



Open Space Subdivisions

A Primary Tool for Protecting Quality of Place

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What's the Problem?



Conventional Techniques to Protect Rural Character

Protecting Rural Character Is Almost Always:

- A primary goal in local Comprehensive Plans
- A primary concern revealed in local land use attitude surveys

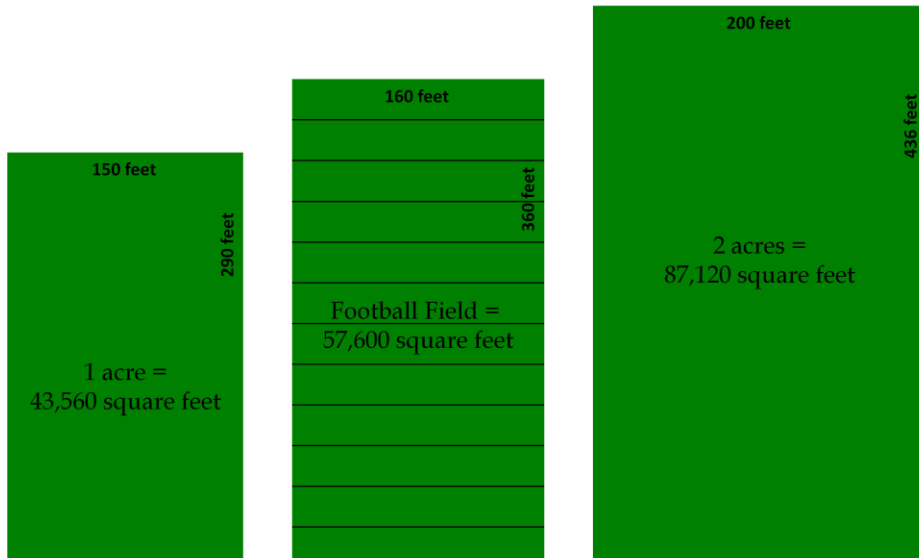
Conventional Techniques to Protect Rural Character

Response is almost invariably that Rural Density should be kept Low to Protect Rural Character

- 1 dwelling unit per 2 acres requirement in rural areas is very common in local land use ordinances

DOES IT PROTECT RURAL CHARACTER?

What is a typical lot size?





This subdivision was built out at 1 dwelling unit per 2 acres. Has this protected rural character?



“Large frontages are required in order to limit the number of access points and retain a rural atmosphere.”

This quote from a Comprehensive Plan illustrates the notion that people have equating density to rural character. The sense is that spreading new homes apart will somehow preserve the sense of space that is characteristic of our rural areas.

This is a photo-simulated view of what a development parcel may have looked like a generation ago.

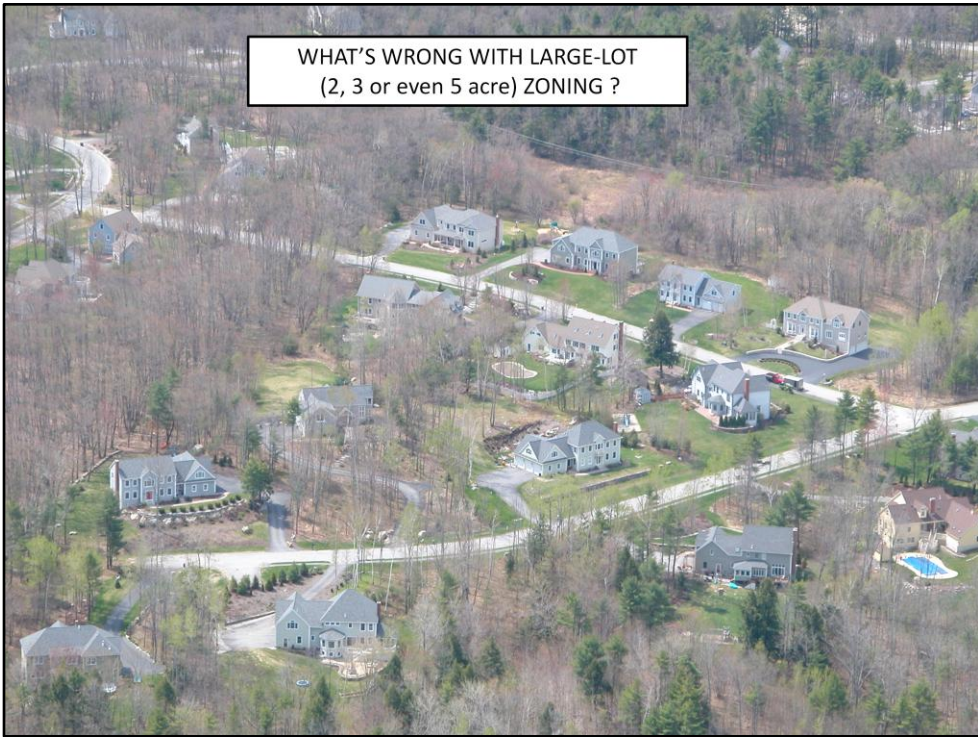
This is a field in Windham, ‘before’ development took place.



This is the same field as it appears today. (In the previous photograph the homes were digitally removed to show what the land used to look like.) The homes are on one to two acre± lots, spaced 200'± apart. There is no landscaping, or sidewalks, or pedestrian amenities.



Does reduction in density preserve open space? By digitally removing every other house the density is reduced to one home per three or four acres \pm . The effect of homes scattered over a large open field is still the same.



Typical development pattern on 1.5 - 2 acre lots.



Unknown location between Lisbon Falls and Windham. Typical large lot subdivisions on 3+ acres, resulting in forest fragmentation, loss of habitat, disruption of traditional recreation.

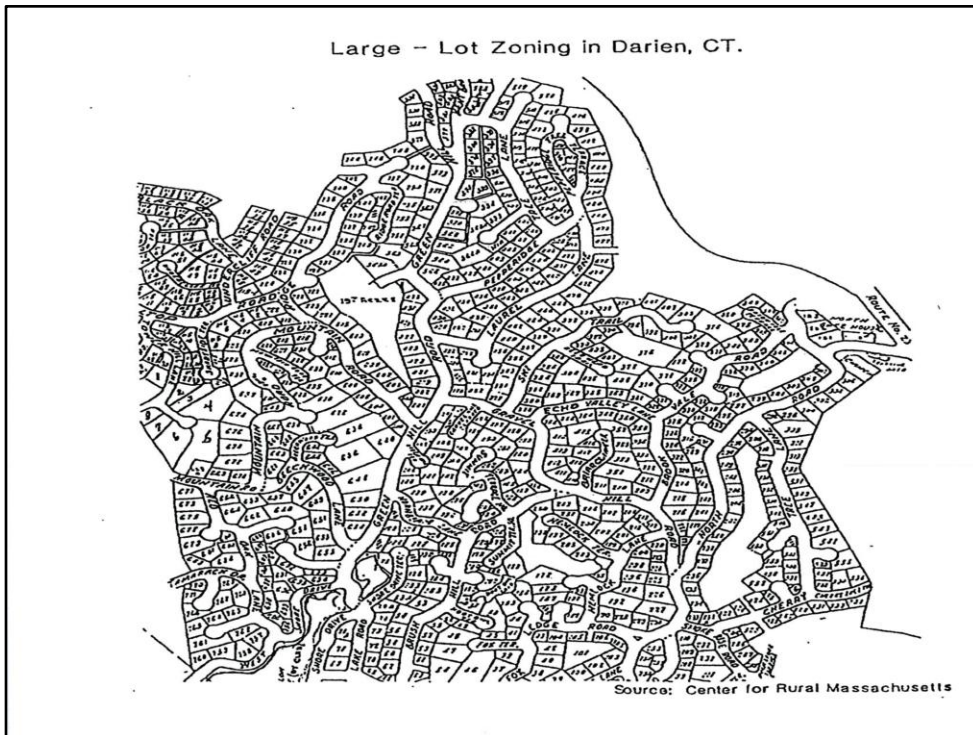


300 feet

726 feet

1 dwelling unit per 5 acres

Mountain Housing
Newry



Darien Conn. has had large lot zoning (minimum lot size of 2 acres) since the early 1960s as a means to protect rural character in its rural zone. The result is that this area is fully built out with 2 acre lots with the only open space in the form of front yards, side yards and rear yards except for an open space area for the country club and the hunt club. Rural character has been lost in much of Darien.



