DEVELOPMENT CONTROL AND THE PROTECTION OF SENSITIVE AREAS

JENNIFER CLARKE

DEVELOPMENT CONTROL
AND THE PROTECTION
OF SENSITIVE AREAS

A Master's Project Presented

by

Jennifer Clarke

Submitted to the Department of
Landscape Architecture and Regional Planning
in partial fufillment of the requirements for the degrees of

MASTER OF REGIONAL PLANNING

and

MASTER OF LANDSCAPE ARCHITECTURE

May 1988

DEVELOPMENT CONTROL

AND THE PROTECTION

OF SENSITIVE AREAS

A Masters Project Presented

by

Jennifer Clarke

Approved as to style and content by:

Hugh C. Davis, Chairperson of Committee

Ann L. Marston, member

Shirley L. Griffin, Ed.D. , member

Meir Gross, Dept. Head
Landscape Architecture
and Regional Planning

ACKNOWLEDGEMENTS

This work would not have been possible if not for the talents and direction of Shirley Griffin, creator of the ECOLANDS Program, Hugh Davis, my committee chairperson, and Ann Marston, my graduate school mentor.

Additionally my thanks extend to Phillip Rivard-Rapoza and to David Pride, both of whom I can always rely on for academic and emotional support.

Also, I would like to thank Thomas or Samantha, whoever is in there, for not kicking too hard too often.

Finally, a very special thanks goes to David, without whom my environment would be meaningless.

TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

With an increase in population and a depleting bounty of natural resources comes the need for intelligent development controls and the protection of sensitive areas. Primary to any land use campaign is the necessity for an educational program.

It is in that vain that ECOLANDS, an environmental education program was conceived. ECOLANDS is a land use curriculum for both students and laypersons which centers on the theme of environmentally responsible land development. Through the ECOLANDS Guidebook, the individual is introduced to the mechanics and functions of the land development process.

The philosophy advocated by this work promotes an understanding that as populations increase, so too does development; therefore, because the population <u>is</u> growing, society must learn to accommodate development in harmony with the environment. It is in response to this philosophy that discussions of land protection techniques have been generated. This text is to be considered a supplement to the ECOLANDS Guidebook as a more detailed source of land use controls and techniques for the protection of the environment.

DEDICATION

For mom and dad, whose love and encouraging words have inspired me for the past 25 years.

SECTION ONE

INTRODUCTION

CHAPTER ONE: THE SIGNIFICANCE OF CONTROL

The control of human activity is crucial to the future of the earth. Society must use control to regulate and restrain blatant disregard for the natural environment. Without exercising authority over the continued development of the physical environment, the natural environment will fall victim to societal greed. The dillusion of land development without land use controls must be eliminated. Only a disciplined planning process of control will serve the environment and the economy so that both will equall share in the richness of the future.

The planning process is the anticipation of future demands and the recognition of having to prepare for them. Over the past few decades there has been much conjecture over the types of demands society is placing on itself and its environment by virtue of society's spiralling population growth. Further it is widely accepted that such a phenomenal surge in population, (such as the increases described in the Global 2000 Report to the President of the United States), will seriously impact land development issues. With this anticipation comes the recognition that something must be done. Therefore, the planning process becomes the means through which information may be disseminated and analyzed; it is the stepping stone from which communities may learn to move from technique to technique in their efforts to promote environmentally responsible land development.

In this work, four major techniques of the planning process are discussed: non-regulatory, regulatory, legislative and land trusts, (See figure 1, Land Protection Controls and their Uses). Each of these forms of land protection are comprised of sub-techniques which are tools that society may use in its efforts to grip the reigns of untamed growth. development and must be considered the tools with which society can use the planning process to grip the reigns of untamed growth.

<u>The Importance of Nature</u>

The planning process is the product of many different elements combined. Economics, growth, demographics, design and management are but a few of these elements. Similarily, nature must be considered a key component in such an elaborate process, one which is highly variable and is fit to cope with minor environmental changes. However, nature cannot survive in "the scale now commensurate with the world's economic and technological development," (Lovejoy, 1973, p. 2).

Nature has proved to be one of the prime sources of wealth over the past 300 years in North America. The land has been used for plowing, building and digging and has been abused to a frightening degree. Filling in wetlands, destroying productive ecosystems and diminishing prodigious timber stands are only three examples of a disregard of nature's importance in the life of society. "In our long arduous ascent out of biological darkness," writes Lewis Mumford, "we have forgotten our indebtedness to the natural world of our origins," Schell, 1982,

