

Appendix E: Implementation Tools

Concord Township Comprehensive Plan Update

Appendix E

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Key Design Elements of Traditional Towns and Traditional Neighborhoods

Unlike conventional suburban development patterns (with separated land uses, deep setbacks, no on-street parking, cul-de-sacs, and no sidewalks), Traditional Towns and Traditional Neighborhoods promote a more compact, integrated, and sustainable development pattern, and have the following Key Design Elements:

Institutional "Anchor" in the Town Center/

Neighborhood Center: features a Park, Meeting Hall, Corner Store, Post Office, Library, Town Hall, Community Center, Train Station, Theatre, or like use; enjoys most success along a "main street"; provides a place for special events

Service Area and Size: features a ¼ mile (5 to 10 minute walk) from the Neighborhood Center to the edge; creates 40 to 200 acres for each neighborhood

Mix of Uses: combines Residential, Institutional, Recreational, Commercial, Limited Industrial, and open space uses in a diversified but seamless arrangement; also combines first floor retail with second floor apartments and/or offices in the town/neighborhood center; encourages live-work units

Park, Open Space, Countryside: creates the green, square or park to help "anchor" the Town/Neighborhood Center; a system of "green spaces" ecologically balanced with the built environment and distributed within the neighborhood; includes a "green edge" of open space to help shape neighborhoods and towns; forms the countryside between towns and other places

Network System of Interconnecting

Streets: organizes a block and pattern of lots; integrates with lanes, alleys, neighborhood streets, avenues, and boulevards; links to pedestrian and other transportation systems; streets and street walls create outdoor rooms; street vistas terminate with public space, landmark structures or civic buildings;

On-Street/Parallel Parking: provides a separator between vehicular and pedestrian traffic; utilizes cartway as an "aisle"; (with "overflow" parking to the rear or side of buildings); promotes effective "traffic calming" by slowing down the speed of vehicles, especially along narrower streets

Lanes (Alleys): allows for preservation of frontage streetscape; moves vehicular access to detached garages in the rear; provides opportunities for access to an accessory apartment (granny flats) to the rear, or for deliveries; provides access for utilities and staging construction

Shallow Setbacks: helps to create an "outdoor room" sense of space, with 2 to 4 story buildings, typically from 60 to 80 feet across from one another on both sides of the street; promotes a human scale relationship for the pedestrian as part of the public realm; buildings placed at a "build-to" line create a Street Wall (with 4 to 8 foot offset)

Building Types: focuses on buildings designed by type, not solely by function, to allow for adaptations and changes in use (e.g. from dwelling, to shop, to work place, to institution); most appropriate when an expression of regional/local style

Front Porch/Portico/Colonnade: serves as transition element from the private realm of the building to public realm of the sidewalk and street; provides shade; promotes a finer, more ornamental "texture" of the building; creates a cozy space to sit, read, relax; provides outdoor room to greet and socialize with neighbors

Sidewalks/Crosswalks/Pedestrian Paths/

Walkways: serves to link uses, buildings and lots together; accommodates a healthy pedestrian circulation network; provides close to home opportunities for exercise; enhances wayfinding and an appreciation of the neighborhood/place

Shade Trees: provide (as street trees) the canopy/overhead plane to help create an "outdoor room"; and as shade trees, provides an "old shade" character

Other Vertical Infrastructure: includes fences, hedges, walls, street lamps, benches, gazebo, pavilion, pergola, monuments, or like features

Tool #9 TRADITIONAL NEIGHBORHOOD DEVELOPMENT

<i>Applicability to Landscapes</i>			
Natural	Rural	Urban	Suburban
○	●	●	⊗

- Most Applicable
- ⊗ Somewhat Applicable
- Not Applicable

Description

Traditional Neighborhood Development (TND) is a design technique that uses historic development patterns found in American towns and applies it to new development projects. Unlike most conventional subdivisions found throughout the County, TND plans development in a compact form with a mix of uses into a village-type setting. As such, the historic characteristics found in turn-of-the-century towns can be replicated into a "pedestrian-friendly" design pattern that reduces land consumption and preserves permanent open space. Existing historic structures can also be incorporated into the TND design.

The TND pattern can be used in rural landscapes in the form of new or expanded hamlets and villages, and within the urban landscape as new neighborhoods that respect and replicate the surrounding street and lot pattern.

The TND option is best implemented through the municipal zoning ordinance and the adoption of an official map which identifies the layout of streets, alleys, parks, and other public spaces. (See Tool #12, Official Map.)

Advantages

Traditional neighborhood development provides the following benefits:

- Reduces the amount of infrastructure needed such as sewer, water and roads;
- Broadens the choices to the consumer in terms of housing types and styles, lot size and neighborhood setting;
- Provides for a wider, diversified housing market;
- Reduces dependence on the automobile;
- Encourages pedestrian movement;
- Reinstates turn-of-the-century town patterns, characteristic of Chester County's heritage;
- Creates open space and recreation opportunities both within and surrounding the development;
- Promotes opportunity for public transit services through compact development;
- Provides a sense of community.

Limitations

The following limitations are associated with traditional neighborhood development:

- Requires significant revision to local ordinances to allow for TND type development;
- Municipal acceptance of a compact, mixed use pattern may be difficult to achieve;
- TND pattern, while the traditional pattern in Chester County, may conflict with our contemporary sprawl pattern;
- TND project requires a master, coordinated plan;
- Investment bankers may be hesitant to finance projects which do not use conventional design.

Process

Municipalities considering encouraging TND's should follow these steps:

Community Policy and Support

The municipality needs to review its comprehensive plan to determine whether the principles of TND are supported by the community. Policy should be established in the municipality to support compact development and the other characteristics of TND. Policies supporting open space preservation and villages are consistent with TND projects.

Community Profile

The municipality needs to determine whether the TND pattern of development is appropriate in terms of community character and services. Does traditional development exist in the municipality or is development dominated by suburban sprawl? Are there locations in the municipality that can accommodate compressed development without conflicting with surrounding conventional development? Is there access to public sewer and water facilities for the site(s)? Will the road network support a compressed development pattern? Are mass transit services nearby?

Ordinance Review

Once the above two steps have been completed, the municipality should evaluate current zoning and subdivision regulations to determine what stumbling blocks exist which preclude TND's from occurring. Can small lots be created? Is a mix of uses allowed? Conventional zoning typically discourages the compact, mixed development found in TND patterns. Conventional subdivision ordinances typically discourage the type of interconnected road network and alley system associated with TND patterns.

Zoning Ordinance Revision

Flexibility and simplicity are the keys to the success of TND projects. The TND option should be permitted by right with specific standards for uses, density and design. Lots as small as 7,500 square feet should be permitted. Standards such as "to build lines" should be inserted to move structures closer to the internal road system in order to define street space. The "Issues to Consider" which follow should be addressed in the ordinance.

Ordinance Mapping

It is important to determine acceptable locations for TND projects. They should be near, but not necessarily front, major highways and the collector road network. TND's may be permitted either by use of a fixed zoning district or by use of a "floating" district which allows TND's to locate wherever the siting criteria is met.

Subdivision Ordinance Revision

Revisions may be needed to allow for on-street parking, street widths as narrow as 18 feet, sidewalks and paths, as well as the opportunity for alleys.

Issues to Consider

Key Design Elements

Traditional neighborhoods share several common design features. The following elements have been found to be prominent in the various towns and villages researched by Thomas J. Comitta, AICP, a local Town Planner. These principles should be considered when designing TND ordinance language as well as when the municipality reviews a development proposal using TND design standards.

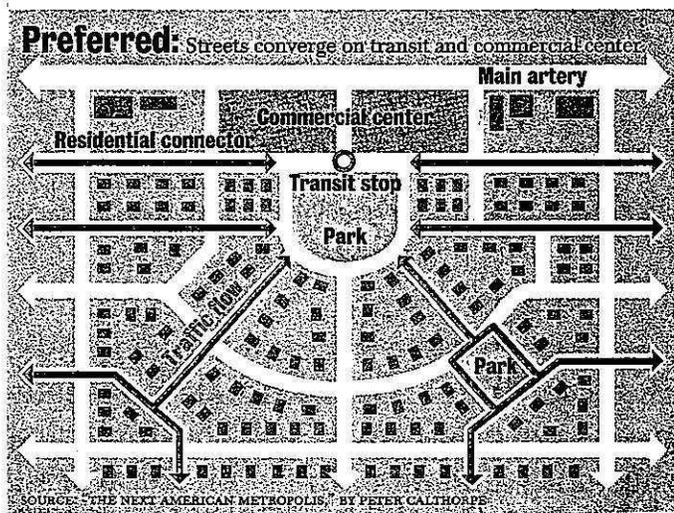
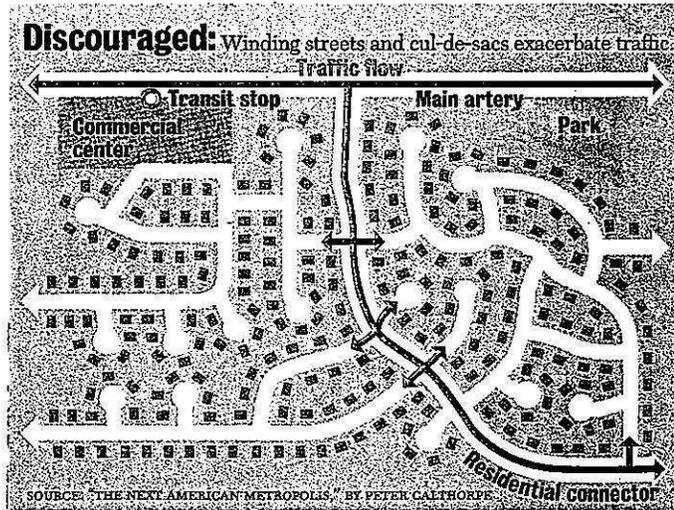
TRADITIONAL TOWNS & TRADITIONAL NEIGHBORHOODS: KEY DESIGN ELEMENTS

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Unlike conventional suburban development patterns (with separated land uses, deep setbacks, no on-street parking, cul-de-sacs, and no sidewalks), Traditional Towns and Traditional Neighborhoods promote a more sustainable development pattern, and have the following Key Design Elements:

- Institutional "Anchor" in the Town Center/Neighborhood Center features a park, meeting hall, corner store, post office, town hall, library, train station, Theater, or like use; enjoys most success along a "main street"; provides a place for special events
- Service Area and Size features a 1/4 mile (5 to 10 minute walk) from the Neighborhood Center to the edge; creates 40 to 200 acres for each neighborhood
- Mix of Uses combines residential, institutional, recreational, commercial, and limited industrial uses, with open space uses in a seamless arrangement; also combines first floor retail with second floor apartments in the town/neighborhood center
- Park, Open Space, Countryside creates the square or central park to help "anchor" the Town/Neighborhood Center; small internal "green spaces" surrounded by dwellings promotes neighborliness; a system of "green spaces" focused on the pedestrian; includes a "green edge" with open spaces (and possibly agricultural land) to help shape towns or neighborhoods and provide a balanced pattern to the fabric of the community

Network System of Streets



- Network System of Streets organizes a block and pattern of lots; integrates with alleys, lanes, neighborhood streets, avenues, and boulevards; promotes through traffic; street vistas terminate with public space or landmark buildings
- On-Street/Parallel Parking provides a separator between moving traffic and sidewalk access by pedestrians; utilizes cartway as an "aisle" (with "overflow" parking to the side or rear of buildings); promotes effective "traffic calming" especially along narrower streets
- Service Lanes/Alleys allows for preservation of frontage streetscape; moves vehicular access to detached garages in the rear; provides opportunities for access to an accessory apartment to the rear, or for deliveries; provides access for staging construction
- Shallow Setbacks helps to create the "outdoor room" sense of space, with buildings from 60 to 80 feet across from one another on both sides of the street; promotes a human scale relationship for the pedestrian in an outdoor space; buildings placed at a "build-to" line to create a street wall (with up to 4 foot offset)
- Building Types focuses on buildings designed by type, not solely by function, to allow for adaptations and changes in use (e.g. from dwelling, to shop, to work place, to institution); most appropriate when an expression of regional/local style
- Front Porch/Portico/Colonnade serves as transition element from the private realm of the building to public realm of the sidewalk and street; provides shade; promotes a finer, more ornamental "texture" of the building; creates a cozy space to sit, read, relax; provides outdoor room to greet and socialize with neighbors
- Sidewalks/Crosswalks/Pedestrian Paths/Walkways serves to link uses, buildings and lots together; accommodates a safer pedestrian circulation network; provides close to home opportunities for exercise; enhances wayfinding and an appreciation of neighborhood/neighbors
- Shade Trees provide (as street trees) the canopy/overhead plane to help create an "outdoor room"; and as shade trees, provides an "old shade" character
- Other Vertical Infrastructure includes fences, hedges, walls, pergola, gazebo, pavilion, street lamps, benches, clock tower, or like features

Typical Zoning Regulations

Traditional neighborhood development standards contain the following typical standards. The actual numbers used must reflect the character and historic pattern of the community.