Negative Effects of Sprawl

- Loss of farmland
- Loss of wildlife habitat
- Increased water pollution
- Longer commutes
- Higher costs for building streets, schools, and utilities
- Which leads to higher taxes
- Increased flooding and erosion potential from more impervious surfaces
- Introduces non-native invasive plants
- Increased exposure to lyme disease
- Decreased ground water
- Isolation of young, poor, and elderly lack car access
- More ordinances regulating logging , noise and odors
- Reduced rural character & Quality of Place

Conventional Cluster Subdivisions

Cluster Subdivision Option Ordinances Allowing the Same Number of but Smaller Lots Yielding Common Open Space Adopted by Many Towns

However Conventional Cluster Ordinances Often Do Not Protect Rural Character or the Environment

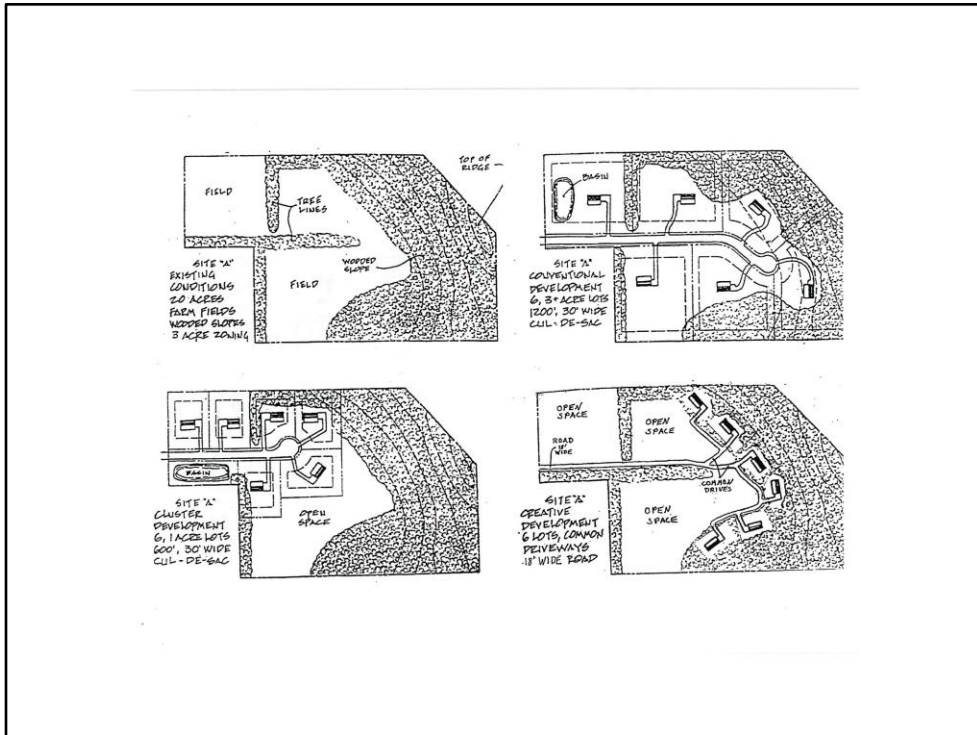
- For example: Cluster subdivision in the middle of a farm field



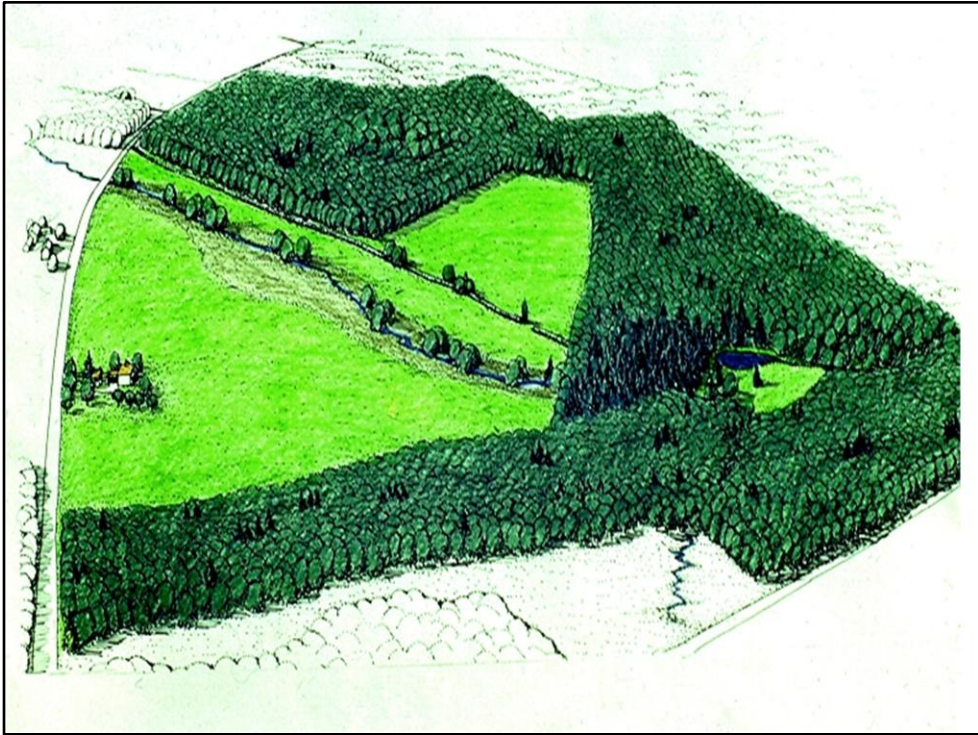
Royal Meadows is a cluster subdivision of ten homes plopped on 22.6 acres of land that had been formerly used as pasture for a horse farm. Developed in the late 1980's. Has rural character been protected here?

What's a Primary Remedy to Subdivision Sprawl?