Figure 1: Land Protection Controls and their Use

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
NON-REGULATORY TECHNIQUES	DIRECT LAND ACQUISITION	Outright Purchase of Land	City or Town takes the money from general fund and purchases lot
		Use of Municipal Bonds	Municipality applies for general obligation bond so that it will receive money to buy land. General Obligation bond is secured by taxes
		Land Banks	A tax is imposed on real estate transactions with revenues going into a fund to be used toward the purchase of land
	OPEN SPACE AND RECREATION PLANS	Federal Land and Water Conservation Fund	Provides a 50% (or less) reimbursement to states and towns for the purchase and development of land for outdoor recreation
		MA: State Self-Help Program	M.G.L. allows up to 80% state reimbursement for the acquisition of conservation land
		MA: State Urban Self-Help Program	M.G.L. allows up to 90 percent state reimbursement for the acquisition and devt. of park and rec. lands to Mass. communities with a population of 35,000+

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
NON-REGULATORY TECHNIQUES	GROWTH MANAGEMENT PLANS	Locally: Zoning, Subdivision Regs, Moratorium	Zoning and Subdivision Regs. are regulatory in nature, but are used as components of a growth mgt. plan which is a non-regulatory tool through which a city or town manages place, location and quality of developments. Used to articulate community goals and values through policies.
		State and Federal: Constitution, Regulations, State Growth Management Plans	Functions similarly to local policies
REGULATORY TECHNIQUES	ZONING: 1. DENSITY BASED	Cluster Developments	Allows residential units, either SF or MF, to be "clustered" together on reduced lots. Design-by site instead of a design based on a lot to lot basis allows for the conservation of open space
		Planned Unit Developments (PUD)	Differ from clusters in scale and diversity. They offer flexibility and mixed development, (business & residential), in exchange for stricter development guidelines

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
REGULATORY TECHNIQUES	2. ALTERNATIVE METHODS	Planned Development Districts (PDD)	Allow for broad mix of businesses, housing & services which may serve a regional market. Requires complete rezoning of area
		Flexible Zoning	A technique allowing variation in lot sizes and frontages subject to predetermined municipal guidelines
		Overlay Districts	Specific requirements created in addition to those already designated by an existing ordinance or by-law. Typically used to protect impt. watershed or groundwater recharge areas. Provides an additional layer of safeguards for development in sensitive areas
		Performance Zoning	Sets upper limits on the measurable characteristics of land use; it establishes a set of design criteria which must be met for approval
		Incentive Zoning	Provides trade-off system where developer gets a benefit, (density bonuses), for providing public benefits, (outdoor theater)

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
REGULATORY TECHNIQUES		Contract Zoning	Illegal bargaining-away of police power where community is bound by an agreement to allow a use if developers meet certain requirements set forth in a bilateral contract
		Conditional Zoning	Same results as contract zoning but done legally with no contract. If conditions go unmet at any time, the govt. has the right to revoke any approval thus re-turning the land to its original use
	SUBDIVISION REGULATIONS	MA: State Subdivision Control Law	Allows any community to regulate the design and construction of roads, sanitary facilities, parks, open areas and proposals submitted by a developer of private lands not abutting an existing private way
	WETLANDS PROTECTION	MA Wetlands Protection Act	Administered by local conservation commission according to regs. es-tablished by DEQE. It safeguards wetlands, associated resource areas and flood plains from over-development; it requires any person seeking to fill, dredge

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
REGULATORY TECHNIQUES			or alter an area fitting the legal description of wetlands to follow certain procedures
		MA: Wetlands Restriction Act	Intent is to identify & map significant local wetlands in advance, then restrict their future use
		Local By-laws and Ordinances	Used to protect wetland areas, water resources, and adjoining land areas in cities and towns by controlling certain activities that are likely to have a significant or cumulative impact upon wetland values
LEGISLATIVE TECHNIQUES	TAXATION 1. LOCAL PROPERTY TAX		The prime generator of local revenue based on the market value of real property times a tax rate established by individual communities
	2. STATE GOVERNMENT TAX REDUCTIONS	C.61 Forest Land	Provides tax benefits to owners of 10 contig. acres+ of timberland who have applied for such classification & follow certain requirements

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
LEGISLATIVE TECHNIQUES		C.61B Recreation Land	Provides tax benefits to owners of 5 acres^{+} of land that is retained in a natural manner or is devoted to a recreational use which does not interfere with the environmental benefits of the land
		C.61A Agricultural/Horticultural Land	Provides tax benefits to owners of land 5 acres or greater which is devoted to agricultural and horticultural uses
	AGRICULTURAL PRESERVATION RESTRICTIONS (APR)		State money is used to purchase the development rights of farmlands across Mass. This compels the farms to enjoy lower assessments and consequently lower property taxes thus reducing financial pressure on working farms
	CONSERVATION EASEMENTS		A less-than-fee interest in real property that gives the holder the right to prevent certain activities on the land. It reduces the market value and property tax of affected property.

