating their intentions, obligations, and responsibilities. A joint venture or limited partnership is frequently used when groups first incorporate and purchase land. Individual members of a simple partnership share the responsibilities and liabilities of the development equally. The residents of the development determine the ownership structure of the development.

Different co-housing groups have implemented various forms of co-housing ownership. Some groups have found it beneficial to utilize two or more forms of ownership. For example, individually owned houses can be built within a development with few or no common areas, while locating the common house, woodland, or other open space on nearby land owned by a cooperative or land trust. All groups intending to venture into a co-housing development must address the issue of ownership type.

**The Management of Co-housing**

The co-housing concept is more about how people can live together than about financial or ownership struc-
ture. The ownership of housing in a co-housing development is similar to that in open space developments—the houses are privately owned, and each homeowner also owns an interest in the common areas.

All co-housing community residents participate in the management of the development through either a homeowner’s association or condominium association. This group is responsible for the care and maintenance of the buildings and land in the development, and members are required to pay monthly maintenance fees. Residents can work on various community committees.

The common house supplements the individual housing units and forms the heart of the co-housing community. This important and distinctive feature of a co-housing development may include a kitchen and dining room, a meeting room, and other rooms for various activities. The common house is a central focus of a co-housing community, providing a place for many community activities. The community’s members determine the specific features of the common house to serve their interests and needs.

The community members manage both the common house and the land in a co-housing community. Green spaces are usually pedestrian-friendly and surrounded by a cluster of homes. Community designers generally try to eliminate automobiles from the interior of the community, thus decreasing traffic noise, pollution, and safety hazards, and preserving more open space for recreation, leisure, and aesthetic enjoyment.
**The Social Aspects of Co-housing**

While co-housing is not for everyone, people who have lived in and studied co-housing attribute many social benefits to this type of community. Residents can more readily share knowledge and skills, and offer and accept support in a co-housing neighborhood. Members can share common resources, including items for occasional use, such as lawnmowers and ladders.

This communal approach may be fostered by the social structure of co-housing, which emphasizes caring and concern for the welfare of others in the community. This mutual consideration can alleviate stress, foster meaningful relationships, and help weave the strong social fabric of most co-housing communities.

Co-housing communities also may foster more sharing of ideas and experiences between residents. This can probably be attributed to the closer social relationships often found among individuals in these developments.

Co-housing encourages human interaction and support across generations to individuals of all ages. Elders can benefit from living in a house within a close community, and sharing their expertise and experience with younger generation members who value their skills and abilities.

Co-housing and open space developments can both preserve valuable open space. Both types of developments use cluster housing to conserve land and protect the natural environment. As the popularity of both co-housing and open space developments grows, expect to see more of these innovative types of subdivisions.
APPENDIX IV.

A Sample Zoning Ordinance Text

RESIDENTIAL OPEN SPACE – CLUSTER DEVELOPMENT BY CONDITIONAL USE PERMIT

8.1. RESIDENTIAL OPEN SPACE – CLUSTER DEVELOPMENT.

Pursuant to RSA 674:21, the Planning Board is hereby authorized to grant a Conditional Use Permit to allow for an Open Space – Cluster Development in accordance with the restrictions and requirements of this section. The Planning Board is further authorized to adopt amendments to the Subdivision Regulations in order to further administer the requirements of this ordinance.

8.1.1. Purpose – This section is to provide a flexible method of residential development that is consistent with principles of sound planning and wise land use that are not specifically permitted in the current zoning ordinance. All developments seeking a conditional use permit shall be administered by the Planning Board to ensure that Open Space – Cluster Development opportunities do not adversely impact neighboring properties, or the citizens and Town of [TOWN]. The Planning Board shall consider the following purposes and balance them accordingly during review of individual applications.

A. Maintain and Preserve rural character of the Town of [TOWN] by allowing an alternative residential development option which preserves large areas of open space, provides for visual buffers from existing roads and residential development, and permits farming opportunities on parcels of open space.

B. Preserve large, contiguous parcels of open space throughout the town and as found in the [TOWN] Master Plan designated and referred to as the [TOWN] ___ on Map ___.

OPEN SPACE DEVELOPMENT THROUGH RESIDENTIAL CLUSTERING
C. Provide for a diversity of housing types, opportunities, and styles.

D. Encourage flexible road design that will contribute to and enhance a rural atmosphere and maintain minimal safety design.