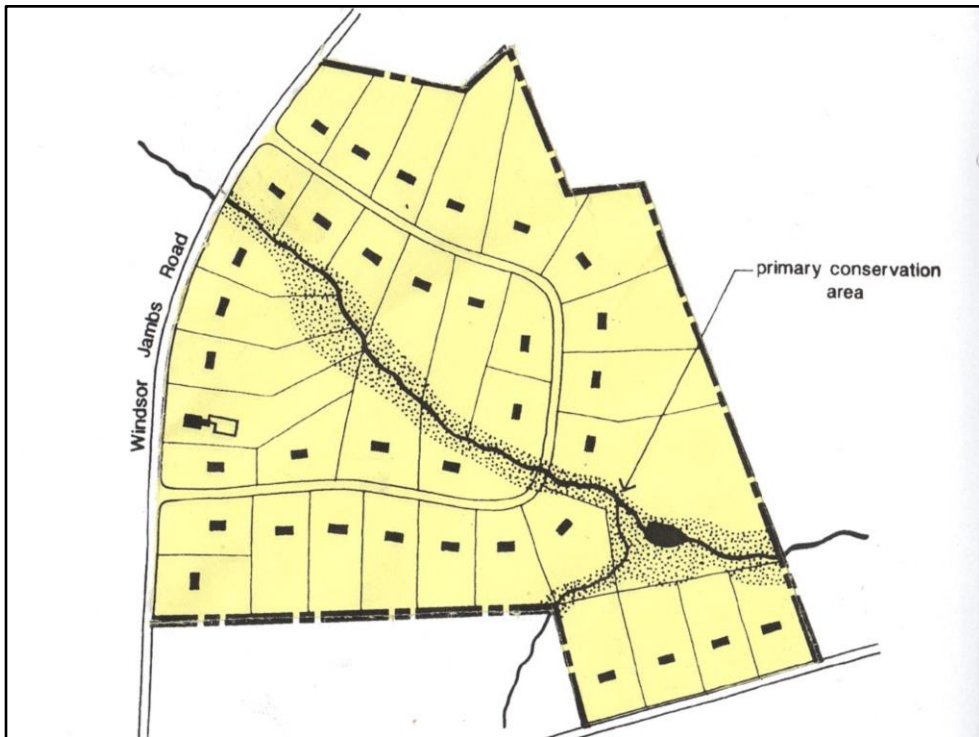




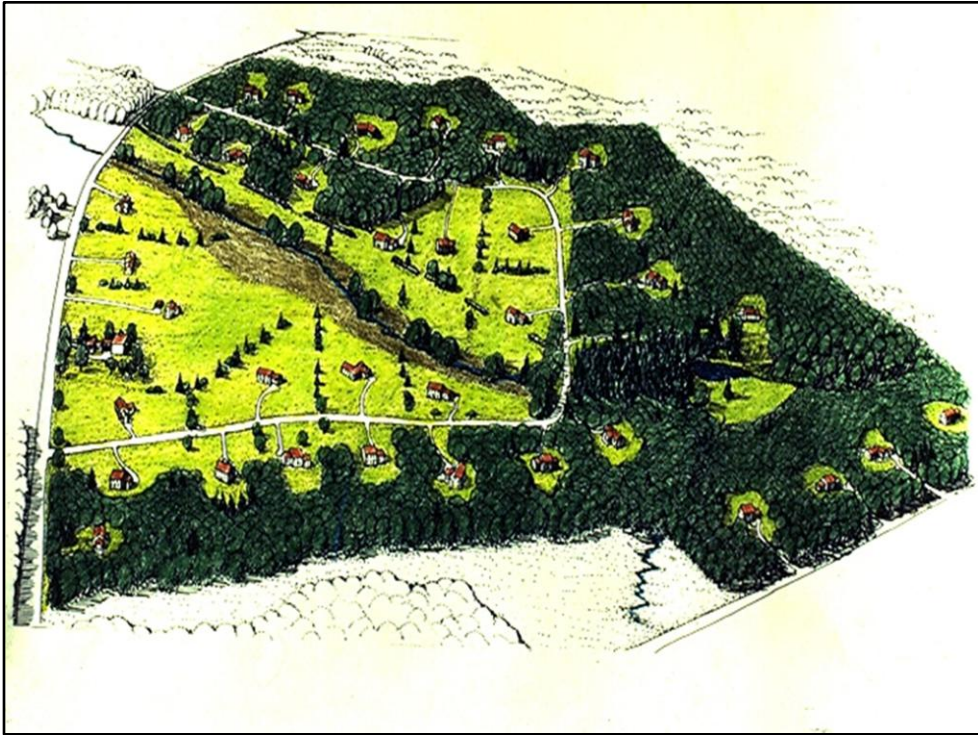
Assume that a public road borders along the left side of the illustrated 20 acre parcel. The upper right hand illustration shows the parcel developed as a conventional subdivision with 3 acre lots and no protected open space. The lower left illustration shows a cluster subdivision with protected open space but the development consumes much of the open fields and does not blend into the landscape. Views from the front of most of the houses in this and conventional subdivision are of the front picture window of a nearby house. The lower right illustration shows an open space subdivision that blends into the landscape with open fields protected. Front views from these houses are filtered by buffering trees in front and unobstructed into the open fields. Privacy is assured by buffering trees between the houses. The road in this development is only 18 feet wide and splits into two common driveways. The fields could be used for farming. Homes cannot be seen from the public road. Site design criteria were applied to this subdivision. Rural character has been protected.



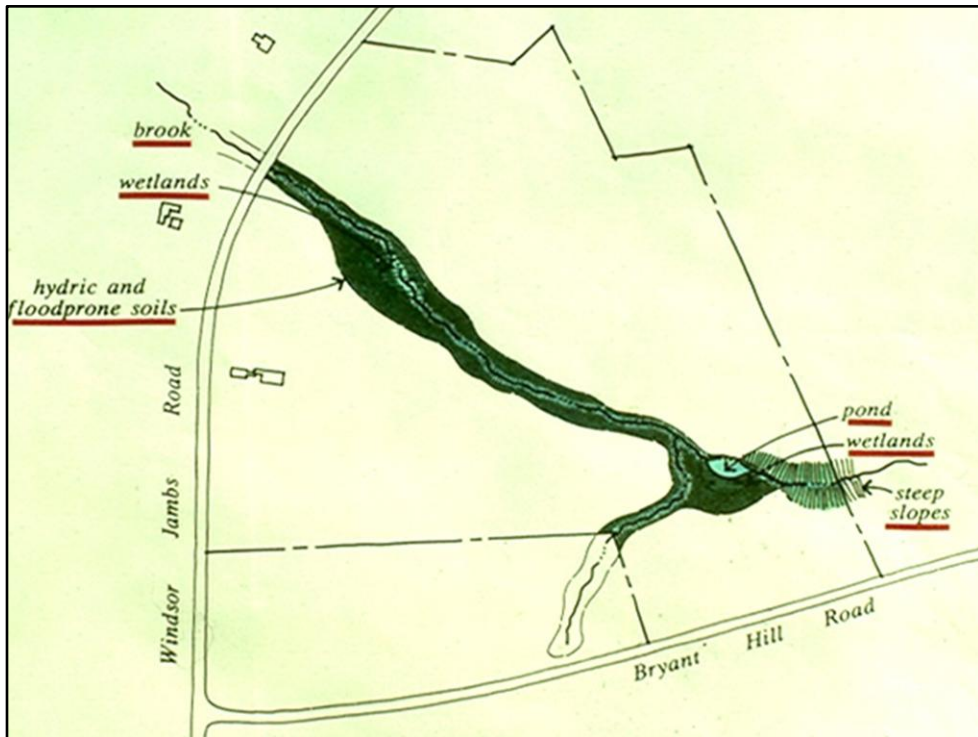
This is an illustrated aerial view of farmland with original farmstead on left side field near public road. This and the following illustrations of this fictional development are used courtesy of Randall Arendt.



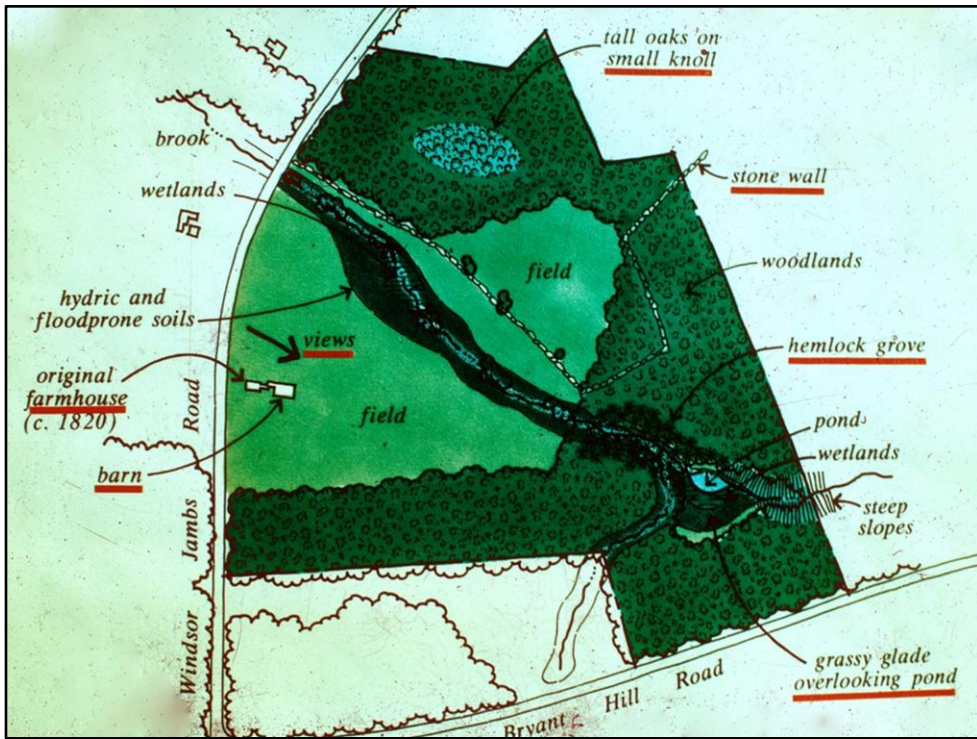
This shows the same parcel developed as a conventional cookie cutter subdivision. Primary conservation areas or constraints like wetlands or steep slopes are indicated.