Qualifying Criteria	
Tract Size (Minimum)	20 to 200 acres
Siting Criteria	Specified zoning district(s) Specified highway classification (access)
Submission Data	Master development plan
Minimum open space retained	35 to 50 percent

Road system	Network pattern of connecting streets
Lot Pattern (typical)	Double frontage with rear alley access
Lot Dimensions	
Lot Size (minimum)	5,500 to 8,500 sq. ft.
Lot Width (minimum)	40 to 85 ft.
Lot Depth (typical)	100 to 150 ft.
Lot Coverage (maximum)	40 to 60 percent
Yard Dimensions	
Build-To Line (mandatory)	15 to 30 ft.
Rear Yard (minimum)	
Principal building	20 to 35 ft.
Garage from alley	8 to 20 ft.
Side Yard (minimum)	0 to 20 ft. (Possible zero lot line option)
Street Dimensions	
Street Width (typical)	
On-street parking	28 to 38 ft./33 to 50 ft. right-of-way (two 10 to 11 ft. lanes + one or two parking lanes)
Off-street parking	22 to 24 ft./33 to 50 ft. right-of-way
Alley Width (minimum)	14 to 16 ft.
Sidewalks (typical)	
Residential	4-5 ft. all weather surface
Commercial	6-12 ft. all weather surface

Practical Applications

Municipalities Using the Technique. Several Chester County municipalities have adopted TND language within their zoning ordinances:

<u>Municipality</u>	<u>Applicable Zoning District/Standards</u>
Charlestown Township	(H) Historic District- Article VII
West Chester Borough	(NC-1) Traditional Neighborhood Development Option, Section 112-15
West Fallowfield Township	(V) Village District- Article 600

Development Projects Using the Technique. Several developments in Chester County and across the country have incorporated TND principles:

<u>Municipality</u>	<u>Development</u>
Elverson Borough, Chester County	Summerfield
Uwchlan Township, Chester County	The Gardens at Eagleview
Gaithersburg, Maryland	Kentlands
Memphis, Tennessee	Harbortown

Mansfield, New Jersey	Crystal Lake
Beaufort, North Carolina	New Pointe
Chicago, Illinois	Prairie Crossing
Portland, Oregon	East Sunnyside

Sample Ordinance Standards. Sample ordinance standards for traditional neighborhood development are located in Part II of the Handbook. The sample is an adaptation of the West Chester Borough zoning language.

Legal Basis

The Pennsylvania Municipalities Planning Code, Act 247, enables municipalities to establish land use controls such as zoning and subdivision ordinances which can accommodate traditional neighborhood development patterns. The Official Map can establish the street network and infrastructure needed for this kind of development pattern.

Related Tools

<u>No.</u>	<u>Tool</u>	<u>Relationship</u>
1	Community Design Program	Establishes the pattern of development
2	Growth Boundaries	Defines development within a boundary
4	Open Space/Cluster Development	Can be used within the TND program
6	Rural Center Zoning District	Defines development pattern in centers
8	Urban Center Zoning District	Defines development pattern in towns
10	Transferable Development Rights	Potential "receiving" area
11	Transit-Oriented Development	Promotes pattern that can support transit
12	Official Map	Can establish street and lot pattern
46	Village Protection Program	Respects historic development pattern
57	Residential Street Design	Streets are scaled to development
58	Pedestrian/Bikeway Facility Standards	Pedestrian-oriented development

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Sutro, Suzanne, Reinventing the Village, PAS Report No. 430, American Planning Association, Chicago, IL, 1990.

Unwin, William, Town Planning in Practice, Princeton Architectural Press, 1994, reprint.

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Tool #10 TRANSFERABLE DEVELOPMENT RIGHTS

<i>Applicability to Landscapes</i>			
Natural	Rural	Urban	Suburban
●	●	●	●

- Most Applicable
- ⊗ Somewhat Applicable
- Not Applicable

Description

Transferable Development Rights is a zoning option that allows conservation and development to coexist within a municipality. The technique directs growth to preferred locations through the sale and purchase of development rights. The option establishes a program by which development rights are established for a given piece of land and which can be separated from the title of that property. These rights can be sold on the open market in exchange for permanently preserving the land. The option establishes an area to be protected, known as the "sending area" and an area to accommodate growth, known as the "receiving area".

While the TDR program is a part of the municipal zoning ordinance, the actual buying and selling of development rights remains with the property owner. Therefore, the value of each development right is controlled by the open market, not the municipality. The TDR option offers one of the most equitable systems for preserving open space and agricultural lands by compensating the owner of preserved land, while guiding the growth of development centers through the allowance of increased density.

A municipality should consider using this technique if they can answer yes to several of the following questions:

- Does the comprehensive plan have a policy for conservation and concentrated development?
- Are there areas or resources in the community in need of protection/conservation?
- Is agriculture a significant land use in the municipality?
- Is there a logical area to guide development towards (i.e. public sewer and water, collector road, etc.)?
- Does current zoning lend itself to a TDR program (i.e. distinct conservation and development districts)?
- Is the municipality adjacent to a borough or developed municipality?

Advantages

The use of transferable development rights provides the following advantages:

- Provides opportunity to implement comprehensive plan objectives;
- Preserves prime farm land;
- Creates a municipal open space network;
- Conserves natural and cultural resources;
- Links development location and infrastructure;
- Promotes innovative sewage treatment techniques;
- Promotes innovative stormwater management techniques;
- Removes the taking issue associated with conservation programs;
- Lowers infrastructure costs;
- Establishes a sense of community.

Limitations

The following limitations are associated with the use of TDR's:

- Hesitation to pursue this option due to unfamiliarity and the perceived complexity and uniqueness of a TDR program;
- Program requires constant monitoring by some entity;
- Transfer is limited to within a single municipality unless joint zoning is adopted;
- Requires the municipality to identify and commit to an area of growth.

Process

Several steps are involved in developing a successful TDR program. As more and more municipalities develop a TDR program, there is a need to establish a consistent process throughout Chester County in order to effectively implement the County Plan.

Establish Objectives of the Program

As the first step, the municipality needs to generally define what is to be preserved by a TDR program and where growth is to be guided. The program can serve agricultural or resource protection objectives. Defining these objectives will dictate how the program is developed and the ordinance is written. The municipal comprehensive plan must identify these objectives in order to support a TDR program.

Identify Sending Areas

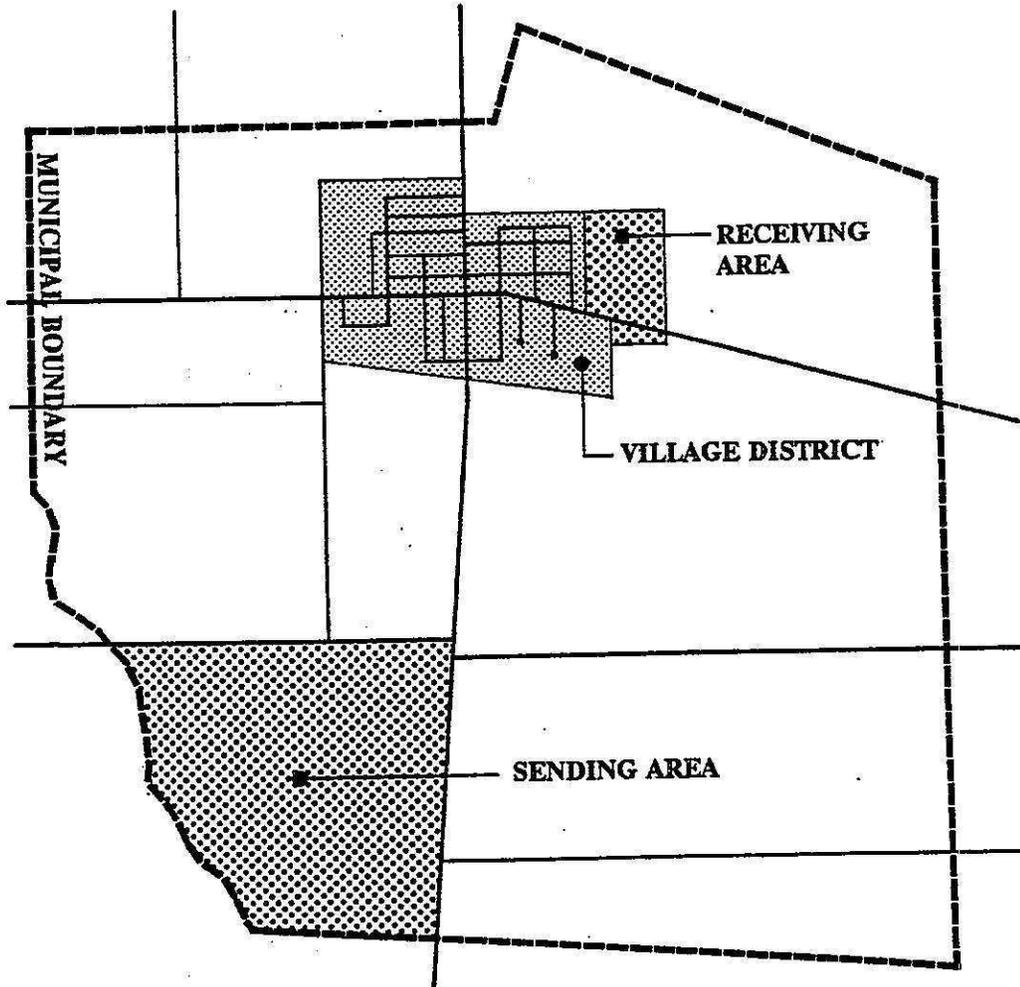
The areas of the municipality to be preserved must be identified. (See Figure 10-1.) Resource mapping is needed for this step. If a large area is to be preserved, the corresponding receiving area will need to be larger or have a higher density so that the demand for development rights remains marketable.

Identify Receiving Areas

The limits of the area to receive development rights must also be defined. (See Figure 10-1.) The size of the receiving area is dependent upon the size of the sending area. It is important to establish a "market" for these rights by having a smaller receiving area than the corresponding sending area. Several municipalities have established the ratio of sending to receiving areas at approximately 2:1.