	SUB-TECHNIQUES	SPECIFIC METHOD OF CONTROL	USE
TRUSTS	LAND TRUSTS	Community Land Trusts	A democratically-controlled institution that holds land for the common good of any community while making it available to individuals within the community through long-term leases. The purpose is to permanently remove land from the speculative market
		Neighborhood Land Trusts	Concentrating on a small scale, this form of trust is used in urban areas and allows local residents the structure to own urban open spaces on a cooperative basis
		Conservancy Land Trusts	These provide the maximum protection possible for distinctive or fragile natural areas or ecosystems by withholding land from human use

p. 120). Controls must be used to halt the unbridled destruction of precious natural resources.

Raymond Dasmann elaborates on this idea in his 1984 work, Environmental Conservation, (p. 84):

> "The conservation of nature is fundamental to human existence and is the concern of people everywhere. It is not to be accomplished only by setting aside specifically protected natural areas, but must be practiced in all places at all times. All areas must be protected areas to some degree, since even the most heavily urbanized areas provide suitable living spaces for many wildlife species."

Nature should be a concern in the complete spectrum of life, not only because some laws may tell society it must be concerned, but also because it is an intrinsic part of life. Society cannot survive without recognizing nature's inherent features and characteristics.

The Economics of Nature

An economis't view of nature is a tainted one which sees nature as a uniform commodity. It is appraised in terms of time, distance, cost of land, and cost of development and is allocated in terms of acres per unit of population. It is imperative to recognize the variable forms of nature: its diversity, its function with regards to historical geology, climate, physiology, soils, plants, animals and its intrinsic resources and land uses, (McHarg, 1971).

Despite the somewhat blinded view of the economist, economics plays an important and useful role in environmental decision-making. By strategically using economic incentives in business and industry, economic agents may be forced to include the cost of environmental resources when making any kind of economic decision, (Ostro, 1977). At a workshop on the economics of the New England Environment in 1977, a panel of economists and environmentalists agreed that the economics of New England was strong enough to fufill the aims of existing environmental legislation. Thus, by using both economic incentives and environmental legislation, economic and environmental goals may be tied together.

The Combination of Nature and Economics

Traditionally, the environmentalist's desire to preserve and work to improve the physical environment in harmony with nature has been regarded as conflicting and incompatible with the demands for economic growth and development. At the furthest end of this environmental spectrum, advocates insist upon a no-growth policy as a means of saving the environment. An operating presumption dominates: that environmental degradation results from uncontrolled economic growth. Proponents of the opposite end of the spectrum preach that only through accelerated economic growth can luxuries, (such as air and water), commensurate with higher standards of living, (Ostro, 1977). However, current social, environmental and psychological pressures have helped more people recognize a broader spectrum. Subscribers to this broadened spectrum are beginning to produce a new philosophy of design and planning with inter-related environmental and economic concerns.

This welcome transition from two diametrically opposed notions to a single movement has been marked by nine major trends. These trends, as enumerated in Van der Ryn and

Calthorpe's 1986 work, Sustainable Communities, have transformed the economics of nature:

1. Environmental Conservation Movement of the 1970's
2. Water supply limits affecting growth in many areas
3. Waste management effecting growth
4. Rising cost of developable land changing housing patterns
5. Land costs up 25 percent in a few years
6. Agricultural system is approaching crisis, (# acres lost)
7. Top soil erosion extracts 5 bushels of soil/1 bushel corn
8. Commitment of greater expanses of land to parking
9. Quadrupling of energy costs in the past decade

Recognition of the dependency which both economics and the environment have on each other begins to draw these two ideas together in generating solutions to these problems. Major victories can be seen through the introduction of compact, mixed-use communities, more efficient buildings, diverse transit systems, ecologically sound agricultural practices, waste and water conservation, the establishment of greenbelts, and greater sensitivity to the uniqueness and integrity of each region.

The fact that economics and nature are related must be strongly stated. Likewise, the importance of this relationship should not be lightly dismissed. For example, if soil erosion and a depleted water supply put once productive farmers out of business, forcing them to sell their agricultural land to development, other farms and agriculturally related businesses might be forced to shut down as well. Farm closings can equal bankruptcy and obsoletion for many other businesses. This can have several economic impacts on a community: 1.)farm closings, 2.)related business closings and unemployment, 3.)an eventual rise in crime rates, etc. Conversely, population growth is inevitable and must be planned for in terms of housing and services. Growth will not go away, but at the same time, it need not dominate our environment and obfuscate nature.

Balance

Although there are no definitive solutions to these problems, society must rely on an interplay between environmental education, legislation, economic incentives and planning. Even in Great Britain, (where planning and environmental legislation is one of the most comprehensive and advanced in the world), economic circumstances are such that constant pressure is still creating singularly disturbing problems in the landscape, (Lovejoy, 1973). So that the environment may be protected as well as economic growth be promoted, a system of land use controls is necessary to balance these interdependent factions.