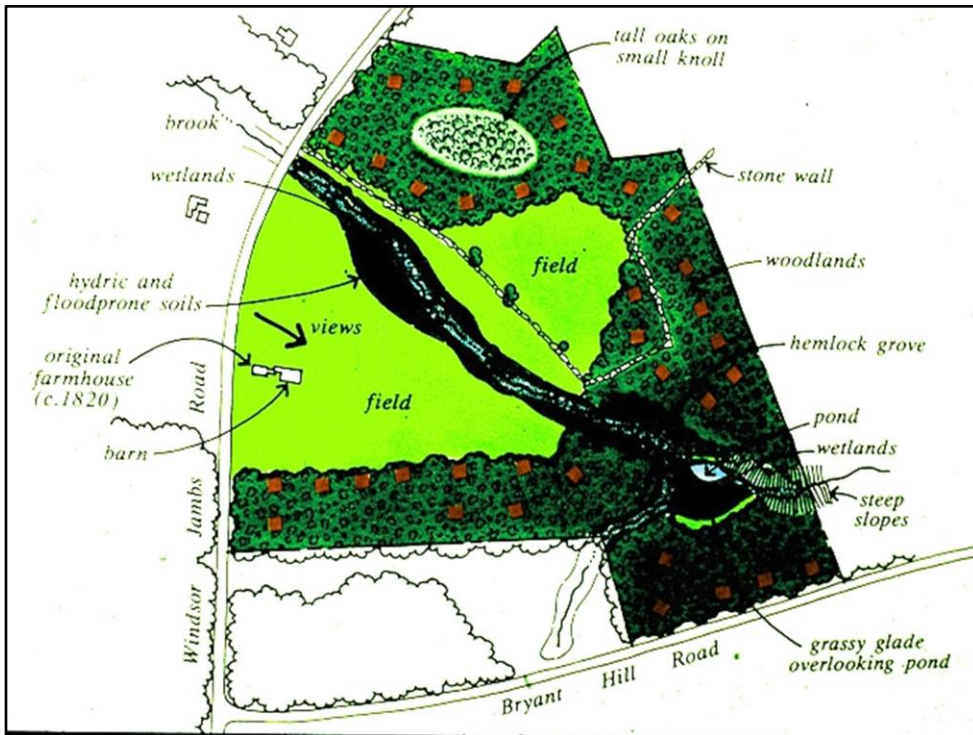
This is a bird's eye view of the same development.



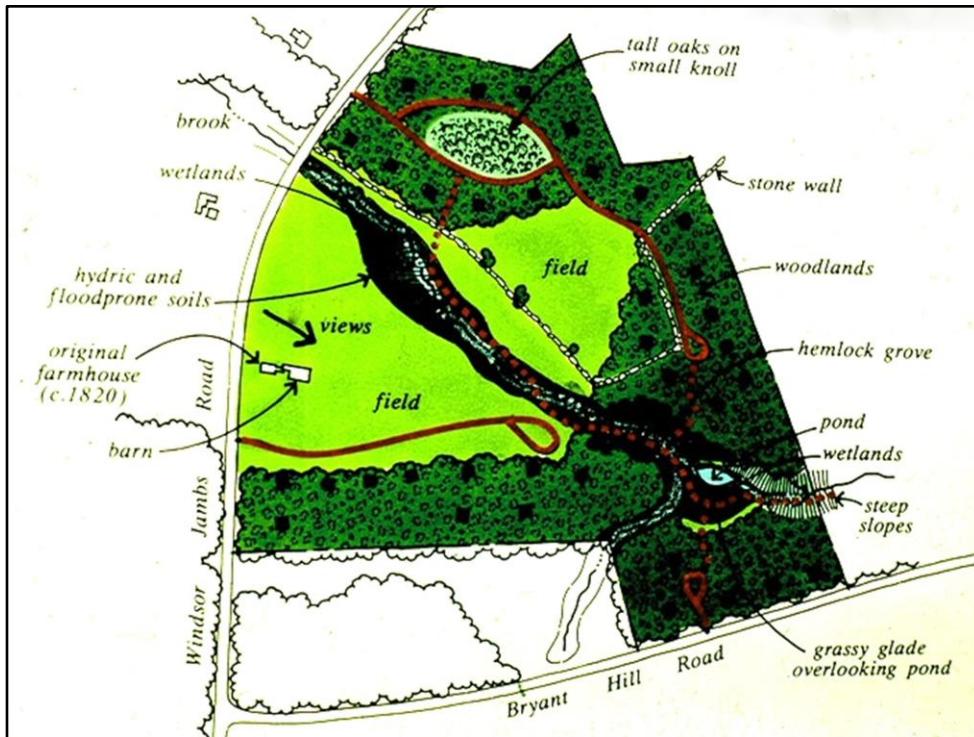
So how is an open space subdivision designed so that rural character is protected? The first step is to identify Primary Conservation Areas. These are areas with constraints that should not be built upon including steep slopes, hydric soils, wetlands, and surface waters including intermittent streams.



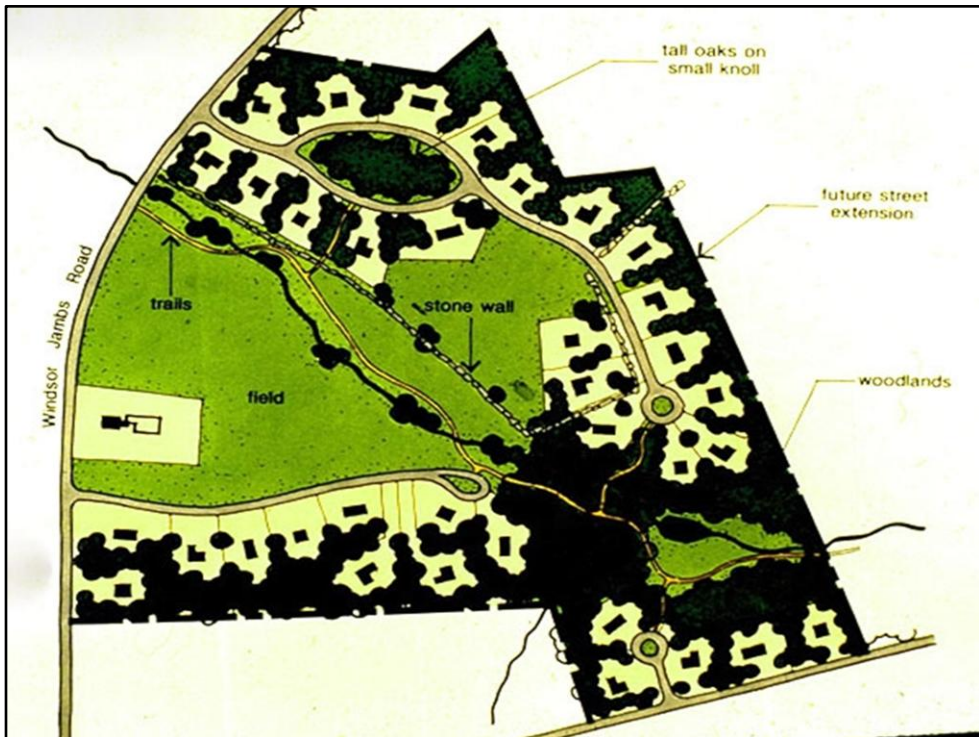
The second step is to identify Secondary Conservation Areas. These are significant features that include open fields, high value natural areas, important agricultural soils, mature woodlands, stone walls, tree lines, existing historic structures, scenic views into and out of the property, trails and hilltops.