After development rights have been transferred, the receiving area will have a higher development density than would otherwise occur using conventional zoning.

Figure 10-1
Sending and Receiving Areas



Source: Chester County Planning Commission, 1997

Allocation of Development Rights

This is perhaps the most important step in the process. The methodology established will define how the program works and whether it will be used by the development market. It is extremely important that the municipality maintain a balance between receiving and sending area development rights. A "build-out" scenario helps in this calculation. The formula for allocating rights needs to be established and the total number of rights should be assigned to each parcel within the sending area. Further, a decision needs to be made as to whether a bonus incentive will be offered to make the use of TDR's more attractive (see sample ordinance in Part II).

Prepare TDR Provisions

The ordinance must define the sending and receiving areas, how rights are calculated, transferred and recorded. It must also define how the program is to be administered and how the use of TDR's is used within the development process. The provisions must be included within the municipal zoning ordinance, as required by the Municipalities Planning Code, Section 603(c).

Issues to Consider

In addition to the questions listed in the "Description", several issues need to be addressed with this technique. Analysis of several existing TDR programs in the region has shown several common characteristics to successful TDR programs:

Preservation goals must be clearly spelled out. Most programs identify the desire to preserve either prime farmland or designated open space and natural resource areas.

Receiving areas must be served by infrastructure. Many of the TDR programs have identified receiving areas that are currently or programmed to be served by public sewer and water service. Such facilities allow the desired compressed pattern of development needed to conserve land.

Common ratio of sending to receiving area. Most successful programs have established a sending to receiving ratio of development rights at 2:1. This allows for a wide market for the development rights. The down side to such a ratio is the potential for continued sprawl by not targeting specific areas for concentrated development. The common goal in these calculations is to establish an incentive to sell rights.

Location of receiving areas. Many TDR programs have located their receiving areas adjacent to boroughs and built-up areas or next to highways that serve as collector roads. This selection targets growth to developing areas. Alternative locations need to be identified in municipalities where no urbanization has occurred. Analysis has shown that it is unwise to arbitrarily target historic villages as receiving areas. Their pattern of development and open space edge can be quickly lost should intensive development be permitted. There may be, however, opportunity to guide growth to the edge of villages and centers as identified within the County plan, when properly designed to reflect the traditional pattern. New cross-road villages may also be appropriate.

Establish a maximum density for receiving areas. A maximum density needs to be established in order to guarantee community character is maintained with the introduction of a TDR program. Excessive density can disrupt this character and raise public protest over the program. Many of the programs analyzed limited the amount of density increase within the receiving areas to 30%. The actual figure should be designed according to the municipality and the location of the receiving area. Several municipalities have revisited their zoning once the TDR program was established and have reduced the base density within the "receiving areas" so that previous densities can only be obtained through the transfer of development rights. Clearly, the larger the density difference between the sending and receiving areas, the more likely the program is to succeed.

Maintain a clear and simple process. A common argument with the use of a TDR program is its apparent complexity both in terms of its construction and its administration. An effective program requires clear and concise language which allows the reader to understand the program and his/her

options. Washington Township, Berks County, has developed a work sheet by which a landowner can calculate the total development rights.

Municipal administration must be available to manage the program. Successful TDR programs have full-time staff to help monitor the TDR program, or have retained professional services to monitor the program. The program requires assisting property owners with calculating rights and their options, tracking the transfer and recording of rights and deed restrictions, and monitoring development plans to make certain that the TDR program is being properly applied. The community's leadership must be committed to the TDR concept.

Development rights must be allocated up front. Once the TDR program has been constructed, development rights must be allocated to all sending area properties. These rights are recorded as a miscellaneous deed with the County Recorders Office.

Infrastructure must be in place. In order to support receiving areas for development, municipalities must be willing to provide or allow for alternative sewer and water facilities.

Subdivision Standards. A standard set of regulations is needed regarding the allocation of development rights upon any subsequent subdivision of parcels.

For more information on this subject, refer to the Montgomery County Planning Commission publication, Guidebook for Creating a Municipal TDR Program (1995).

Practical Applications

Two TDR programs serve as models for municipalities considering this technique:

Rural Landscape example. Washington Township, Berks County, serves as a model for the rural landscape. It is a simplistic program designed to preserve a designated agricultural area in a rural community. The Township has also developed a work sheet that aids the landowner in calculating development rights.

Suburban Landscape example. Manheim Township, Lancaster County, has developed a TDR program in a suburban landscape. Designated receiving areas are planned to be served by public sewer and water service, whereas sending areas are not.

Municipalities Using the Technique

<u>Municipality</u>	<u>County</u>	<u>Municipality</u>	<u>County</u>
Washington T.	Berks	Chanceford T.	York
Buckingham T.	Bucks	Codorus T.	York
Warrington T.	Bucks	E. Hopewell T.	York
Birmingham T.	Chester	Lower Chanceford T.	York
E. Bradford	Chester	Shrewsbury T.	York
E. Nantmeal T.	Chester	Manheim T.	Lancaster
London Grove T.	Chester	Warwick T.	Lancaster
West Bradford T.	Chester		

Sample Ordinance Standards - Sample ordinance standards for transferable development rights are located in Part II of the Handbook.

Legal Basis

The Pennsylvania Municipalities Planning Code, Act of 1968, P.L. 805, No. 247 as reenacted and amended, Section 619.1 is the enabling legislation allowing the use of TDR's. The Municipalities Planning Code was revised on December 14, 1992 (P.L. 815, No. 131) to permit TDR programs to occur on a multi-municipal basis when a joint zoning ordinance is adopted. This revision has given municipalities the option to direct growth on a larger geographic scale and further separate protection areas from areas targeted for development.

Case Law: In 1978, the U.S. Supreme Court upheld New York City's TDR program in *Penn Central Transportation Co. v. New York City* 57 L.Ed 2d 631 (1978). This affirmation recognized the TDR program as a mitigating tool in takings issues.

Related Tools

<u>No.</u>	<u>Tool</u>	<u>Relationship</u>
2	Growth Boundaries	Defining the limits of growth
6	Rural Center Zoning	Potential receiving area
7	Suburban Center Zoning	Potential receiving area
8	Urban Center Zoning	Potential receiving area
12	Official Map	Defining road and lot pattern in receiving area
17	Wetlands Management	Potential sending area
18	Floodplain Management	Potential sending area
19	Vegetation Management	Potential sending area
20	Slope Management	Potential sending area
25	Scenic River Overlay District	Potential sending area
28	Greenways	Potential sending area
34	Community Sewage Systems Options	Infrastructure planning for receiving area
36	Water Resources Sustainability	Helps relate development to aquifers
39	Agricultural Preservation Programs	Potential sending area
40	Effective Agricultural Zoning	Potential sending area
55	Transit-Oriented Development	Potential receiving area
56	Interchange Overlay Zoning	Potential receiving area
59	Scenic Road Overlay District	Potential sending area

References

Montgomery County Planning Commission, Guidebook for Creating a Municipal TDR Program, Norristown, Pa. 1995.

Montgomery County Planning Commission, Save Your Landscape by Using TDR's, Norristown, Pa. 1995.

2 Protecting Open Space Networks Through Conservation Planning

Although many communities have adopted either Comprehensive Plans or Open Space Plans containing detailed inventories of their natural and historic resources, very few have taken the next logical step of pulling together all that information and creating a *Map of Potential Conservation Lands*.

Such a map is vitally important to any community interested in conserving an interconnected network of open space. The map serves as the tool which guides decisions regarding which land to protect in order for the network to eventually take form and have substance.

A *Map of Potential Conservation Lands* starts with information contained in the community's existing planning documents. The next task is to identify two kinds of resource areas. *Primary Conservation Areas* comprise only the most severely constrained lands, where development is typically restricted under current codes and laws (such as wetlands, floodplains, and slopes exceeding 25%). *Secondary Conservation Areas* include all other locally noteworthy or significant features of the natural or cultural landscape—such as mature

woodlands, wildlife habitats and travel corridors, prime farmland, groundwater recharge areas, greenways and trails, river and stream corridors, historic sites and buildings, and scenic viewsheds. These *Secondary Conservation Areas* are often best understood by the local residents who may be directly involved in their identification. Usually these resource areas are totally unprotected and are simply zoned for one kind of development or another.

A base map is then prepared on which the *Primary Conservation Areas* have been added to an inventory of lands which are already protected (such as parks, land trust preserves, and properties under conservation easement). Clear acetate sheets showing each kind of *Secondary Conservation Area* are then laid on top of the base map in an order reflecting the community's preservation priorities (as determined through public discussion).

This overlay process will reveal certain situations where two or more conservation features appear together (such as woodlands and wildlife habitats, or farmland and scenic

viewsheds). It will also reveal gaps where no features appear.

Although this exercise is not an exact science, it frequently helps local officials and residents visualize how various kinds of resource areas are connected to one another, and enables them to tentatively identify both broad swaths and narrow corridors of resource land that could be protected in a variety of ways.

Figure 3 shows a portion of a map prepared for one Chester County township which has followed this approach.

The planning techniques which can best implement

the community-wide *Map of Potential Conservation Lands* are Conservation Zoning and Conservation Subdivision Design. These techniques which work hand in hand are described in detail below. Briefly stated, conservation zoning expands the range of development choices available to landowners and developers. Just as importantly, it also eliminates the option of creating full-density "checkerboard" layouts that convert all land within new subdivisions into houselots and streets.

The second technique, "conservation subdivision design," devotes half or

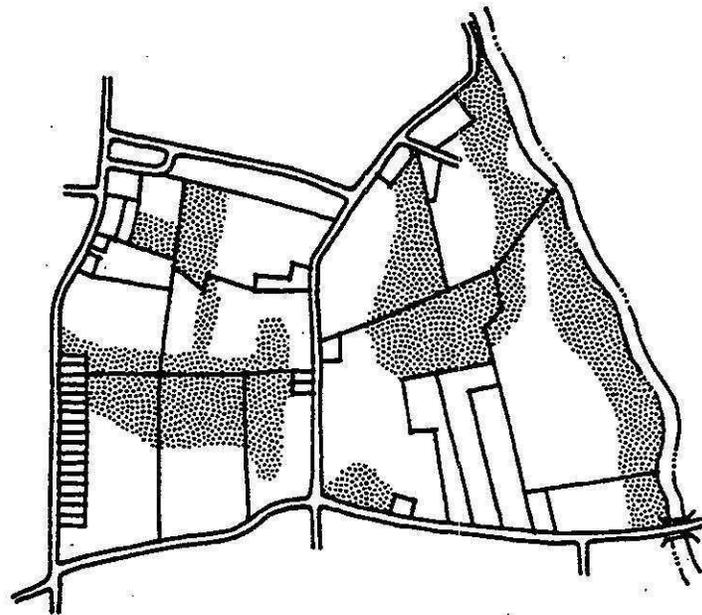


Figure 3
Part of a *Map of Potential Conservation Lands* for West Manchester Township, York County. West Manchester's map gives clear guidance to landowners and developers as to where new development is encouraged on their properties. Township officials engaged a consultant to draw, on the official tax parcel maps, boundaries of the new conservation lands network as it crossed various properties, showing how areas required to be preserved in each new development could be located so they would ultimately connect with each other. In this formerly agricultural municipality the hedgerows, woodland remnants, and the riparian buffer along the creek were identified as core elements of the conservation network.

more of the buildable land area within a residential development as undivided permanent open space. Not surprisingly, the most important step in designing a conservation subdivision is to identify the land that is to be preserved. By using the community-wide *Map*

of Potential Conservation Lands as a template for the layout and design of conservation areas within new subdivisions, these developments help to create an interconnected network of open space spanning the entire municipality.