E. To provide for connected corridors of open land throughout town for preservation of habitat, environmental resources, and public enjoyment.

F. As part of an alternative for residential development, to require clustering of homes in a manner that includes proximity in physical location while minimizing confusion over issues of property ownership.

8.1.2. Conditional Use Permits. All Open Space – Cluster Developments shall obtain a conditional use permit from the Planning Board. The conditional use permit shall clearly set forth all conditions of approval and shall clearly list all plans, drawings and other submittals that are part of the approved use. Everything shown or otherwise indicated on a plan or submittal that is listed on the conditional use permit shall be considered to be a condition of approval. Construction shall not deviate from the stated conditions without approval of the modification by the Planning Board.

8.1.3. Application Procedure. Applications for conditional use permits for an Open Space – Cluster Development shall be made in accordance with the procedures set forth in the relevant sections of the Subdivision Regulations of the [TOWN] Planning Board.

8.1.4. Approval of Applications. Prior to issuance of a building permit, the applicant shall acquire a conditional use permit as well as any other necessary Planning Board approval. A conditional use permit shall be issued only if an Open Space – Cluster Development complies with all of the requirements of this section. The Planning Board may condition its approval on reasonable conditions...
necessary to accomplish the objectives of this section or of the [TOWN] Master Plan, Zoning Ordinance, or any other federal, state, town resolution, regulation, or law, including but not limited to a reasonable reduction in allowed density, a reasonable increase in required frontage, setbacks, or any other requirement if necessary to accomplish said objectives. The conditional use permit is meant to provide flexibility, minimize adverse impacts, and allow the Board to participate jointly with the applicant to prepare a development that is consistent with this ordinance, regulations, and the Master Plan for the town of [TOWN].

8.1.5. General. The Open Space – Cluster Development provisions of this ordinance provide applicants with an alternative development approach intended to promote flexibility and innovation in land planning. Within this context, the ordinances that are established are intended to be a minimum consideration of allowable impacts. Each tract of land possesses different, unique development characteristics and limitations, and the Open Space - Cluster Development use allowed on any particular tract will be a function of innovative land planning and subdivision design interacting with the special characteristics and limitations of the site.

The following definitions specifically apply to this Section of the Zoning Ordinance:

A. Common Area. Any parcel or area of land and/or area of water set aside as a result of a cluster plan. The common area is designed for the benefit and enjoyment of the residents of a cluster development. These areas may contain accessory structures and improvements necessary and appropriate for the educational, recreational, cultural, social or other non-commercial/ non-residential/ non-industrial uses, plus any utility services utilized by the owners of the common area.

B. Conservation Land. Land given to a public body dedicated to conservation of forests, park land, etc., or to a private conservation trust, with the intent of
preserving in its original ecological condition, safeguarding water supplies, or diminishing flood danger.

C. Mandatory Home Association. A private non-profit corporation, association or other non-profit legal entity established by the developer for the benefit and enjoyment of the residents of the Cluster Development. 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 Planning Board and by the Town Counsel and any other municipal, county, state agency, body, commission or department required by law to approve of the same.

D. Open Space Easement. Land whose development rights have been legally restricted, either by deed or by public purchase of those rights. The easement may be so worded as to permit or restrict public access, to allow or disallow recreational development, and similar provisions. Easements are tied to the title of the land, regardless of its subsequent ownership.

E. Public Open Land. Land purchased by or given to the Town of [TOWN] for parks, playgrounds, or an undeveloped open space, generally with the intention of making it accessible for public use.

8.1.6. Strict adherence to these provisions shall not be construed as establishing a legal right to a conditional use permit for a cluster development. Those who wish to pursue their development rights to a certain use or development of land should consider developing their land with the permitted, conventional subdivision approaches, or through the variance procedure as provided for by New Hampshire law.
8.1.7 Lot Size and Frontage - The minimum lot size for an Open Space - Cluster Development is 20 acres. The minimum frontage for the development shall be a contiguous 100 feet and of sufficient length to provide safe access for a right-of-way of at least 60 feet. At least one access shall be within the minimum frontage. The minimum frontage and access shall be within the Town of [TOWN]. If, however, the subject parcel has only 50 feet of frontage and was legally created prior to the date of adoption of this ordinance under ordinances and regulations that required at least a 50-foot minimum right-of-way, 50 feet shall be the minimum required frontage for such pre-existing lots. Frontage lands on roads existing at the time of application shall be preserved as buffers to the maximum extent possible in addition to all required setbacks. After the passage of this ordinance, any parcel that subdivides more than 50% of the frontage away from the parent parcel shall not be eligible for an Open Space - Cluster Development for a period of 4 years from the date of the subdivision approval. Merging the required parcels with the parent parcel to achieve the 50% original required frontage shall nullify this restriction.