To some extent, land use controls have forced landowners to relinquish some control over their land. Walter Youngquist, in his 1975 book, Investigating Natural Resources, suggests restrictions of control such as those regarding frontages and sizes of subdivided parcels make landowners feel more like caretakers of property than owners. While some may feel this invasion of personal liberties wrong, it must be remembered what the intention of such control and management is: to protect the health, safety, welfare and morals of the general public and to maintain the essential natural systems necessary for human life. While the United States Constitution protects individual rights, it also provides for the general welfare of the common good.

History of Planning and Control

Land use planning and control did not begin to emerge as a separate and distinct area of the law until the early zoning ordinances and accompanying judicial decisions concerning them appeared in the 1920's, (Hagman and Juergensmeyer, 1986). Thus, the first controls placed on property owners were tried in court and found to be a valid expression of land use management. Zoning rapidly gained prominence as the grandfather of land use controls. Throughout the United States, zoning and other less defined land use controls took hold and began shaping much of the landscapes of the Depression era, World War II and post-war eras. Federal, state and local agencies each had a role in the use of such controls. Until the nationally-recognized environmental movement of the early 1970's, planning and control were severely limited in scope and clearly did not work toward accommodating growth without foresaking the natural environment.

<u>State and Local Division of Control</u>

State land use control was minimal before the 1960's while local power was greater. However, during the 1960's and 1970's a quiet revolution moved much of the broad-based policy decision-making into the state's hands. Some enabling acts and legislation that had delegated powers to local bodies were taken back by many states in an effort to exercise a variety of state and regional land use controls. There was a perception at the time of a local "unwillingness" and an incapability to handle this immense responsibility, (Callies and Freilich, 1986). Through the late 1970's, local governments began to slowly retain more and more control while states maintained broad authority through state legislation and regulatory agencies, (See figure 2, Indirect and Direct Control of Regulatory State and Local Bodies). Today, most land use decisions are still made at the local level. This demands an effective and educated citizenry to support sound land use planning and regulation, (Moss, 1977). As resources become more limited, this local citizenry becomes a crucial player in creating more stringent land use controls.

The Case for Control

"Control" as such is a very important tool in American planning and has been since the early twentieth century. A majority of these land use controls were advanced in response to undesirable developments. As planning matures, it has become necessary for land use planners to understand how each individual control affecting land use may contribute to contextural changes of the larger environment. Controls are decisions and decisions can no longer be made without regarding the larger scale of the environment, (Fabos, 1983). Decisions must respond to the array of fragmented contraints and incentives coming from both the private and public sectors, (Peskin, 1978).

The control which local governments posses is important because it includes the right to zone land, tax land, buy land and sell land, (Little, 1968). Likewise, state controls have also remained strong but on a broad level. While local governments today may make land use decisions of great consequence to their communities, it is not always true that they may be sensitive to the need to protect natural resources or other situations which may invoke disastorous regional

MASSACHUSETTS:

INDIRECT AND DIRECT CONTROL OF REGULATORY STATE AND LOCAL BODIES

Body \ Control	Indirect	Direct
State	Office of State Planning	Ex. Office of Env. Affairs
	Attorney General's Office	Dept. of Environmental Mgt.
	Coastal Zone Mgt. Program	Dept. of Env. Quality Eng.
	State Building Code	Dept. of Public Works
	Depts. that fund Development	Housing Appeals Board
Local	Mayor or Selectperson	Town Meeting or City Council
	Tax Assessor	Planning Board
	Redevelopment Authority	Conservation Commission
	Housing Authority	Board of Appeals
		Building Inspector
		Board of Health

Figure 2: Indirect and Direct Control of Regulatory State and Local Bodies

Source: Peskin, Sarah. Guiding Growth and Change: A Handbook for the Massachusetts Citizen, Boston, 1978.

reprucussions. Therefore, state involvement in land use controls maintains a regional directive and typically lends structure to local control. As an example, the town of Leverett, MA, in their Growth Policy of 1976, stated major goals, objectives and values that they felt should guide future growth, development and change. One of their goals was to have the state provide structure to Leverett so that the town and state could seek mutually beneficial solutions to problems without Leverett losing its autonomy. Local citizens sought the right to identify and target problems while haveing the opportunity to consult with full-time, state-provided assistance.

State Land Use Control

The many tools of land use planning can be used to alleviate problems on regional and state-wide scales. (It is crucial to recognize that some situations transcend local boundaries and therefore must be addressed on a broader level.) John M. DeGrove, in his 1984 work, Land Growth and Politics, lists seven states which dominate widescale planning for land and growth management: California, Colorado, Florida, Hawaii, North Carolina, Oregon and Vermont. Presently these states have each been battling the idea that "growth is good" with varying degrees of success. Each state has also admitted that the days of grand planning schemes are over and that the use of land use controls is now part of an ongoing planning strategy.