Figure 4 shows how the open space in three adjoining subdivisions has been designed to connect, and illustrates the way in which the *Map of Potential Conservation Lands* can become a reality.

Figure 5 provides a bird's-eye view of a landscape where an interconnected network of conservation lands has been gradually protected through the steady application of conservation zoning techniques and conservation subdivision design standards.

Figure 7: "Option 1"). Another full-density option could include a 25 percent density bonus for preserving 60 percent of the unconstrained land (Figure 8: "Option 2"). Municipalities might also consider offering as much as a 100 percent density bonus for protecting 70 percent of that land (Figure 11: "Option 5").

The main reason subdivisions typically consist of nothing more than houselots and streets is that most local land-use ordinances ask little, if anything, with respect to conserving open space or providing neighborhood amenities (see Figure 6).

Communities wishing to break the cycle of "wall-to-wall houselots" need to consider modifying their zoning to actively and legally encourage subdivisions that set aside at least 50 percent of the land as permanently protected open space and to incorporate substantial density disincentives for developers who do not conserve any significant percentage of land.

Following this approach, a municipality would first calculate a site's yield using traditional zoning. A developer would then be permitted full density *only* if at least 50 percent of the buildable land is maintained as undivided open space (illustrated in

It is noteworthy that the 36 village-like lots in Option 5 occupy less land than the 18 lots in Option 1, and that Option 5 therefore contributes more significantly to the goal of creating community-wide networks of open space. The village-scale lots in Option 5 are particularly popular with empty-nesters, single-parent households, and couples with young children. Its traditional layout is based on that of historic hamlets and villages in the region, and new developments in this category could be controlled as Conditional

Figure 4 shows how the open space in three adjoining subdivisions has been designed to connect, and illustrates the way in which the *Map of Potential Conservation Lands* can become a reality.

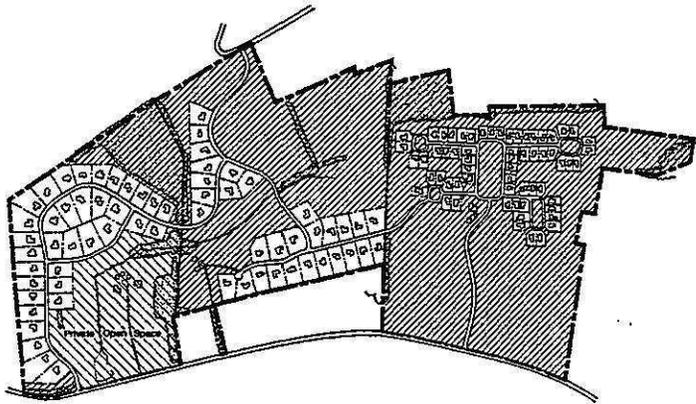


Figure 4
The conservation lands (shown in gray) were deliberately laid out to form part of an interconnected network of open space in these three adjoining subdivisions.

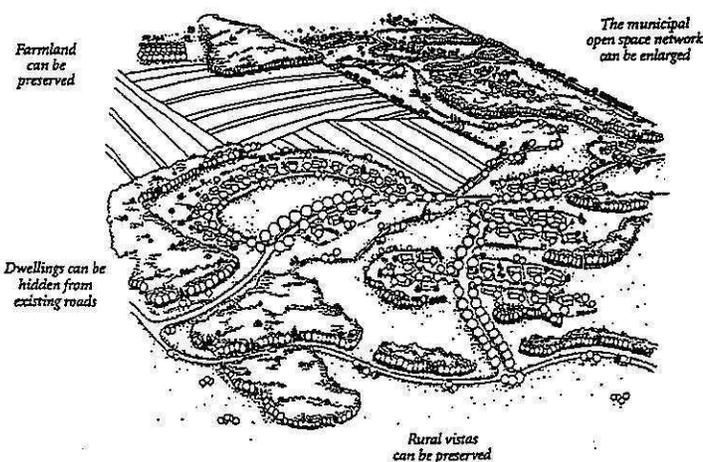


Figure 5
This sketch shows how you can apply the techniques described in this booklet to set aside open space which preserves rural character, expands community parkland and creates privacy for residences. (Source: Montgomery County Planning Commission)

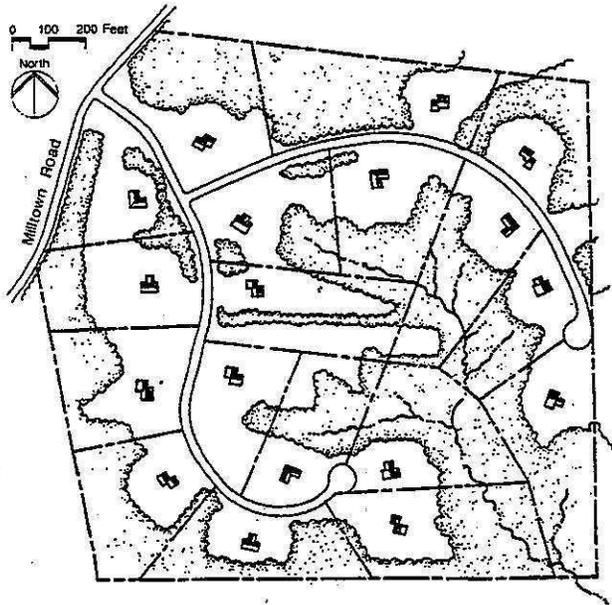


Figure 6 YIELD PLAN

The kind of subdivision most frequently created in Pennsylvania is the type which blankets the development parcel with houselots, and which pays little if any attention to designing around the special features of the property. In this example, the house placement avoids the primary conservation areas, but disregards the secondary conservation features. However, such a sketch can provide a useful estimate of a site's capacity to accommodate new houses at the base density allowed under zoning—and is therefore known as a "Yield Plan."

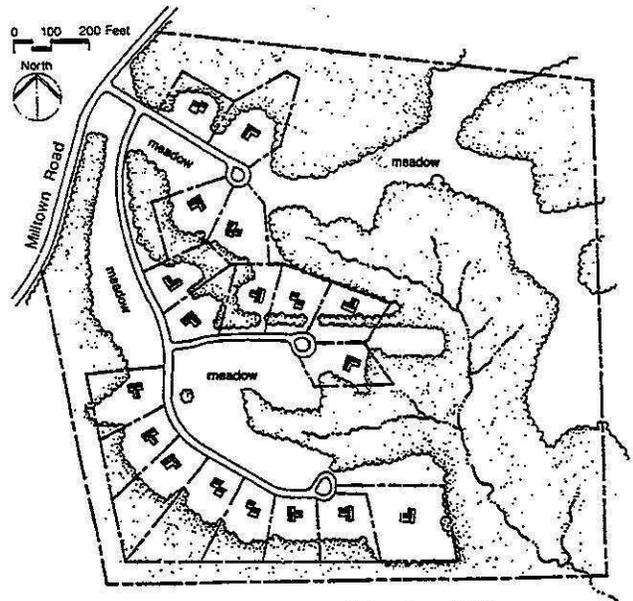


Figure 7 OPTION 1
Density-neutral with Pre-existing Zoning
18 lots
Lot Size Range: 20,000 to 40,000 sq. ft.
50% undivided open space

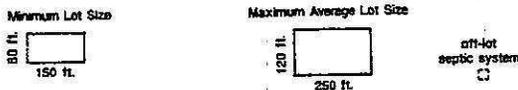
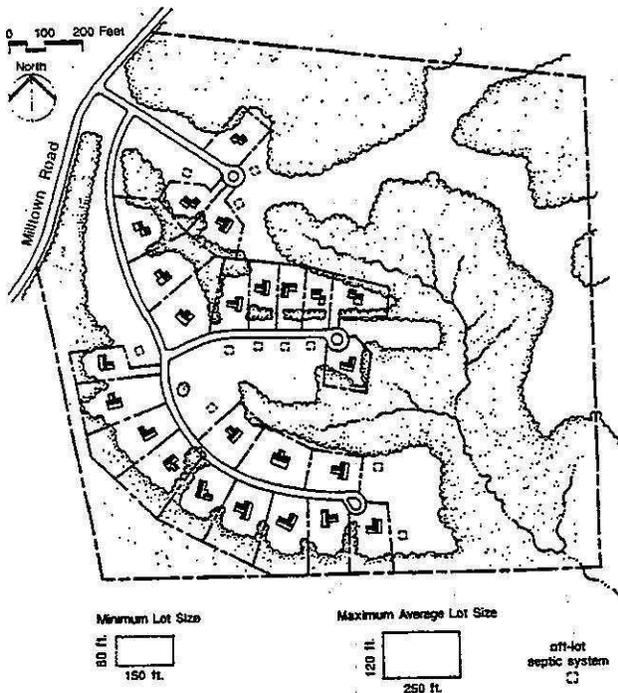


Figure 8 OPTION 2
Enhanced Conservation and Density
24 Lots
Lot Size Range: 12,000 to 24,000 sq. ft.
60% undivided open space

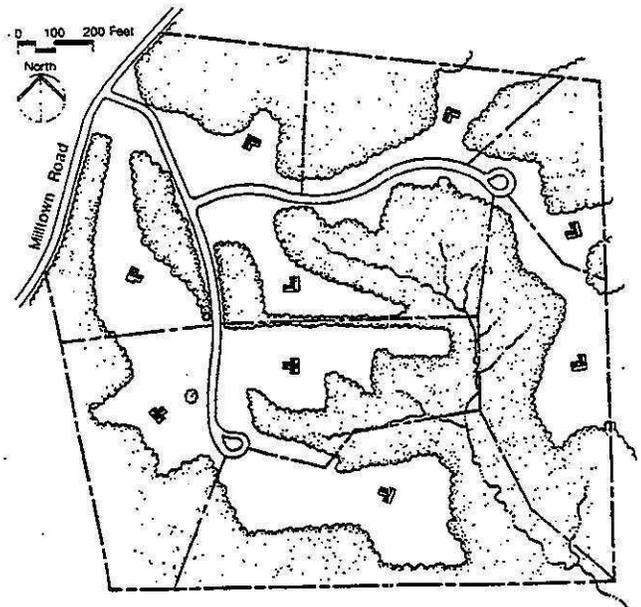


Figure 9 OPTION 3
50% Density Reduction
9 Lots
Typical Lot Size: 160,000 sq. ft. (4 acres)
Estate Lots

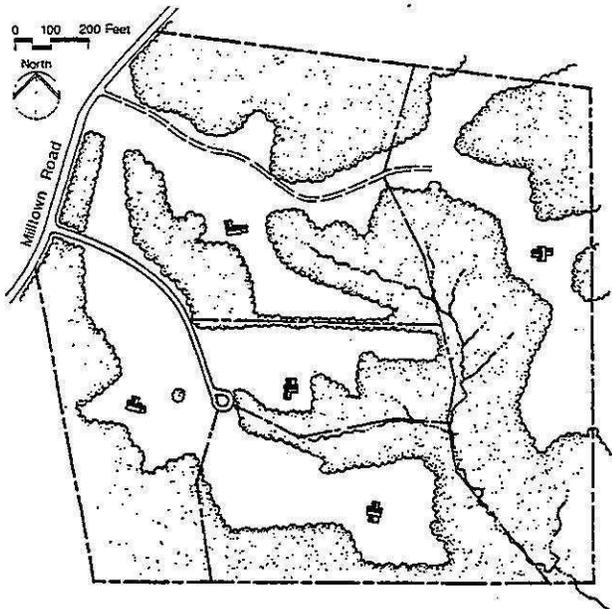
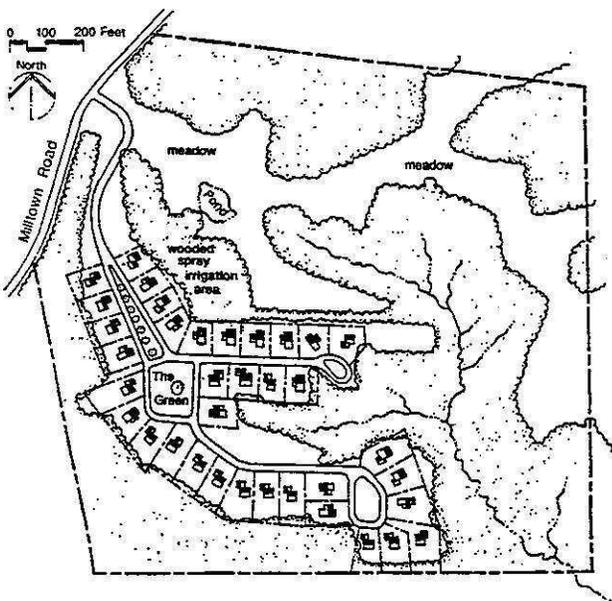


Figure 10 OPTION 4
Country Properties
5 Lots
Maximum Density: 10 acres per principal dwelling
70% density reduction



Minimum Lot Size
50 ft. 120 ft.