8.1.8 Density - Maximum density for an Open Space - Cluster Development shall be determined by use of a yield plan. The purpose of a yield plan is to show the density that is reasonably achievable under a conventional subdivision following the requirements of the zoning ordinance and subdivision regulations. The Planning Board shall adopt regulations that provide for the generation of a yield plan in accordance with this section.

8.1.9. Density Bonus - If required criteria are met, the [TOWN] Planning Board may award the development a density bonus. The total density bonus awarded to a particular development authorized under this section for innovative protection bonuses shall not exceed 15% of the yield plan. The density bonus shall be applied to the number of lots achievable under the yield plan. Where a final number is greater than .5, the density
number may be rounded up to the next whole number. The minimum density bonus regardless of percentage achieved shall be one lot. Density bonuses awarded for preserving frontage lots shall be in addition to the above 15%, but in no event shall the total density bonus exceed the soil-based carrying capacity for the entire parcel or 80% of the yield plan. The Planning Board shall adopt regulations that provide for density bonuses in accordance with this section.

8.1.10. Standards for Approval – All standards below must be met or impacts mitigated to the satisfaction of the Planning Board prior to the granting of a Conditional Use Permit.

A. The permit is in compliance with this ordinance and is in the public interest.

B. There will be no greater diminution of neighboring property values than would be created under any other use or development permitted in the underlying zone.

C. That there are no existing violations of the [TOWN] zoning ordinance on the subject property.

D. That the character of the area shall not be adversely affected. This determination, to be made by the Planning Board, shall be made by considering the following aspects of the surrounding area.

   1. Consistency of architecture, except for single-family detached development, determined through analysis of the following:

      • Roof pitches;
      • Siding types;
      • Architectural styles of residential structures;
      • Proportional aspects of facades, building locations on lots.
2. Transportation, determined through analysis of the following:

- Access for safety vehicles onto the site, within the site, and to individual houses;
- Capacity of nearby and affected intersections, and transportation corridors;
- Cost for municipality to maintain roadways;
- Layout, width, and construction of roadways on the site.

3. Protection of natural resources, determined through analysis of the following:

- Protection of environmentally sensitive areas, including, but not limited to, wetlands, shore-land buffers, wildlife corridors, significant groundwater resources, etc.;
- Maintenance of viewsheds and other visually appealing aspects of the site.

4. Protection of cultural resources, determined through analysis of the following:

- Establishment of new and protecting existing trailways for travel;
- Protection of historic buildings or significant historical landscapes;
- Establishment, protection and promotion for agricultural uses of the site.

E. That granting the permit will not result in undue municipal expense.

F. That the proposed development will be constructed in a manner compatible with the spirit and intent of the [TOWN] Master Plan and Zoning Ordinance.

G. That the capacity of existing or planned community facilities and services (including streets and highways) will not be adversely impacted. Mitigation of these impacts by the developer can be
properly considered in granting of a conditional use permit.

H. That the general welfare of the Town will be protected.

1. Landscaping or other appropriate buffers of sufficient opacity and materials shall be required if deemed reasonably necessary for the welfare of neighboring properties or the Town.

8.2. OTHER REGULATIONS APPLICABLE.

The Planning Board shall adopt sections of the Subdivision Regulations not pre-empted by this ordinance which shall apply to the Open Space – Cluster Development, including the right to waive such regulations. Where not specifically pre-empted by the provisions of this ordinance, the requirement that is more restrictive shall apply. The Planning Board shall determine if pre-emption is intended by the provisions of this ordinance, and/or what requirement that is to apply is more restrictive.

8.3 MINIMUM OPEN SPACE REQUIREMENTS.

In addition to the requirements of this section, the Planning Board shall adopt regulations that prescribe additional criteria for Open Space parcels.

8.3.1 The parcel must contain a minimum of 35% of the total land in the parcel dedicated as open space.

8.3.2. Such land shall be preserved in perpetuity through deed restriction or conservation easement, and designated on the approved and recorded plat. Such restriction shall be approved by the Planning Board and Town Counsel.