The next step is to locate new houses on the property using site design criteria. One criterion should be that houses will be within woodlands or if that's not possible along far edges of open fields preferably adjacent to woodlands (to enable new construction to be absorbed by natural landscape features)



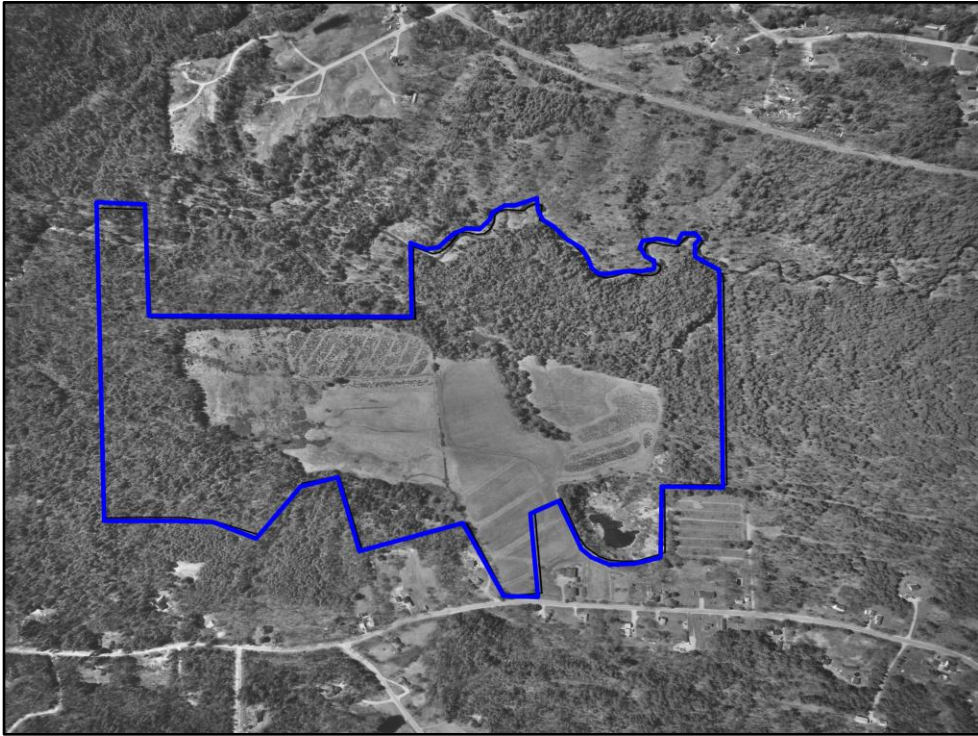
The next step is to locate roads, common driveways, and trails. Site design standards should be followed e.g. roads and common driveways should avoid or cross open fields, agricultural lands, sensitive habitats at the edges preferably along tree lines or hedge rows.



Final step is to draw in lot lines. It would have been better if there had been treed buffers in front of homes fronting open fields allowing a filtered view onto the field and blending the homes into the landscape better.



Here is an illustrated aerial view of the development.



Here is an aerial photo of a 117 acre parcel off the Pleasant Hill Road in Freeport that was developed as an open space subdivision that effectively protects rural character.



Speckled areas in farm fields are Christmas trees where a number of houses were located partly because they were buffered by the trees. Mill Stream is in the upper part of the slide.



This shows another corner of the parcel.



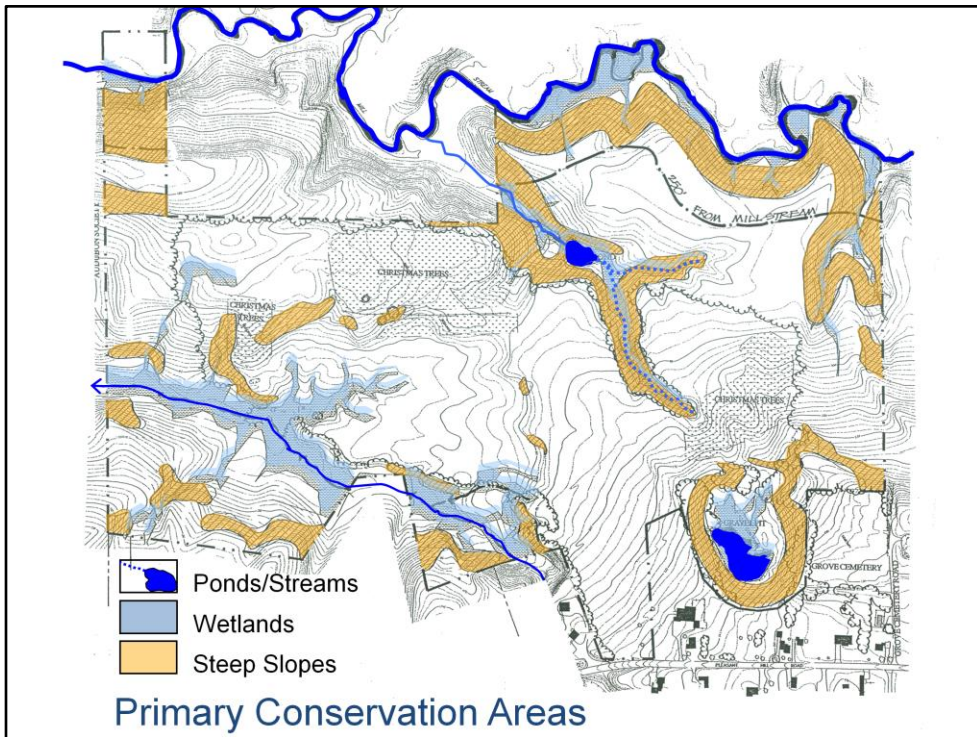
This is a pre-development view from Pleasant Hill Road looking across the open fields of the property.



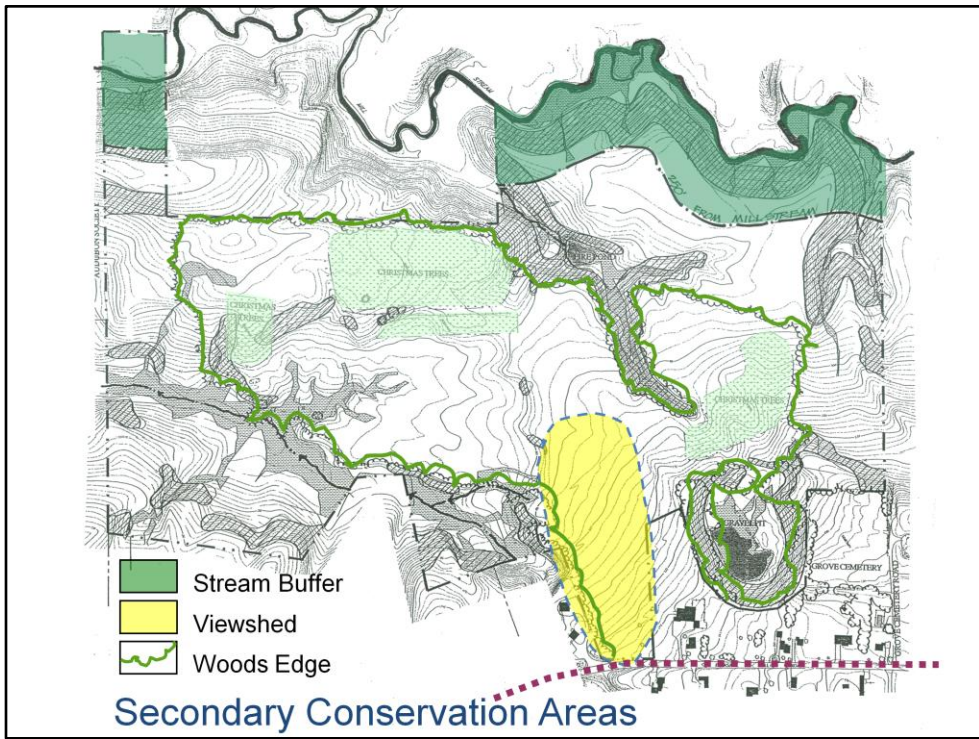
This is another pre-development view along the edge of the property near where the subdivision road was located.