Case: Florida

One example of an unsuccessful state land use control and its accompanying politics may be illustrated by looking at

Florida. Cristina Garcia reported in a January 1988 Time magazine story that the "signs of decay are everywhere in Florida." Waterways are polluted, prisoners are released early from jails so as to accommodate new inmates, a yearly influx of 300,000 new residents overloads existing services and by the 1990's, Florida will need 933 new schools just to break even with the 800,000 new students predicted. As a solution, Governor Martinez signed into a law a 5 percent tax on the services industry, (the largest and fastest growing industry), as a means of revenue to control Florida's increasing land-related problems. Amid a flurry of criticism from the service sector, the Governor repealed this controlling measure and instead, increased the Florida sales tax by $.01. This politically motivated restructuring of state control will now provide only half of the $52.9 billion revenue that Florida needs within the next few years to satisfy its growing needs. The general public's reaction to this extra burden on them appears to be that they don't mind paying for better services, but most people do not feel as though the government will be sufficiently frugal with their money.

Case: California

This general theme of public reaction ties into what is presently happening on the west coast in California. According to the same issue of Time magazine, right now the state is experiencing the biggest grass-roots movement since the California property tax revolt. Residents statewide are "demanding limits on unbridled real estate development." Individual cities such as San Francisco, Los Angeles and San

Diego have taken their own measures by passing the most severe growth restrictions in California history. In November of 1987, there were 17 slow-growth measures on the ballot statewide; 15 of those passed thus validating the increased need for statewide implementation of effective land use controls, (Hull, 1988).

Case: Vermont

Such a statewide program was called for in Vermont. Governor Madeleine Kunin called on the Vermont legislature to enact a statewide growth management plan in order to provide "greater control over its destiny," (Hull, 1988). Vermont remains in the forefront of state land use planning models. In response to a perceived development crisis in the late 1960's and 1970's, Vermont enacted sweeping legislation to protect the environment and to manage growth. The creation of Act 250 required a state review of all major developments and subdivisions. It was the intention of this act to provide the framework within which the regulatory process would function. Without this kind of structure, many land use conflicts are fought out during the permitting process on a case by case basis, (Bradley, 1986).

Act 250 was primarily created as an environmental law calculated to preserve Vermont's unique character, (Roberts, 1982). It provides a mechanism for a comprehensive review of potential environmental impacts of large subdivision and development proposals. This is administered by nine 3 member district environmental commissions and a 9 member state board. The intent of this administrative set-up was to use the board and commissions as forums for a comprehensive review of new land use projects, (Senecal, 1979). Act 250 has also been successful in this respect by providing access to the review process for people who are potentially affected by it. This landmark move toward regulatory simplification at the state level remains a Vermont tradition for conserving and protecting its environment.

Land Use Design

Unfortunately, many proposed subdivisions and developments are becoming commonplace, routine and unimaginative and include low density, single uses and conventional layouts. "Something is missing," write Sim Van der Ryn and Peter Calthorpe in their 1986 book, Sustainable Communities. "Part of it is from our interaction (or lack thereof) in the ecosystem." Beyond conservation and efficiency we must now express a reverence for the 'nature of a place' within our communities. Land use design is as important to a healthy and successful environment as land use controls.

Creative solutions to the boredom of such enigmas as strip developments and homogeneous subdivisions must be elicited and incorporated into development schemes. Strip developments must be averted by providing redesigned corridors which allow for pedestrian access, thus giving neighborhood residents the opportunity to leave their cars at home and walk, thereby reducing the need for endless frontages of asphalt fields. Increasing density and preserving more open space is a further tool of creative land use design. Additionally, such compactness of a development reduces infrastructure demands and limits the amount of land necessary for vehicular circulation.

Alternatively, one could now design new human scale configurations for the pedestrian's circulation and recreational needs. Creative land use design must work in concert within the established land use planning controls of a state or local community.

Nature has provided humankind with a vast bounty of wealth. Throughout the course of history, society has imposed the demands of the economic society onto nature thus creating harsh imbalances between itself and its environment. Fortunately, the evolution of human development control as a significant tool in land use planning has begun to offer some hope to society's struggling natural and human-built environments at both the larger regional scale and at the more personal levels of local communities.

CHAPTER TWO: TOWARD CONTROL AND PROTECTION

Over the past few years, Massachusetts has experienced an unprecedented surge of growth in many different respects: population, housing, business, economy and new development. Growth in fact, can be defined as population increase, economic expansion and new buildings in undeveloped areas, (Peskin, 1978). The phenomenal increase in land development can be attributed to a more widespread recognition of the economic value inherent in all real estate. Land has been used globally as a hedge against inflation for centuries as it never goes down to zero in value. The renewed recognition that all real estate is a means of using a relatively small amount of money to do a large investment job has additionally spurred Massachusetts's growth, (Youngquist, 1975).