8.3.3. The minimum required open space is land unbuilt upon, which must be permanently kept in that condition, and cannot be subjected to current use taxation or discretionary easements. However, actively operated farmland, classified as “prime” or “unique” by the Rockingham County Conservation
District will be entitled to current use taxation or discretionary easements.

8.3.4. The open space and/or common area within a cluster development shall be owned by and bound by one or more of the following:

A. Mandatory Homeowner’s Association, which may use it for common recreational facilities or may designate it as Open Space, or may grant a public body an Open Space Easement.

B. A public body which shall use it as Conservation Land or Public Open Land.

C. Such designation must be made prior to approval of the subdivision application by the Planning Board; such lands shall be held in such type of legal entity as the Planning Board deems appropriate.

8.4 GENERAL REQUIREMENTS.

8.4.1. Uses.

A. Only residential uses shall be permitted in the Cluster - Open Space Developments.

1. Single-family detached homes are permitted.

2. Multi-family units shall be permitted up to a unit count of 4 per building or structure. These are units that are structurally joined and share walls with no yard between units.

3. Joined-Array Units. Single-family units that are attached by and share a common yard and/or fence as part of a tightly-constructed joined-array, not to exceed four joined units, shall be considered single-family units for setbacks to other arrays or detached units but shall not require setbacks from each other provided that yard space at least 20 feet wide is available for individual use between units. In no case shall structures be less than 10 feet apart.
8.4.2. Setback and other dimensions.

A. The following frontage requirements shall apply.

1. Each single-family lot or unit shall have 50’ of frontage on interior roadways.

2. Joined-Array single family as described in §8.4.1,A,3, shall have 125’ of frontage.

3. Duplex and multi-family units, sharing a common wall shall have 75’ of frontage.

B. All developments shall contain some form of lot delineation or lines that designate a reasonable amount of land attributable to each particular structure.

C. The following setbacks shall apply to all residential structures within the development:

1. Setbacks from exterior property lines of the entire parcel shall be 25’ for single-family detached units, with an additional 15’ per unit for multi-unit structures (e.g. 4 unit attached = 85’).

2. 30’ setback from the edge of pavement for roadways within, and part of, the development.

3. 40’ structural separation for all single-family unit structures within the development, subject however to §8.4.1,A, 3.

4. 50’ structural separation setback for multi-family units from all other structures.

5. 10’ structural setback from all lot lines.

8.4.3. Utilities.

A. All utilities serving the development shall be underground. The Planning Board may waive the requirement for underground utilities along lengthy entrance roads that are visually separated from the clustered housing units. The Planning Board may
not waive this requirement within the network of the development.

8.5 EXPIRATION.

Any Conditional Use Permit shall expire if active and substantial development or building has not begun on the site by the owner or the owner’s successor in interest in accordance with the approved plat within 12 months after the date of approval. As part of its approval of a plat or plan, the Planning Board may, with due regard to the scope and details of a particular project, specify the threshold level of work which shall constitute “active and substantial development or building” for purposes of fulfilling this paragraph. In such cases, a new application for a Conditional Use Permit must be completed.
APPENDIX V.

A Sample Open Space-Cluster Subdivision Regulations Text

OPEN SPACE-CLUSTER SUBDIVISION REGULATIONS

4.6 OPEN SPACE-CLUSTER SUBDIVISION

4.6.1. General. The Open Space-Cluster development provisions of these regulations are adopted in accordance with the authorization present in the Open Space-Cluster Ordinance. These regulations are required to administer and regulate the flexibility that is meant to be an inherent part of this development process.

This process is meant to provide applicants with an alternative development approach intended to promote creativity and innovation in land planning. Within this context, these regulations that are established are intended to be a minimum consideration of allowable impacts. Each tract of land possesses different, unique development characteristics and limitations, and the Open Space-Cluster development use allowed on any particular tract will be a function of innovative subdivision design interacting with the special characteristics and limitations of the site.

The definitions found in the [TOWN] Zoning Ordinance shall apply to this Section of the Subdivision Regulations.

4.6.2. Application Procedure. Applications for an Open Space-Cluster development shall be made in accordance with the procedures set forth in the relevant sections of these Subdivision Regulations.

4.6.3. Legal Review Approval. The legal review of the proposed development shall be conducted under the conditions delineated herein:

A. Any condominium agreements, deed restrictions, organizational provisions for a Homeowner’s
Association, or any legal entities providing for ownership of individual dwelling units and a sharing of certain utilities, open space, common areas, and auxiliary facilities and structures, must be approved in writing by the Planning Board and by Town Counsel and any other municipal, county, or state agency, body, commission or department required by law to assure the same.