Maximum Average Lot Size
80 ft. 150 ft.

Figure 11 OPTION 5
Hamlet or Village
36 Lots
Lot Size Range: 6,000 to 12,000 sq. ft.
70% undivided open space

Uses subject to a set of extensively illustrated design standards.

Developers wishing to serve the "estate lot" market have two additional options. One involves lots containing at least four acres of unconstrained land (Figure 9: "Option 3"). The other is comprised of "country properties" of at least 10 acres, which may be accessed by gravel drives built to new township standards for very low-volume rural lanes (Figure 10: "Option 4"). An additional incentive to encourage developers to choose this fourth option would typically be permission to build up to two accessory dwellings on these properties. Those units would normally be limited in size, subject to architectural design standards to resemble traditional estate buildings, and restricted from further lot division.

Two or more of these options could be combined on a single large property. One logical approach

would combine Options 4 and 5, with the Option 4 "country properties" comprising part of the required greenbelt open space around an Option 5 village (see Figure 12).

Conspicuously absent from this menu of choices is the conventional full-density subdivision providing no unfragmented open space (Figure 6). Because that kind of development causes the largest loss of resource land and poses the greatest obstacle to conservation efforts, it is not included as an option under this approach.

For illustrative purposes, this booklet uses a one dwelling unit per two acre density. However, conservation zoning is equally applicable to higher density zoning districts of three or four units per acre. Such densities typically occur in villages, boroughs, urban growth boundary areas and TDR receiving areas where open space setbacks are critical to the residents' quality of life.

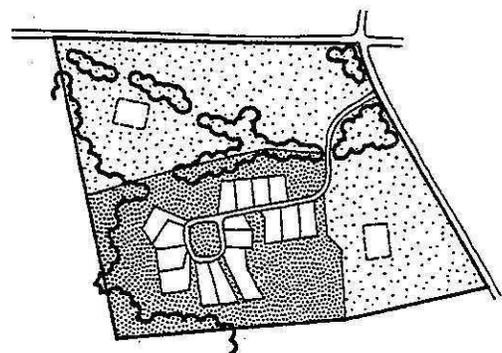
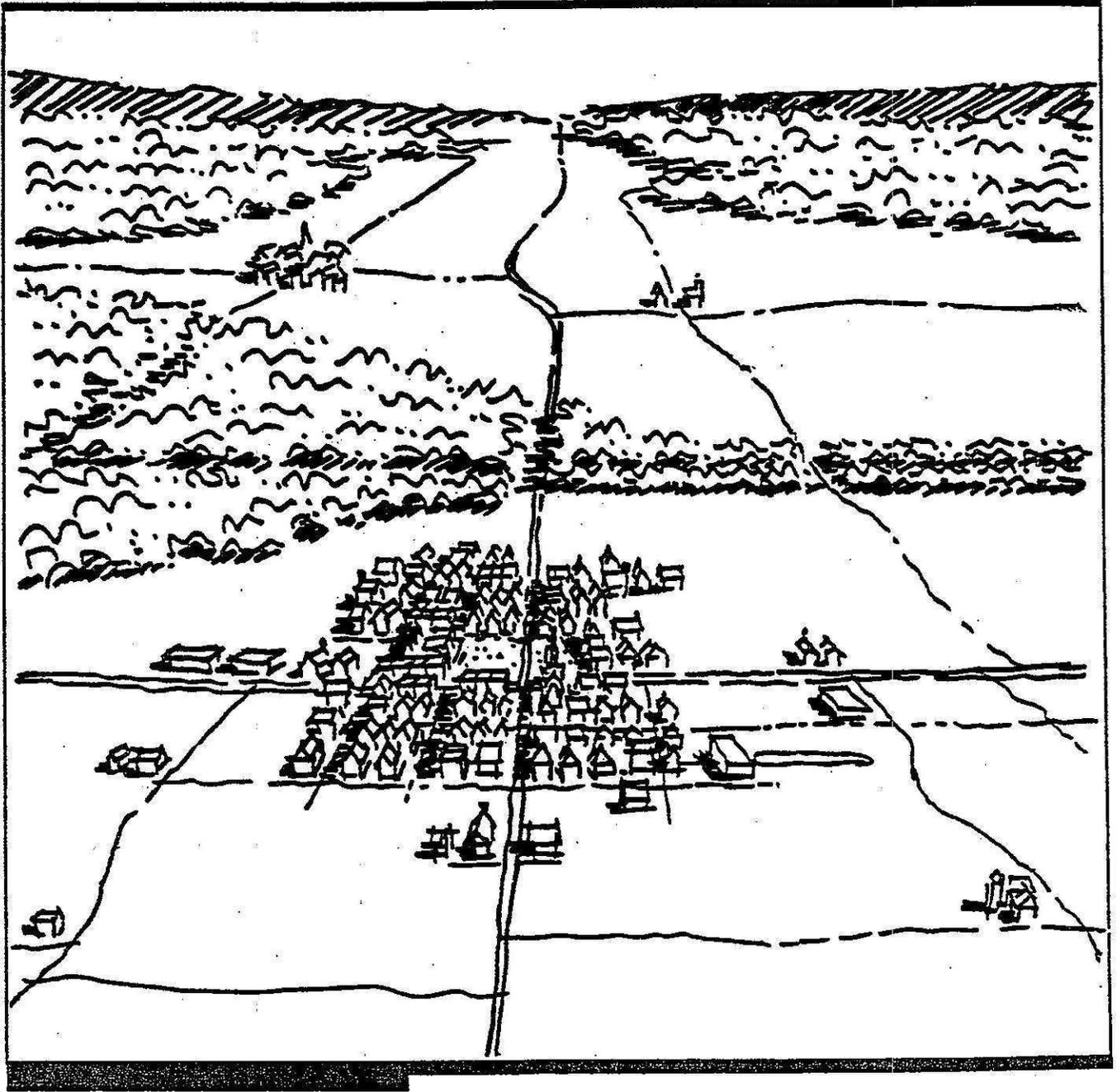


Figure 12
An Option 5 village surrounded by its own open space and buffered from the township road by two "country properties" (Option 4).

Guiding Growth

*Building Better Communities
and Protecting Our Countryside*



*A Planning and Growth
Management Handbook for
Pennsylvania Municipalities*

CHAPTER TWO

B. Alternative Patterns in the Built Environment.

Development patterns are created by a mixture of economic forces, social trends, infrastructure systems, and local land use regulation. In recent years, the market for relatively inexpensive agricultural land and the desires of many Americans to escape to the country have prompted developers to buy farmland and subdivide it for commercial, industrial, and residential use. Some of these trends may be changing as people rediscover the convenience, social

bility, and environmental preferability of cities, towns, and close-in suburbs.

Local decision-makers cannot affect economic and social trends on the regional and national scale, but they can influence what development pattern these trends will take in their own communities. Local zoning choices for compact, mixed-use and open space development as opposed to large lot zoning, for example, will significantly change the character of the community. This section describes the choices that are available to local municipalities for various forms of development.

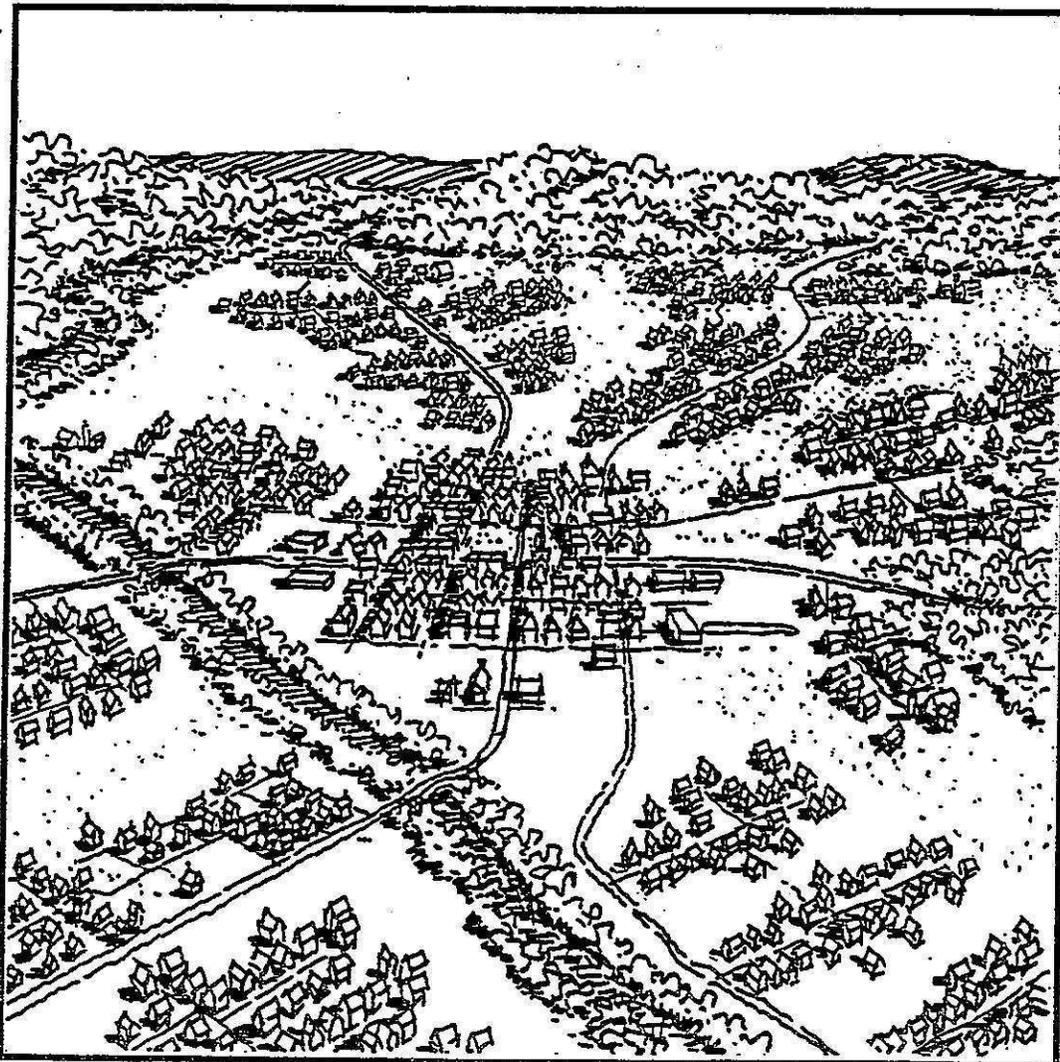


Figure 5
Cluster pattern of development

1. Residential Development

Sprawl and scatter have been widely deplored and two antidotes are regularly prescribed: cluster development and large-lot zoning. Cluster or open space development has advantages (to be discussed below), but it can be seen from *Figure 5* that while it reduces sprawl at the site scale, clustering does little to change the pattern at the scale of the municipality.