The growth of Massachusetts may be explained by examining some of the demographics involved. First it is important to recognize what major factors are responsible for populatiion changes. New technologies, dynamic economies and residential mobility are all major factors in this case. Key to the New England region is the concept of residential mobility where workers and their families move out of metropolitan along with their companies. A corporate shift outside of metropolitan regions factors in heavily with this new residential mobility which sees non-metro areas, or suburban areas, growing in

Massachusetts at a faster rate than metropolitan comunities for the first time in history. Although the northeast ranked last in terms of size of non-metropolitan population in 1980, it ranked first in terms of size of non-metropolitan population relative to metropolitan population change, (Steahr and Luloff, 1985). These figures support the notion of the increasing growth of the Massachusetts non-metropolitan area.

Changes in the number of persons (and their characteristics), such as these, who live in New England "have a pervasive impact on all areas of planning, (Steahr and Loloff, 1985). Such a significant change can be further highlighted with regards to Massachusetts in that it has experienced a 2 percent increase in the number of people living in suburban communities. In 1950, 4.7 million people resided in non-metropolitan areas as compared with the 1970 figure of 5.7 million people, (Peskin, 1978). This increase toward decentralization away from urban cores has raised significant concerns for the land use planner. Land use planners must have an understanding as to where their community is headed so that effective controls are placed and empowered in their city or town. Planners must anticipate future demands. This may not always be a simple task. For example; approximately 10 years ago many real estate developers and real estate specialists insisted that the detached single family house was on its way out, a victim of a severe lack of affordable and developable, raw land. It was predicted that the future lay solely in rowhouses, townhouses and other kinds of attached multi-family housing styles. In 1975 conventional single family housing accounted for 80 percent of the private housing starts in the United States. A decade later 62 percent of the starts were for single family detached; an 18 percent decrease, but still a formidable housing alternative at over 60 percent that must be contended with at the local control level, (Langdon, 1986).

The 18 percent decrease in single family detached housing starts does suggest that it is a significant enough trend for land use planners to prepare for. Although the outright trend may still be toward single family detached, there are increasing numbers of people who are willing to buy attached homes provided they are planned and designed properly. For example, in Scottsdale, Arizona, a developer built 134 units of townhouses and flats on an 11 acre site. The buying public was brought in due to the creation of a park-like setting within the desertscape. Key marketing strategies included an extensive $650,000 water feature and a village design which played down the high density of development. Likewise, Massachusetts's planners must take note of similar occurences in their own backyards. A project called the "Hills" located in Wayland, MA was sold out on opening day in June of 1985. When phase II was completed, all 44 units were sold out on opening day in January of 1986, (Builder Magazine, 1986). Land use planners must recognize such trends in the housing (and business) market and prepare for them through the implementation of fair and environmentally stringent controls.

Continuous population growth and changing lifestyles have affected the housing market. The planner must regard business trends and economic indicators such as inflation when considering control and protection measures. Inflation, for example, has fueled price increases in land, servicing and construction costs. An increasingly significant segment of the population annot afford to live in a single family detached dwelling. Multifamily units are beginning to spring-up where real estate prices are high and land use controls allow it, (Butcher, 1979). Land use planners must anticipate the consequences of such trends and prepare for them through control and protection measures.

Demographics, economics and business have greater impacts that stretch far beyond residential dilemmas. One example of a consequence of growth beyond residential development is the frustrating traffic gridlock which is increasing in intensity, seemingly on a daily basis. "Throughout the United States local transportation officials are looking at new highway designs, improved signalization techniques, closed-circuit television surveillance, micro-computer detectors, motorist information boards and completely new public transit and freeway systems," (Darnell, 1987). The Federal Highway Administration reported that traffic in the 34 largest U.S. cities increased by over 50 percent between 1970 and 1980 alone. This urban increase in traffic is partially attributed to population increases in suburban areas versus those in the city, (11 percent suburban increase as compared with a 2.4 percent urban increase).

With the trend toward decentralization of businesses away from the urban core, (such as Route 128, the "High Technology Highway" outside Boston), and the residential movement out of the cities, activity has also increased to belts around the urban fringes. This activity can again be equated with traffic. In San Francisco, a 100 corporations moved 18,000 jobs out into the suburbs in 1985 alone, (Darnell, 1987). Significant changes in employment trends such as this greatly effect transit and housing, thus growth, in an area.

All of the factors discussed here impact how society must accommodate growth in terms of controling development and protecting sensitive areas. If a major business employer chooses to locate 1,000 new jobs in a rural town just outside of Worcester, it will have a multitude of consequences impacting the surrounding communities. No business or economic trend moves independently, but instead, drags along a host of complicated issues inherently related to it. The land use planner must hold onto the reigns of a dynamic region, such as Massachusetts, as it continually seeks to transform itself from an "agrarian society to one dominated by industry and presently is heavily influenced by service" and technological activities, (Steaher and Luloff, 1985, p.45).