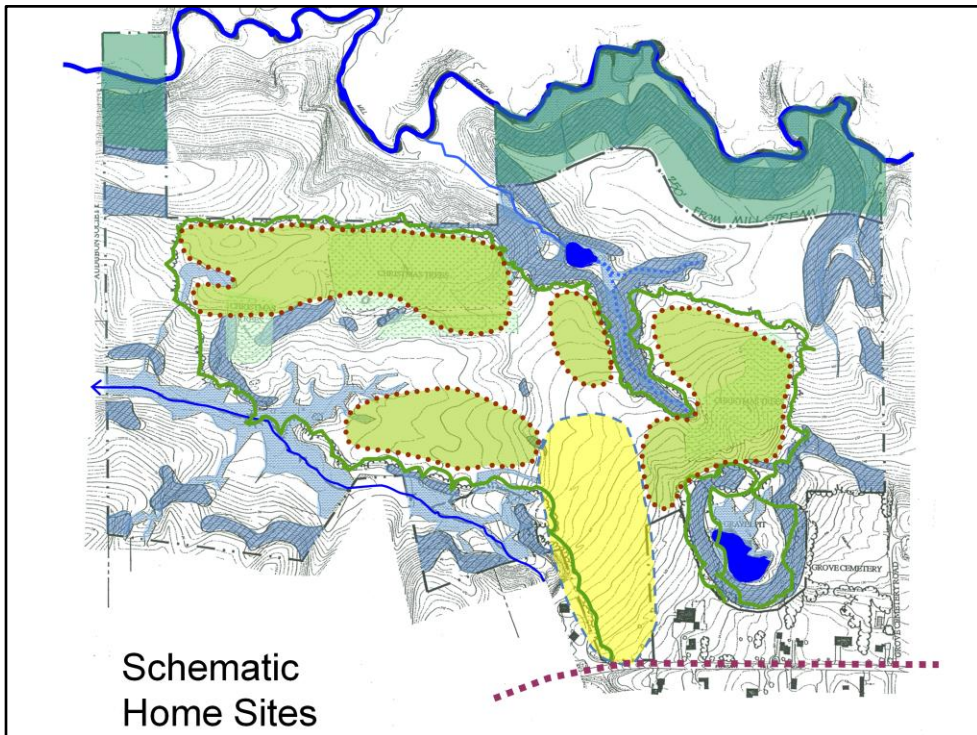
Here's another pre-development view across the fields, note Christmas trees middle right of the slide and in background in front of forested area.



This open space subdivision in Freeport called Mill Stream Subdivision used a similar 4 or 5 step design process described earlier. First the primary conservation areas were identified.



Next secondary conservation areas were identified.



Next areas were identified where homes should go. Ultimately the two smallest (more oval less irregular) lime green areas were not used for homes partly because they couldn't be well buffered in the field. The other two lime green areas had Christmas trees to buffer the houses. The yellow area represents the view in from the Pleasant Hill Road (red dashed line) .



Roads and trails were drawn in followed by house lot lines.

Primary Conservation Areas	
Wetlands	13.2 acres
Slopes > 20%	19.9 acres
100 year flood plain included	
Water bodies	included
Deer wintering areas	0 acres
Total	33.1 acres
Roads	5.4 acres
<hr/>	
Land Unsuitable	38.5 acres



Primary Conservation Areas in acres are itemized and totaled as land unsuitable. Some ordinances term this as unbuildable land. A small percentage of parcel acreage is accounted for roads.

Net Residential Acreage (NRA)	
Gross Area:	117.0 acres
– Land unsuitable:	38.5 acres
<hr/>	
NRA	78.5 acres
Required Open Space (ROS)	
50% of NRA	39.3 acres
Primary Cons. Area	33.1 acres
<hr/>	
ROS	72.4 acres

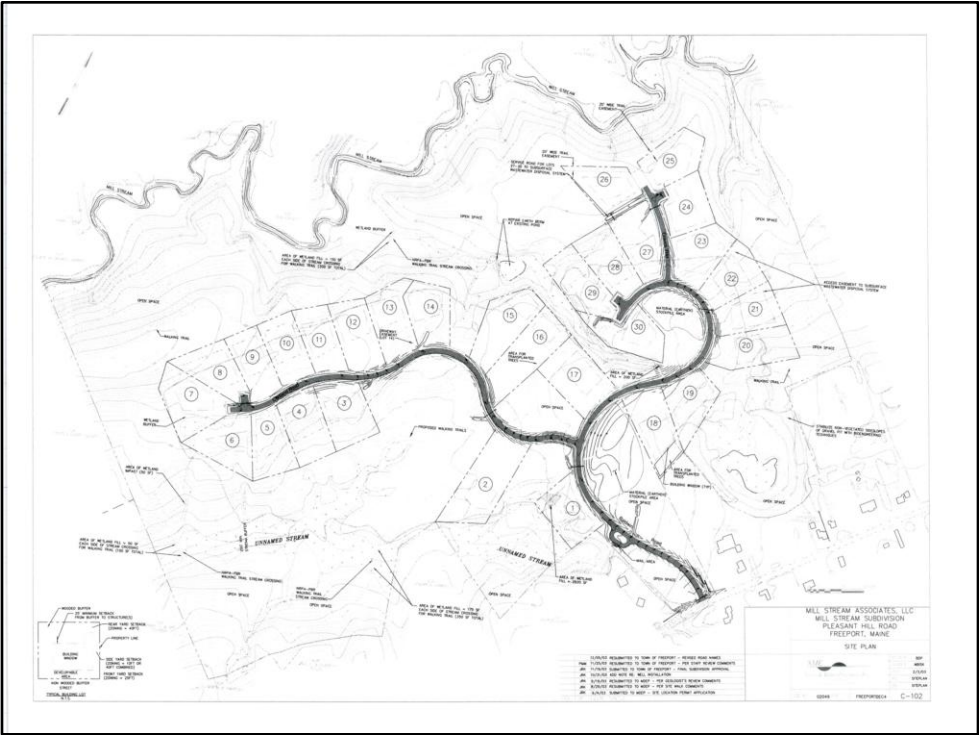
Unbuildable land or land unsuitable is subtracted from the total acreage of the parcel with a remainder called Net Residential Acreage (NRA). Freeport’s subdivision ordinance requires that open space subdivisions set aside 50% of NRA plus any Primary Conservation Areas as protected open space. This amounted to about 72 acres for Mill Stream Subdivision.

Residential Density

Net Residential Acreage = 78.5 acres

Density: 1 unit / 2.5 NRA = 31 units

1 unit per 2.5 acres of Net Residential Acreage is allowed in the rural zone of Freeport. The number of house lots allowed on this parcel was determined by dividing the Net Residential Area by 2.5, which allowed 31 house lots on this parcel the same number that would have been allowed for a conventional subdivision that protected no open space.



Here's a site plan of Mill Stream Subdivision.



Here's a Google earth image of the development.



Here's a post-development view across the farm field from Pleasant Hill Road. Note Christmas trees buffering the houses. Farmstead is to the right just out of view.



Here is similar view from Pleasant Hill Road with part of existing farmstead on the right.



This is a view from intersection of subdivision road to homes on “left” (“left” determined looking into the development from Pleasant Hill Road) side of parcel.



Here's a closer view of houses on "left" side of Mill Stream Subdivision parcel.