B. The developer will submit a suitable legal instrument which, to the satisfaction of the Board and/or Town Counsel, will assure that such open space and/or common land will continue to be used for conservation, park or recreation, and shall not be disposed of by sale or otherwise except to any organization established for the purpose of owning and maintaining such open space.

C. Such developer shall also provide for adequate maintenance of such area set aside for conservation, park or recreation. Such developer shall provide for the insertion in all deeds, in a form approved by the Planning Board and/or the Town Counsel, any and all safeguards and conditions suitable to carry out the purposes of these regulations.

D. Such legal instruments shall also provide that the Town of [TOWN], its agents, servants, and employees may, without liability, enter upon such land held for conservation, park or recreation and remove, or cause to be removed, anything, object, or condition which may be deemed to be a nuisance or in the nature of a nuisance.

4.6.4. Yield Plan. In accordance with the Open Space-Cluster Development Ordinance, the applicable density shall be determined through submittal of a yield plan. The yield plan shall be reviewed and approved by the Planning Board in accordance with the following:

A. The yield plan shall incorporate soils information sufficient to determine estimated lot sizes by soil type.
B. The yield plan shall incorporate roads and rights-of-way that provide for a layout that corresponds with existing state and federal laws, town ordinances, and subdivision regulations, including, but not limited to, minimization of wetland crossings, road length requirements, right-of-way widths, and safe sight distance for entrances.

C. The yield plan is meant to be conceptual in nature but must be realistic and not show potential house sites or streets in areas that would not ordinarily be legally permitted in a conventional layout.

D. In addition to the above, the yield plan shall include basic topography, wetlands, floodplains, steep slopes (greater than 25%), soils subject to slumping, and contiguous non-wet areas and other areas of land where it is not feasible to accommodate building sites and individual septic systems.

E. In order to show that the yield plan is reasonably achievable, 20% of the lots, randomly distributed throughout the yield plan, shall indicate one test pit which complies with all local, state, and federal requirements including, but not limited to, depth to estimated seasonal high water table, setbacks to lot lines and structures, and wetland setbacks. These lots shall be selected by the applicant; however, the Planning Board, at its discretion, may seek additional lots for testing if doubts arise.

F. The yield plan shall comply with conventional subdivision standards and shall not require a variance or waiver from the existing ordinances or regulations in order to achieve the layout supporting the proposed density.

4.6.5. Innovative Open Space Bonus. These regulations provide for the available open space bonus as authorized in the Open Space-Cluster Ordinance.

A. Where the proposed Open Space Cluster plan shows 50% or more of the total parcel as open
space protected as such in perpetuity, the development may be awarded a density bonus of 10%.

B. Public Access Bonus – Where the public is granted access to the open space, the development may be awarded a density bonus of 5%. The nature of public access required to trigger this bonus is pedestrian traffic. The instrument granting access, acceptable to the Planning Board, may reasonably restrict the use of motorized vehicles.

C. Agricultural Lands and Use Bonus – Where the development protects agriculturally valuable lands and provides permission for their use as such in perpetuity, the development may be awarded a density bonus of 10%. The Planning Board shall, on a case-by-case basis, determine the bonus percentage by considering the size of the project and the number of acres of farmland preserved. The open space portion preserved for agricultural use must amount to a minimum of 50% of the minimum required open space and either has been historically farmed, or contain good soils for farming and must be reasonably accessible to receive the maximum bonus. A minimum of three and one-half (3.5) contiguous acres must be available for agricultural uses in order to receive any bonus under this section. The instrument granting use, acceptable to the Planning Board, may reasonably restrict the type or intensity of farming to occur to prevent nuisances. This provision only requires that permission is reasonably available; the fact that agricultural uses are not pursued at any particular time does not affect the validity of the bonus.

D. Additional Protection Bonus – Where the development is able to protect unique characteristics, including and limited to the following:

1. Viewsheds, which are lands or corridors of land that contribute to the visual landscape of the town, including items such as open fields containing stonewalls, mature stands of trees, visible water bodies and their natural buffers.
2. Historically significant buildings and landscapes, identified as such in the Master Plan, that include buildings and associated uses that are maintained and visually separated from the developed portion of the cluster development. Structures or landscapes not identified as such through the Master Plan may be determined by sufficient evidence presented to the Planning Board during review of the cluster development. Such evidence may include Heritage Commission comment, listing or eligibility for listing on the National Register of Historic Landmarks, or other qualified statements of historic value.