SECTION TWO

LOCAL LAND PROTECTION TECHNIQUES

CHAPTER THREE: NON-REGULATORY TECHNIQUES

Any community may control development and protect sensitive areas without regulatory authority in generally one of three ways: 1.)direct land acquisition, 2.)open space and recreation plans, and 3.)growth management plans. The most expensive of these alternatives is typically direct land acquisition.

1. DIRECT LAND ACQUISITION

Outright Land Purchases

The concept of direct land acquisition is certainly not a new one as governmental bodies have been landowners for centuries. This technique is relatively new as a land protection technique, however, and is a reactive governmental response to the disappearance of vast tracts of open space within its own communities. As growth persists throughout Massachusetts, some rural responses to development have been to raise the money (or deplete the general fund) and buy property with the title going to the town or city. This type of outright purchase of raw land is by far the single most expensive and least feasible alternative for any community. If a developer seeks an eight acre tract of prime farmland in an industrial zone for the development of an industry, it means the town or city is going to have to solicit a large amount of cash, deplete reserves or surpluses in the local budget or otherwise raise money in order to complete with the market value/developer's offer on the parcel.

Beyond the fact of the money that is required, one must also bear in mind several issues regarding the potential purchase of land:

1. Does this desired parcel of land represent an intrinsically significant piece of land to the community in terms of its character, location, natural or cultural importance?

2. What will the effects be (long term and short term) on the local budget? Will the city or town be able to recoup their financial loss, (liquidate), if an emergency should arise?

3. Who or what department will be charged with the responsibility of maintenance? How will that effort by funded?

4. What will be the long-term uses for the property? Will it remain an open space or be converted into a municipal recreation area?

Recently, state governments have begun to recognize the importance of land purchasing as a means of rapid, non-regulatory land control in addition to local inability to raise such large amounts of capital. As an example of such recognition, Massachusetts's Governor Michael Dukakis proposed $258 million for an open space bond, the House of Representatives raised that figure to $440 million and the State Senate added $101 million to bring the bill's total to $541 million. This bill would allot most of the money for land acquisition, including $80 million for purchases by cities and towns. Rhode Island voters endorsed a $65 million conservation bond which earmarked $35 million for land purchases by communities. Likewise, other New England states host similar bills which allot funds for limited land purchases, (The Boston

Globe, November 15, 1987).

Most importantly, one must consider the overall idea of outright land purchasing. Even with state support, no town or city can afford to buy all the land it wishes to protect and save, so this is by no means a definitive solution to a community's growth increases. It should be remembered that if a community buys land, no property taxes may be collected on it, thus producing a further financial consideration for the town or city.

Outright purchases of land as a means of controlling growth are most successful when prepared for, rigorously evaluated and used very sparingly. A community cannot be held as custodian for all this land. Private sources of support must be sought after and utilized for continued protection and management.

Floating a Bond

Floating a bond is one method which a community may use to obtain money for direct land acquisition. Bonds constitute the long-term indebtedness of communities and can create great fiscal stress if the municipality does not have the ability to maintain itself through its tax collection. The purpose of a bond is to provide finances via an outside source that a community needs. In entering the bond market, a town or city must show that it can pay the money back. Bonds, then are a means for spreading debt over many years thus easing the tax burden of the town or city, (See figure 3, Procedure for Issuing a Municipal Bond).

There are different types of bonds, but in land acquisitions, a general obligation bond is commonly used. This

PROCEDURE FOR ISSUING A MUNICIPAL BOND

ESTABLISHMENT

1. Need: how much is needed in this circumstance?
2. Cost: financial cost to the community?
3. Interest: determine maximum interest the municipality can absorb
4. Date: determine election date for vote on whether or not the bond should be approved

ADVERTISEMENT

Twice: 30 days and 15 days before is typical for notice dates; local by-laws or ordinances will identify exact dates

ELECTION

Depending on where you are, you will require either a majority vote or a two-thirds vote of approval

CONTESTATION PERIOD

Typically a thirty day period to contest the approved bond

SALE

Choice of public or private sale; if you have a low bond rating, it is best to go with a private sale. The choice is both ethical and legal.

PASSING A BOND ORDINANCE

This retires debt, in effect, as it is a commitment to raise taxes until the bond is paid off

DELIVER AND PICK-UP BOND

Figure 3: Procedure for Issuing a Municipal Bond
Source: Mullin, John from a lecture on Economic and Fiscal Issues, Amherst: April 13, 1987.

type of bond has the lowest interest rate because it is secured by taxation, thus, they are regarded as absolutely safe. If a municipality wishes to purchase a parcel of land, it may apply for a general bond secured by taxes.