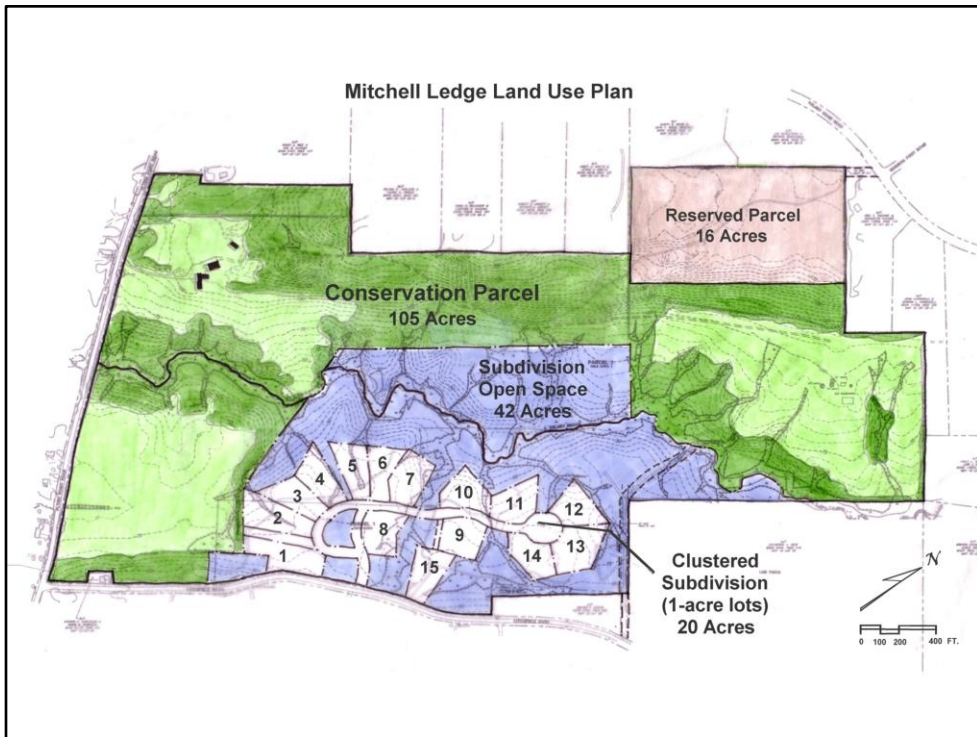
This is a view of homes from subdivision road intersection toward “right” side of parcel. The house on the right is LEED certified.



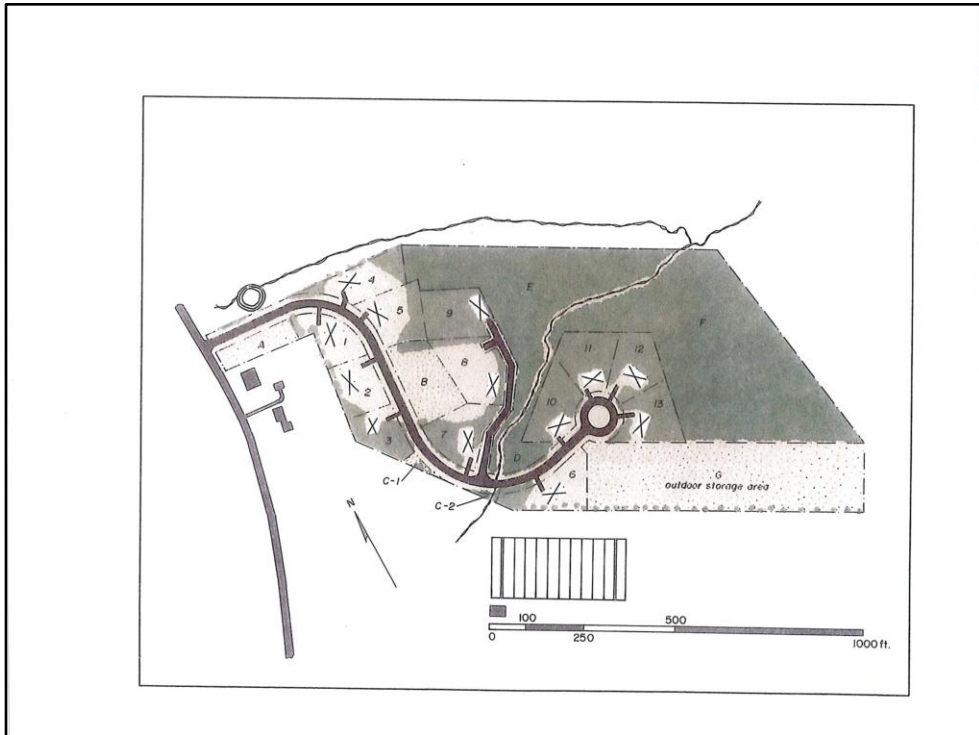
This is a view from further into the “right” side of the parcel looking back towards the LEED certified house on right mentioned with the slide just previous. Note the use of preexisting Christmas trees for buffering.



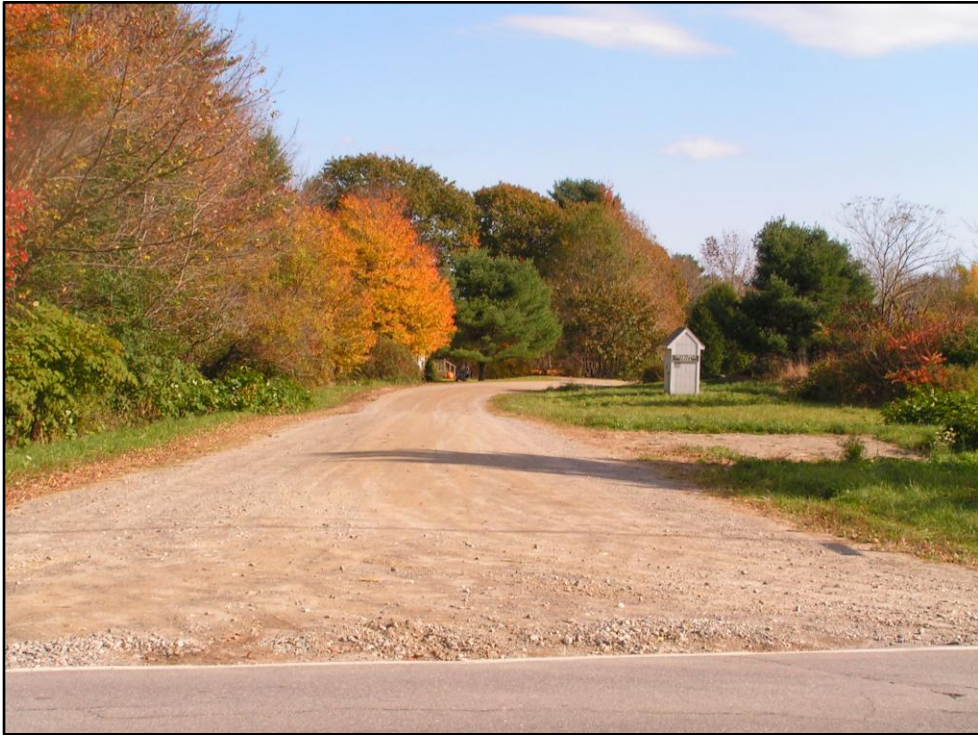
This is a view from a house lot on “left” side of parcel looking across the field toward the farmstead that fronts on Pleasant Hill Road.



Here's another open space subdivision in Freeport called Mitchell Farm Subdivision. The total farm acreage is about 185 acres. 105 acres of the farm is protected by an agricultural and conservation easement managed by Freeport Conservation Trust. The Trust purchased the easement on 105 acres and the landowners donated an easement on 27 additional acres. 62 acres of the farm was developed as an open space subdivision with 42 acres of protected open space and 20 acres with 15 1 acre lots and roads. Agriculture and forest management is allowed on protected land of the farm including protected land of the subdivision.



Crabapple Creek is an open space subdivision in Bremen, Maine that focuses on just affordable housing. The tract is 19.4 acres with 13 very low to moderate income single family homes on 20,000 SF lots. 55% of the tract (10.7 acres) . Building envelopes are limited to 1800 SF (30' by 60'). A homeowners association manages the open space which is protected by protective covenants. Selective cutting is permitted on the protected open space.



This is a view into Crabapple Creek Subdivision from the public road. Note the road is an unpaved gravel road which makes the development more affordable. There's a house left of the road bend that's well buffered.



This is a view at intersection of 2 roads in the subdivision.



This is a view further into the subdivision toward a cul de sac. Note that these are modest homes.