3. Valuable wildlife and environmental areas that are otherwise buildable land, proven as such through an environmental resource inventory by a qualified wildlife biologist specializing in either flora or fauna. Reports by a wetlands or soil scientist shall not satisfy this criteria.

4. Linking open space parcels or trail corridors through the site with existing trails or open space networks. The beginning of such a network or trailway may be considered as linking where reasonable opportunity is present for establishing through corridors into neighboring parcels and provided that Conservation Commission comment is in favor of this location.

If the development protects one or more of the above, it may be awarded a density bonus of 10%. The development must provide for the protection of these resources in perpetuity and trail corridor protection must allow for reasonable public access.

5. Density bonus for frontage lots. Where a development is proposed such that a potential lot with the required legal frontage, on a roadway existing at the time of application within the Town of [TOWN], for the underlying zone has been preserved in a natural condition, the Open Space-Cluster development shall receive an
additional bonus of 2.5 lots in addition to any bonus awarded under this section.

4.6.6. Open Space Criteria. Usable Open Space shall be reasonably available for recreational use by the residents of the subdivision. General public use may be considered but shall not be required. The usability criteria is necessitated by the subdivision. Where land is to be developed in a manner that will result in a significant number of people forming a community on that land, adequate recreational space is a necessity. These criteria are intended to provide that those moving into the subdivision will have an adequate recreational area.

A. A minimum of 25% of the total required open space land must be usable uplands and reasonably available for recreational purposes, provided, however, that no more than 50% shall be utilized for such purpose in order to preserve a reasonable proportion of natural area on the site.

B. Recreational uses may include, but are not limited to, trailways, recreational/athletic fields for sports, cross country ski trails, tennis facilities, swimming pools, playgrounds for children, off-road bicycle paths, horseback-riding, etc.

1. Uses customarily accessory to permitted outdoor-recreational uses such as small clubhouses (less than 1,500-square-foot footprint), maintenance facilities, or gazebos shall be permitted.

2. Where recreational uses may interfere with neighboring residentially zoned or used parcels, the Planning Board shall require mitigative measures to lessen any projected negative effects. Such measures may include sufficiently opaque visual buffers, placement within the interior of the development, and limitations on night lighting and use.

3. Recreational facilities shall be constructed by the developer or financial provision for construction shall be provided by the developer to the
homeowner’s association in order to adequately ensure their proper creation.

4. Land targeted for recreational use shall not occupy the exterior buffer of the development site unless such use is limited to trailways.

C. The minimum required Open Space shall not contain more than 50% of the sum of the following kinds of unbuildable land:

- Wetlands, as defined elsewhere in this ordinance or, if not so defined, as found in state law.

- Slopes exceeding a grade of 25%, or soils subject to slumping.

- Drainage facilities, except that constructed ponds that are filled with water year-round, that are part of a drainage plan, may be included in the open space calculation, provided that access is not restricted.

- Land used for septic systems.

- Floodways, and floodway fringe within the 100-year floodplain as shown on official FEMA maps.

D. No portion of public utility easements, of any kind, may be considered part of the minimum required open space. Expansion or creation of a public utility easement after approval of a development shall not affect the requirements for provision of open space or recreational uses of the development.

E. Open Space Layout. Open space land shall be designated as undivided parcels to facilitate easement monitoring, enforcement, maintenance, and to promote appropriate management by a single entity according to approved land management standards.

1. As part of the application, an open space plan shall be submitted showing clear delineation...
tion of parcels of open space land that is not to be developed. The open space plan shall be recorded at the Registry of Deeds and shall indicate that development is restricted from the open space in perpetuity.

2. The minimum required open space land shall be placed in undivided preserves that equal or exceed 3 acres. All parcels between 3 and 10 acres shall have a length-to-width ratio equal to or less than 4:1; except such areas specifically designated and constructed as village greens, ballfields, upland buffers to wetlands, water bodies or water courses, or trail links. Areas less in size or dimensional requirements may be considered common land left open, but shall not be included in the minimum required open space calculation.