Large lot zoning — at densities of 1 to 3 or more acres per lot — is often instituted for purpose of saving open

space. However, instead of saving open space, it results in much greater areas being developed at low densities, providing housing for few people. See *Figure 6*. The area looks built up rather than rural, and extended trips are necessary. Much larger lots, in the order of 20 to 50 acres, would be necessary to maintain agriculture or commercial forestry.

A municipal-scale alternative for development is the expanded traditional pattern. See *Figure 7*. In such a pattern, much of the new development is lo-

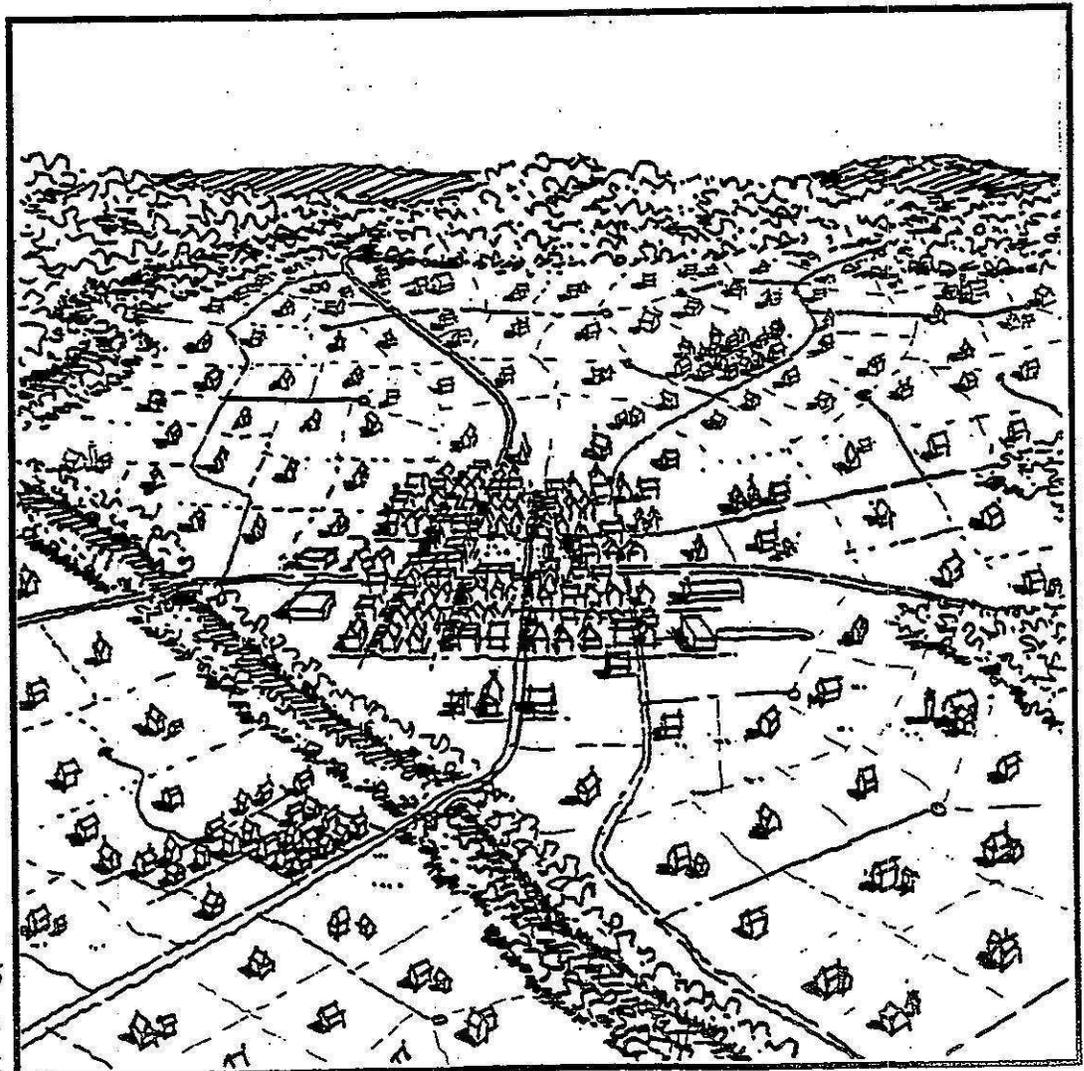


Figure 6
Large lot pattern
of development

CHAPTER TWO

cated next to or within existing town or village development or is located in a number of new villages and hamlets separated from the existing built-up area. Such a pattern requires less expenditure in new public facilities, yields more convenient neighborhoods, generates less traffic, is sensitive to the heritage of townscapes and landscapes, uses less land, retains more open space, makes possible the continuation of farming, and is less disruptive to natural systems.

Overall municipal patterns are achieved not at once, but tract by tract as development decisions are made. Several alternatives are possible for new development on moderate sized tracts such as the theoretical 70-acre tract illustrated in *Figure 8*.

Conventional subdivision: Equal sized lots are laid out with minor consideration given to conservation of wetlands, steep slopes, and other environmentally valuable land. Some land may be dedicated for public use. See *Figure 9*.



Figure 7
The traditional
pattern expanded

Natural Resource Restrictions:

Environmentally sensitive areas, such as wetlands, steep slopes, and mature woodlands, are deducted before determining the number of lots allowed. Lots of conventional size cover the tract, but limitations are put on the intrusion of the built-upon area within each lot into environmentally sensitive areas. See Figure 10.

An important variation on both conventional and performance subdivision is *lot averaging* (Cat. No.14) or the *flexible subdivision*. A flexible subdivi-

sion provision allows some lots to be smaller than the specified minimum for the district so long as the average area of all lots is at least as large as the minimum. For example, in a one-acre district, some lots might be allowed to be as small as three-fifths of an acre so long as all lots averaged at least one acre. Such a provision makes possible more sensitivity in site design. See Figure 11.

Open space subdivision: Lots are smaller and the remaining open space is owned in common — by a homeowners' association, a conservancy, or

Figure 8
Development of a
70-acre property:
Existing conditions

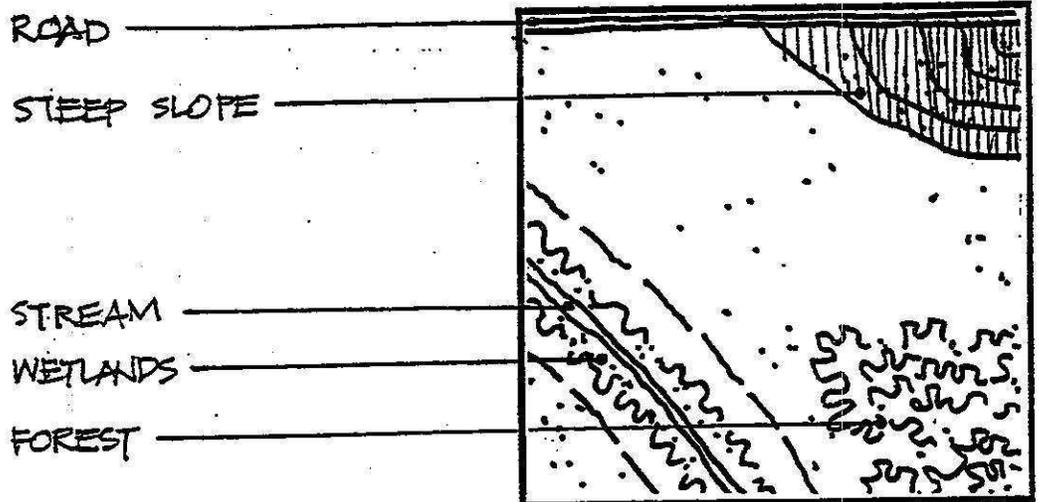
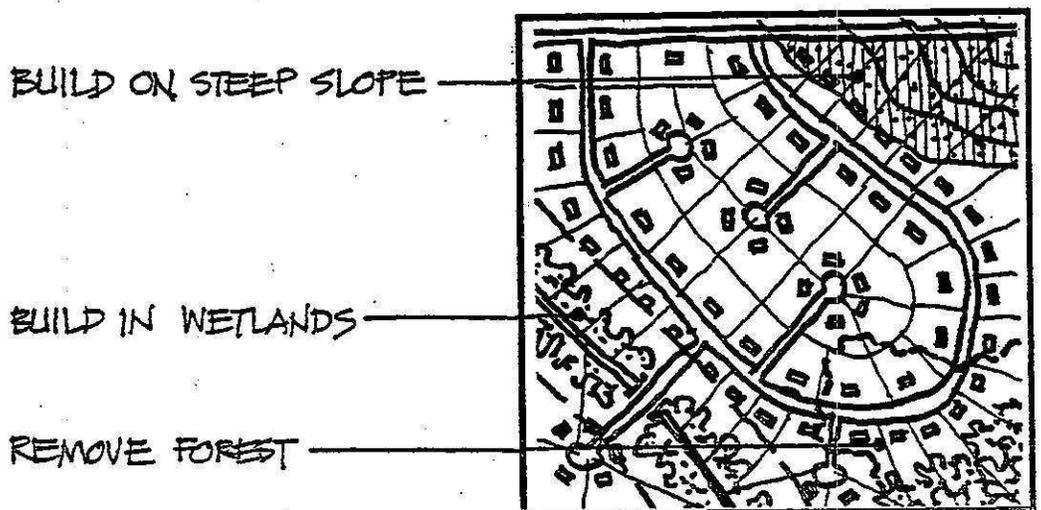


Figure 9
Development of a
70-acre property:
Conventional subdivision



CHAPTER TWO

PRESERVE MOST OF SLOPE

PRESERVE WETLANDS

PRESERVE MOST OF FOREST

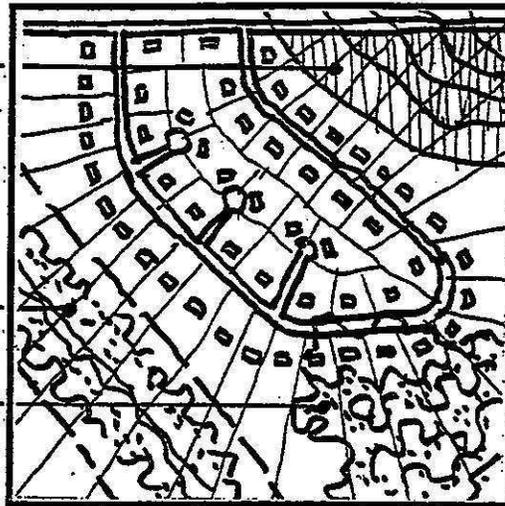


Figure 10
Development of a 70-acre property:
Natural resource restrictions subdivision