Here is a view between 2 houses looking toward the protected open space that's a field. Subdivision road runs just in front of conifers in background and isn't noticeable from this vantage point.

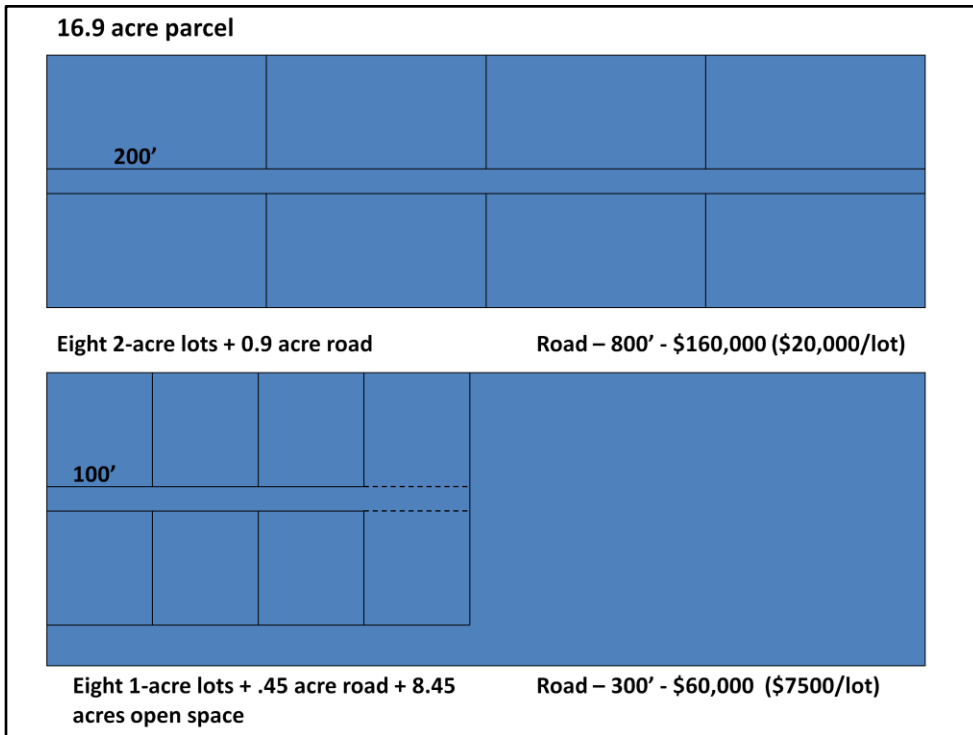


This is a view looking out from the subdivision road toward the public road and a field beyond.

Benefits of Open Space Subdivisions

Economic

- Reduces infrastructure and maintenance costs
- Reduces demand to acquire new public parkland
- Maintains local character



Assumes road is \$200. per ft.. Top of the slide shows a conventional subdivision with eight 2-acre lots and 800' of road which costs \$160,000 or \$20,000 per lot. Bottom of the slide shows an open space subdivision with the same number of lots but half the lot size at 1 acre each. This leaves 8.45 acres of protected open space and only 300' of road is required to service the lots. This length of road costs \$60,000 or \$7,500 per lot. In comparison to the to road costs for the conventional subdivision it costs \$12,500 less per lot for a road in the open space subdivision.

Benefits of Open Space Subdivisions

Environmental

- Protects unique or fragile habitats
- Reduces the pollution impacts of stormwater runoff
- Promotes aquifer recharge
- Provides opportunities to link wildlife habitats
- Conservation values (Beginning with Habitat) are part of the planning process
- Can further goals of open space & community development plans

Benefits of Open Space

Social & Recreational

- Reduces isolation and sprawl
- Enhances New England community character
- Promotes community involvement
- Provides neighborhood trails with an interconnected network of trails and open space

Benefits of Open Space Subdivisions

For Developer & Realtor

- Decreases site development costs by designing with the terrain with less site work for roads, etc..
- Adds valuable amenities that can enhance marketing and sale prices
- Increases resale value; homes in open space subdivisions appreciate faster than homes in conventional subdivisions.

Important Elements of An Effective Open Space Subdivision(OSS) Ordinance

Site Design Criteria

- Locates development so blends with landscape
- Locates development away from primary and secondary conservation areas

Open Space Amount Set Aside

- At least 60% in rural areas

Site design criteria are essential in determining quality of open space by intentionally making significant features part of protected open space. This criterion is essential in protecting the rural character of the site: Locate lots within woodlands or if that's not possible along far edges of open fields preferably adjacent to woodlands (to enable new construction to be absorbed by natural landscape features)

One planning researcher found that rural character breaks down as open space percentage (OSP) in rural area fall below 70%. He found that metro farms require a minimum of 75% OSP and general agriculture (dairy farms, etc.) require a minimum of 85%. Two other researchers found rural areas typically have 60% to 80% OSPs.

Important Elements Of An Effective OSS Ordinance

Mandated Open Space Subdivisions

Existing Features/Conceptual Sketch Plan

- Primary conservation areas
- Secondary conservation areas
- Conceptual layout for house sites

Open space subdivisions (OSS) have not worked as an option to conventional subdivisions even with density bonuses. Mandating OSS is best. Some towns require either OSS or 10 acre lots but the latter approach can promote large lot sprawl.

Primary Conservation Area. Those Unbuildable Areas that include steep slopes (20% or more), hydric soils, wetlands, and surface waters including intermittent streams.

Secondary Conservation Areas. Those areas with significant features that include open fields, high value natural areas, prime USDA agricultural soils, mature woodlands, stone walls, tree lines, existing historic structures, scenic views into and out of the property, trails and hilltops.

Important Elements Of An Effective OSS Ordinance

Contiguous Open Space

- At 75% in a single block

Flexibility In Lot Size, Shape and Setbacks

Same Number of Allowable Lots/Density Neutral

Requiring most of protected open space to be contiguous often makes it more useful for agriculture, forest management, wildlife habitat, etc.

Allowing same number of lots in an open space subdivision as in a conventional subdivision makes this approach fair to developers.

Important Elements Of An Effective OSS Ordinance

Predictable and Fair Review

- Educational handouts for developers
- Don't require two comparative site plans

18' Roads and 12' Common Driveways Allowed

Building Envelopes and Treed Buffers/Screens

- Provides privacy
- Protects rural character

Narrower roads and use of common driveways leaves less of a footprint on environment and is less costly.

A primary function of green perimeter strip of each lot especially along backyard sidelines and rear lines is to maintain privacy. Native vegetation should be required because its more durable and helps avoid a suburban appearance.

Important Elements Of An Effective OSS Ordinance

**Common Open Space
Management/Maintenance**

**Linkage to Open Space Blocks and/or Network
Adjoining Subdivision Tract**

Passive Recreation

Passive recreation would include walking, hiking, cross country skiing, horseback riding, bird watching, picnicking. Passive recreation is typically allowed in much of designated open space.

Important Elements of An Effective OSS Ordinance

Active Recreation

Four Step Design Process

Future Subdivision

Active recreation requires equipment and takes place at prescribed sites and includes tennis and other court games, swimming, baseball and other field sports and playground activities. Active recreation usually limited to one site, encompassing no more than one acre of the designated open space and screened from view in rural districts or areas.

Step One: Identify Conservation Areas.

Step Two: Locate House Sites.

Step Three: Align Streets, Common Driveways and Trails.

Step Four: Identify Lot Lines and Building Envelopes.

Future Subdivision: *A reason for this provision is that a certain percentage of the whole tract must be set aside as open space when a major subdivision is proposed. Primary conservation areas and secondary conservation areas from the whole tract must be incorporated in designated open space. If lots were sold in a minor subdivision prior to a revised proposal for a major subdivision on the same parcel it would invariably be impossible to include the primary and secondary conservation areas, which could be present in those sold lots. Thus a requirement in the ordinance could not be met. This provision is included so that piecemeal submissions of minor subdivisions to avoid submission as a major (open space) subdivision can't happen thereby helping protect primary and secondary conservation areas.*