3. Open space shall be directly accessible to the largest practicable number of lots within the development.

4. Safe and convenient pedestrian access to open space shall be provided from all lots not adjoining the open space.

4.6.7. Development Yield. The yield for residential Open Space-Cluster development shall be determined by total bedrooms and shall not exceed the following:

- 4 bedroom units = \((\text{yield plan} + \text{bonuses}) / 1.00\)
- 3 bedroom units = \((\text{yield plan} + \text{bonuses}) / 0.85\)
- 1 & 2 bedroom units = \((\text{yield plan} + \text{bonuses}) / 0.65\)

The development yield shall not exceed the provisions of Section 8.1.9 of the [TOWN] Zoning Ordinance.

4.6.8. Roadway Design Criteria. Road design for Open Space-Cluster development shall adhere to the roadway design criteria found in the Subdivision Regulations, as amended. The Planning Board may consider the following design waivers specifically for developments in accordance with this Article. The Planning Board may deny any and all of these waivers where future connec-
tions to other roadways is reasonably possible or anticipated. No roadway minimum shall apply where fire and safety access is jeopardized.

4.6.9. Road Specifications. Roadways within an Open Space-Cluster development may be considered for design waivers by the Planning Board in accordance with these regulations. On-street parking shall be prohibited along any street where the roadway width is equal to, or less than, 22 feet.

A. Purposes.

These road design criteria intend to promote the following purposes:

1. Promote and allow flexible and innovative design of roadways.

2. Maintain rural character through reduction in width standards, provided health and safety concerns are met.

3. Provide for and encourage the development of neighborhood environments that will enhance quality of life and property values through the inclusion of village green concepts.

B. Entrance roadways.

1. These are roadways that provide access to the development at any junction with town roads, and continue to the first internal intersection where one or more streets branch off.

2. Entrance roadways shall be built in accordance with the Subdivision Regulations, as amended.

C. Arterial Branch roadways.

1. These are roadways that serve 25 units or less and branch off from an entrance roadway.
2. Arterial branch roadways shall be built in accordance with the Subdivision Regulations, as amended. The Planning Board may permit the width to be reduced to 20 feet, provided that health and safety issues are not jeopardized by the reduced road width.

D. Common Driveways.

1. These are roadways that serve 6 units or less and branch off from an Arterial Branch roadway or Entrance roadway.

2. Common driveways that serve more than two (2) units shall be built in accordance with the Subdivision Regulations, as amended. The Planning Board may permit the width to be reduced to 18 feet, provided that health and safety issues are not jeopardized by the reduced road width.

E. Dead End roadways.

All roadway endings shall be constructed with innovative design methods in mind. The intent of this requirement is to promote the construction of aesthetically pleasing neighborhood environments within the Open Space-Cluster development. These methods shall include landscaped center loops for dead-end roads of one of the following designs:

1. Circular Loop Drive. May be 18 feet in width and with a minimum radius of 75 feet from center to the inside edge of pavement and shall be one-way only.

   a. The center portion of the roadway radius shall contain remaining mature trees, or shall be landscaped with shrubs, rock, or other landscape feature and shall not consist solely of grassed open fields. These areas shall not be counted as part of the Open Space calculation.

   b. Units serviced by Circular Loop Drives shall have parking facilities to accommodate
three (3) vehicles of off-street parking (this count may be met by garage space and driveway area and one space in an off-street parking area).

2. Elliptical Loop Drive. These roadways shall serve no more than 8 units, may be a minimum of 18 feet in width, and shall adhere to Minor Feeder roadway requirements.

   a. The minimum dimensions of the central green for this roadway shall be 100’ wide and 150’ long on average, and may contain open grassed areas in addition to required landscaped areas, remaining mature trees, and any pedestrian facilities such as benches, gazebos, and playground facilities for children.

   b. If a developer elects to utilize this innovative design method, the open central area shall be considered part of the open space calculation.

   c. Units serviced by Elliptical Loop drives shall have parking facilities to accommodate three (3) vehicles (in total) of off-street parking (this count may be met by garage space and driveway area and one space in an off-street parking area that must be within a reasonable distance to the units served).

3. Parking. For all units, off-street parking shall be provided for three (3) cars per unit, with a minimum of a one-car garage for single-family units.

4.6.10. As part of any application, whether roadway design waivers are granted or not, the Planning Board may require additional facilities to ensure adequate access and service for safety vehicles including, but not limited to, additional off-street parking, turn-outs or turn-arounds, fire hydrants, fire ponds, or other recommended accommodations.