PRESERVE STEEP SLOPE

PRESERVE WETLANDS

CREATE NEW, DEDICATED OPEN SPACE

PRESERVE FOREST

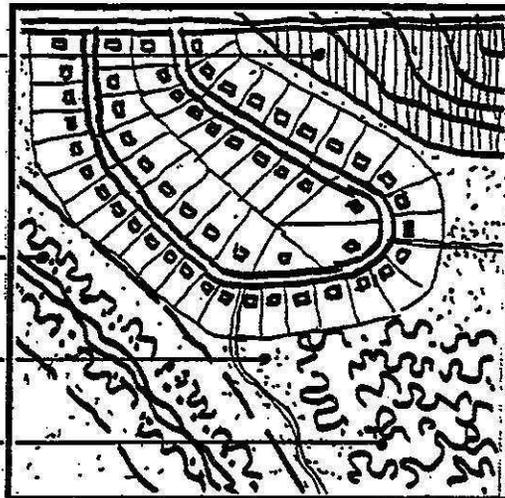


Figure 11
Development of a 70-acre property:
Open space subdivision

PRESERVE STEEP SLOPES

CENTRAL "GREEN" AREA

VARIETY OF HOUSE TYPES

PRESERVE WETLANDS

NEW OPEN SPACE

FOOTPATH CONNECTIONS TO OTHER NEIGHBORHOODS

PRESERVE FOREST

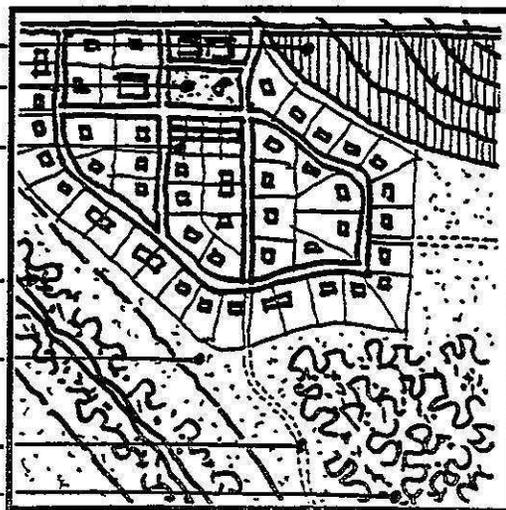


Figure 12
Development of a 70-acre property:
Hamlet subdivision

the municipality. The common open space in an open space subdivision comprises 50%-80% of the site.

See Figure 11.

Hamlet: Similar to open space subdivision except that a mixture of uses is permitted: a variety of housing types, some public buildings, and a few small shops. Road and footpath connections to other development are encouraged; cul-de-sacs are discouraged. Maximum size: 40 to 50 dwelling units. Developed area is surrounded by a wide greenbelt. See Figure 12.

If development is to take place on a large tract or an assemblage of smaller tracts, it could take the form of a village.

Village: Similar to a hamlet, but larger. Development in village form would require that some central sites be set aside for public and semi-public buildings, shops, and squares or parks. Models for new villages can be found in Pennsylvania's many traditional villages and towns, which continue to be much sought-after places to live due in part to their mixed use character. See Figure 13.

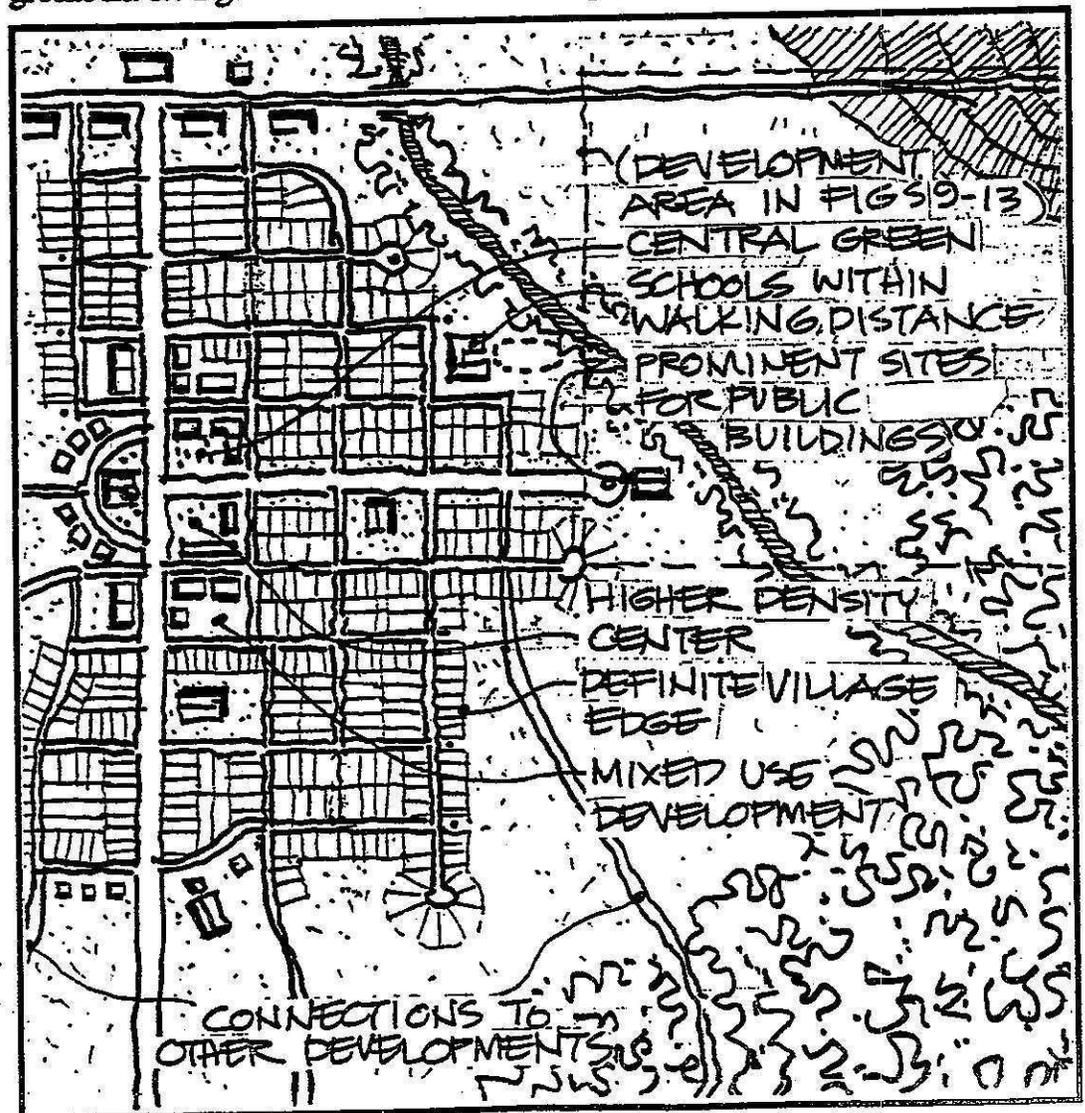


Figure 13
Development of
a 280-acre
property: Village
subdivision

Large-Lot Zoning

"...large-lot zoning... destroys open space and town character. It consumes land at an alarming rate and leaves a bland homogenized landscape, with lot dimensions, building placement and road layouts predetermined by a straitjacket of uniform zoning regulations. Good design is precluded by inflexible zoning by-laws that force development into "cookie-cutter" molds. If residents prefer compact town centers to "hamburger highways," the choice is theirs. No one is forcing them to keep inappropriate regulations on the books."

- Randall Arendt
The Boston Globe, July 3, 1988

Development adjacent to an existing village or town can form a compatible extension if it is designed with that in mind. If it follows typical subdivision design, however, it will be an incongruous appendage.

There are many qualities to be sought in development. Each of these types of development meets some objectives better than others, as *Table 1* shows. As community designers, municipal officials and citizens should decide which development type is best for each part of their community.

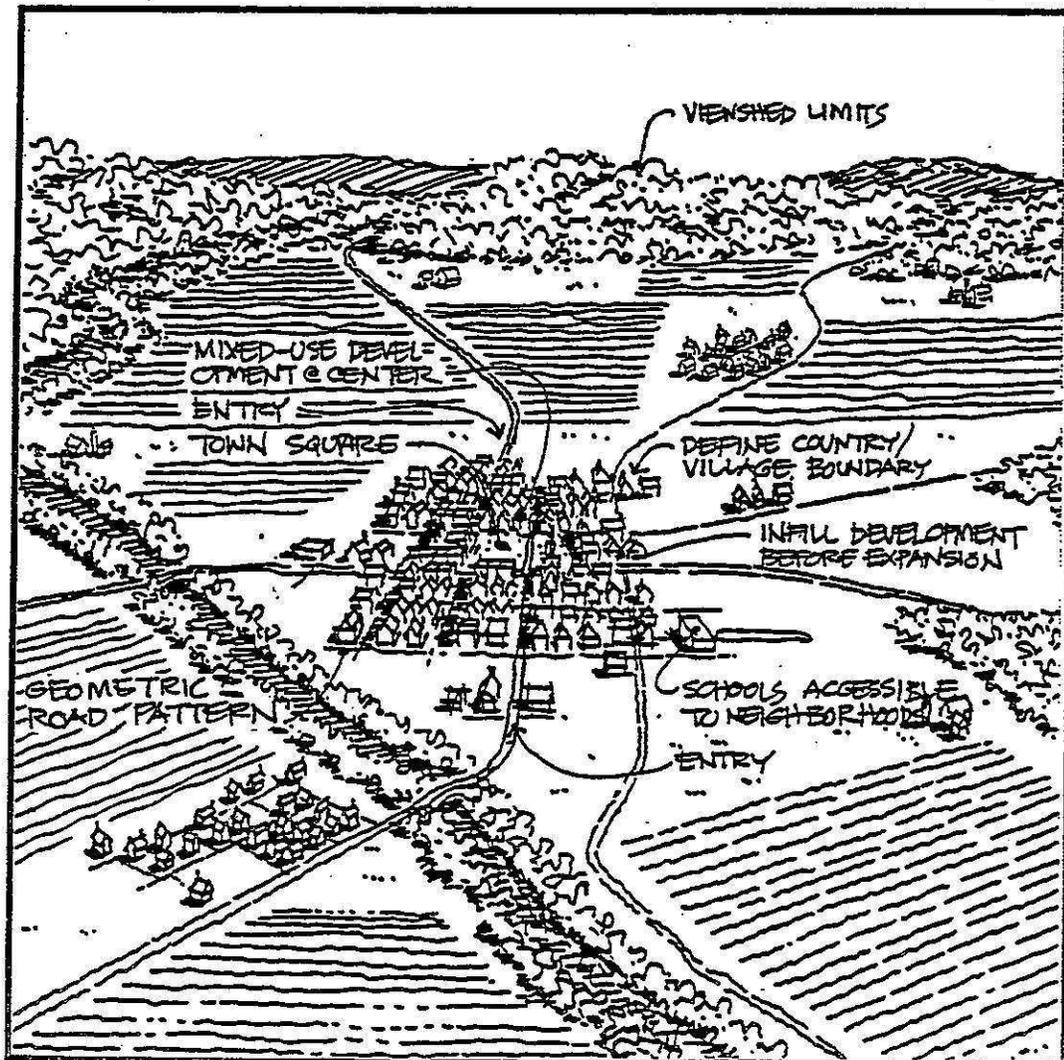
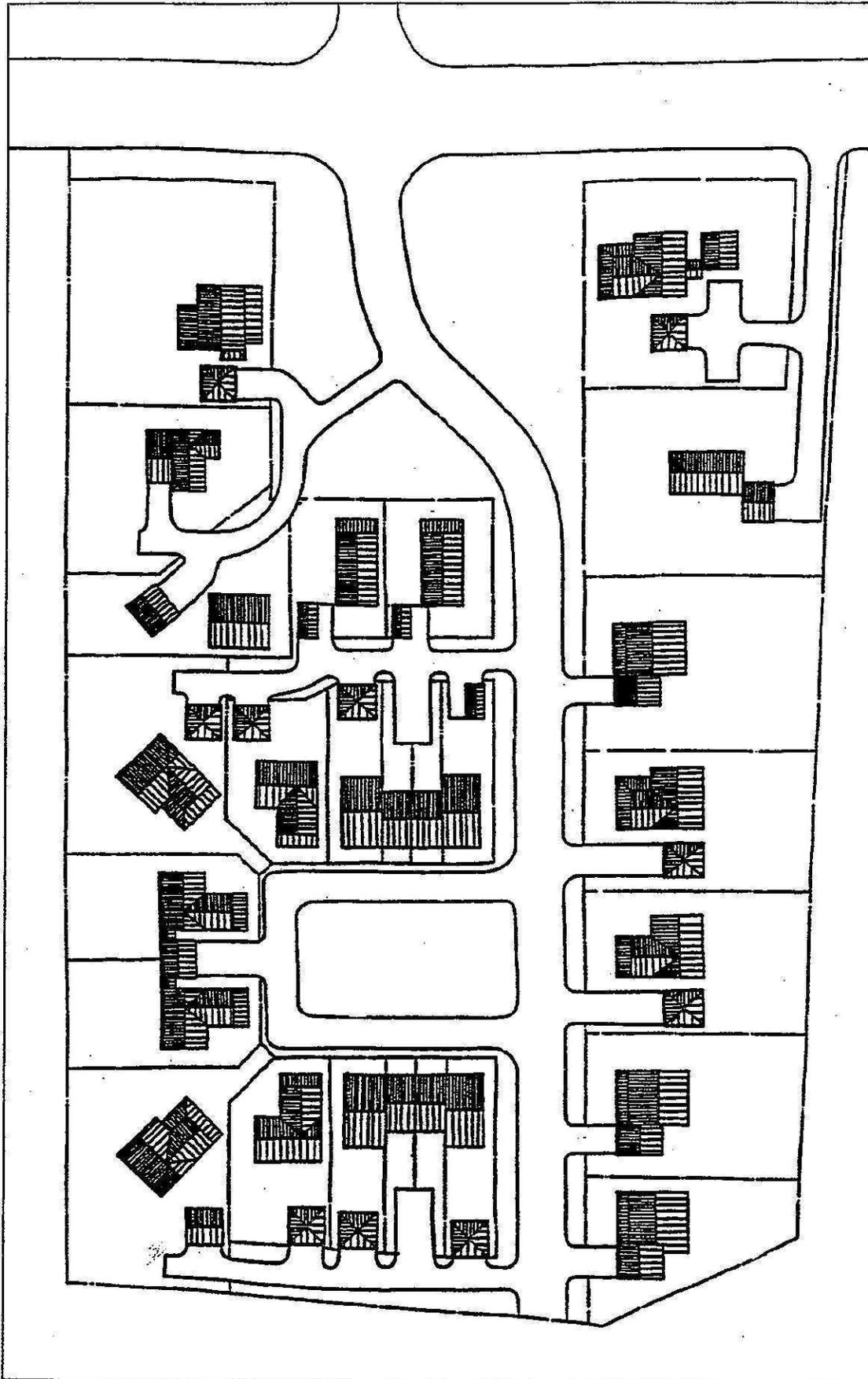


Figure 14
Village planning principles

Table 1

Objectives Served by Alternative Types of Residential Community Development

OBJECTIVES	TYPES OF DEVELOPMENT				
	Conventional Subdivision	Performance Subdivision	Open Space Subdivision	Hamlet	Village
ON THE SCALE OF THE TRACT					
Large Private Yards	++	++	+	+	•
Uninterrupted Open Space	•	•	++	++	++
Pedestrian Access to school, shops, etc.	•	•	•	+	++
Traffic Minimized	•	•	•	+	++
Preserved Natural Resources - wetlands, steep slopes, etc.	•	++	++	++	++
Sense of Community	•	•	+	++	++
Efficient Use of Infrastructure, Services	•	•	+	+	+
ON THE SCALE OF THE TOWNSHIP					
Uninterrupted Open Space	•	•	•	•	++
Protected Farmland	•	•	•	•	++
Efficient Use of Infrastructure, Services	•	•	+	+	+
Sense of Community	•	•	•	•	++
++ Objective well served + Objective moderately well served • Objective poorly served					



26 UNITS ON 6.2 ACRES

WYNDCREST

MONTGOMERY CO., MD

EXAMPLE CONCEPT PLAN FOR COMPACT DEVELOPMENT

TCA: 11-17-99

Note: This Plan is a general model and would need to be reworked for various sites in Concord Township where Cluster Development would apply.

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

RIPARIAN FOREST BUFFER

(Acre)

CODE 391A

DEFINITION

An area of trees and/or shrubs located adjacent to and up-gradient from water bodies.

PURPOSES

- Create shade to lower water temperatures to improve habitat for aquatic organisms.
- Provide a source of detritus and large woody debris for aquatic organisms and habitat for wildlife.
- Reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow.

CONDITIONS WHERE PRACTICE APPLIES

On areas adjacent to permanent or intermittent streams, lakes, ponds, wetlands and areas with ground water recharge.

CRITERIA

General Criteria Applicable To All Purposes Named Above.

The location, layout and density of the riparian forest buffer will accomplish the intended purpose and function. The buffer will consist of a zone (identified as zone 1) that begins at the normal water line, or at the top of the bank, and extend a minimum distance of 15 feet, measured horizontally on a line perpendicular to the water body.

Dominant vegetation will consist of existing or

planted trees and shrubs suited to the site and the intended purpose. Occasional removal of some tree and shrub products such as high value trees is permitted provided the intended purpose is not compromised by the loss of vegetation or harvesting disturbance.

Necessary site preparation and planting shall be done at a time and manner to insure survival and growth of selected species. Only viable, high quality, and adapted planting stock will be used. Site preparation shall be sufficient for establishment and growth of selected species and be done in a manner that does not compromise the intended purpose.

Livestock shall be controlled or excluded as necessary to achieve and maintain the intended purpose.

Harmful pests present on the site will be controlled or eliminated as necessary to achieve and maintain the intended purpose.

Additional Criteria To Reduce Excess Amounts of Sediment, Organic Material, Nutrients and Pesticides in Surface Runoff and Reduce Excess Nutrients and Other Chemicals in Shallow Ground Water Flow.

An additional strip or area of land, zone 2, will begin at the edge and up-gradient of zone 1 and extend a minimum distance of 20 feet, measured horizontally on a line perpendicular to the water body. The minimum combined width of zones 1 and 2 will be 100 feet or 30 percent of the geomorphic flood plain whichever is less, but not less than 35 feet.

Criteria for zone 1 shall apply to zone 2 except that removal of tree and shrub products such as timber, nuts and fruit is permitted on a periodic and regular basis provided the intended purpose is not compromised by loss

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

**NRCS, NHCP
July, 1997**

of vegetation or harvesting disturbance.

Concentrated flow erosion or mass soil movement shall be controlled in the up-gradient area immediately adjacent to zone 2 prior to establishment of the riparian forest buffer. This area is delineated and identified as zone 3. Zone 3 shall be designed in accordance with criteria in the Filter Strip (393A).

CONSIDERATIONS

The severity of bank erosion and its influence on existing or potential riparian trees and shrubs should be assessed. Watershed-level treatment or bank stability activities may be needed before establishing a riparian forest buffer.

Where ephemeral, concentrated flow erosion and sedimentation is a concern in zone 3, consider the application of a vegetated strip consisting of grasses and forbs. When concentrated flow erosion and sedimentation cannot be controlled vegetatively, consider structural or mechanical treatments.

Favor tree and shrub species that are native and have multiple values such as those suited for timber, biomass, nuts, fruit, browse, nesting, aesthetics and tolerance to locally used herbicides.

Avoid tree and shrub species which may be alternate hosts to undesirable pests. Species diversity should be considered to avoid loss of function due to species-specific pests.

Woody phreatophytes and hydrophytes that deplete ground water should be used with caution in water-deficit areas.

The location, layout and density of the buffer should compliment natural features.

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. Specifications shall be recorded using approved specifications sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

The riparian forest buffer will be inspected periodically and protected to maintain the intended purpose from adverse impacts such as excessive vehicular and pedestrian traffic, pest infestations, pesticide use on adjacent lands, livestock damage and fire.

Replacement of dead trees or shrubs and control of undesirable vegetative competition will be continued until the buffer is, or will progress to, a fully functional condition.

As applicable, control of concentrated flow erosion or mass soil movement shall be continued in zone 3 to maintain buffer function.

Any removals of tree and shrub products shall be conducted in a manner that maintains the intended purpose.

Any use of fertilizers, pesticides and other chemicals to assure buffer function shall not compromise the intended purpose.

One township tries to keep its hedgerows

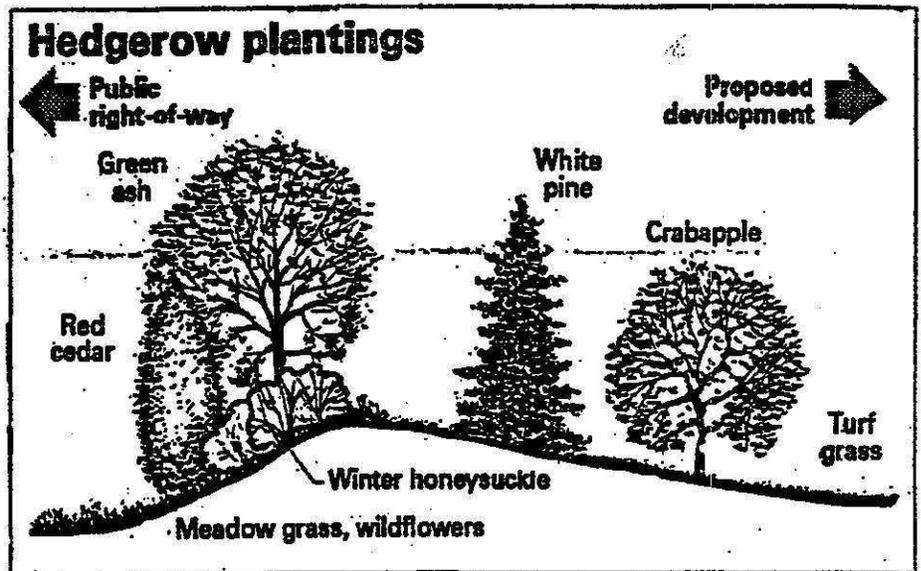
By David I. Turner
INQUIRER STAFF WRITER

To preserve its rural appearance, Montgomery Township, N.J., is requiring developers to preserve or replace hedgerows that have grown up between roadways and farm fields.

Hedgerow preservation programs have been worked into plans for several developments in the Somerset County township, and a new hedgerow is being installed at the Hoagland Farms development there.

The program was developed by Lenz, Mueller & Associates, a Princeton firm that serves as a consultant to the local planning board.

Mike Mueller, a partner in the firm, says that by saving or replacing



the native trees, bushes and other plants that make up hedgerows, developers can help save the appearance of the area.

The hedgerows are an alternative to "the standard five-foot berm with a couple of pine trees" that are used at some developments, he says.

Because native plants are adapted to local conditions, the hedgerows require little or no care.

The hedgerows tend to be at the back edge of 1- to 1½-acre lots, or on land owned by homeowners' associations, Mueller says, and they are protected by conservation easements.

Source: Philadelphia Inquirer. March 1, 1992