Massachusetts has the lowest rate of bond indebtedness of all the industrial states. Although it has the capacity and economic support to float a bond, it does not have the psychological capacity as yet, (Mullin, 1987). In considering floating a bond for a purchase of real estate, towns and cities alike must consider the same issues as if they were directly purchasing it with existing funds, (maintenance, purpose, future uses, etc.) If these considerations are prepared for, floating a bond can be an excellent tool for protecting sensitive areas and controlling development in Massachusetts.

Land Banks

A third alternative for a municipality to pursue when considering direct land acquisition is the creation of a land bank, a relatively new approach for financing local open space protection. The land bank is essentially a "tax on real estate transactions with the money going towards the purchase of land for the town" or city, (The Chronicle, 1988, p.3). It stems from the idea that Massachusetts has been experiencing an intense housing pressure with no increase in population, (pressure has derived from population shifts and increasing numbers of household units of smaller size), and it is projected that the total population will increase within the next decade, "promising an ever more aggravated growth crunch," (ELM

Education Fund Issue Paper, September, 1986, p.1). Such unprecedented growth demands innovative growth management strategies as is found with the land bank.

The ELM Education Fund Issue Paper clearly highlights the fundamentals of such a program, (p.3):

> "The land bank concept is simple: On its own initiative, a community establishes a small real estate transfer fee and the proceeds go into a locally managed fund dedicated to the protection of open space."

The paper continues with a defense of the land bank principle:

> "With hyper development contributing to the urgency of open space protection and the difficulty of implementing that protection, land bank funds allow a community to harness the economic vitality they are experiencing in order to protect critical open space resources."

Although such a program faces criticism about adding financial burdens onto those who wish to buy land and aggravating an already blistering market by increasing the cost of housing, the land bank option in Massachusetts continues to gain support in rapidly growing communities such as Nantucket.

Land banks have long been practiced in Western Europe and Canada as a means of acquiring and holding public land for the needs of growing municipalities including schools, housing and roads. Conservation land banking began in Massachusetts in 1983 on Nantucket through a special act of the legislature. The Nantucket land bank allows the proceeds from a two percent real estate transfer tax to underwrite bond issues for land conservation purposes, only. Presently, the Massachusetts Legislature has a bill pending before it which would give all cities and towns of the Commonwealth the option of creating municipal land banks to be financed by a real estate transfer tax of up to two percent. This legislation has the endorsement of Governor Dukakis who also wishes that land banks return to the earlier concepts practiced by Europeans and Canadians by using these banks for the purchasing of land for affordable housing in Massachusetts communities, (Yaro, 1987).

Conclusion

Direct land acquisition is an important and sensitive consideration for any Massachusetts community to undertake, both in terms of costs and politics. The strategies of outright purchasing, floating a bond and, to some extent, creating a local land bank are each practiced in the Bay State and are enjoying varying degrees of success. One further alternative of direct land acquisition not discussed herein is an override of Massachusetts's proposition 2 1/2. Although a community can override its 2 1/2 percent levy increase limit to finance capital expenditures such as a direct purchase of land, this method increases local property taxes and are therefore widely considered to be a regressive alternative, (ELM Education Fund Issue Paper, September 1986). Outright purchases, the use of bonds and land banking strategies appear to be setting the trends in Massachusetts's direct land acquisition techniques.

2. OPEN SPACE AND RECREATION PLANS

A second general way that a community may protect land in Massachusetts is through an application process for state funds. By following a set of prescribed instructions, a municipality may complete a comprehensive application accompanied by an open space and recreation plan and submit them to state officials in return for possible approval of state aid to be used in the conservation and protection of open space. So that one my better understand such state programs, it is first necessary to explore the rationale behind a community's desire to preserve open space.

<u>The Case for Open Space</u>

Although several years ago open space may have seemed abundant in areas such as central and western Massachusetts and Nantucket, today it is a vital resource coming under an increasing amount of pressure for development, (Peskin, 1978). While a community may wish to preserve open/conservation space for any number of reasons, it would typically do so for serving recreation, conservation and public service purposes in order to preserve natural and scenic resources, (Coplan, 1984). Thus urban, as well as rural and suburban communities, are concerned about the need to preserve open space in Massachusetts and are seeking to develop land conservation programs as part of a larger effort to preserve community character and manage growth, (Yaro, 1987).

In his 1987 monograph, <u>Preserving Open Space in Rural and Suburban Communities</u>, Robert Yaro argues that it is important to decide which objectives are key to a community's goals before deciding which technique(s) is most appropriate: Will land that is conserved be used in to provide open space for recreation purposes? Will it be used to preserve important natural resources or resource-based activities such as agriculture and forests? Will the community's open space be used to guide the location and/or rate of development or will it preserve the rural, open character of the community? If the land is to be protected as well as used for recreation purposes, a town or city may apply for state aid based on an open space and recreation plan.

Traditionally, the approach which has been used in the preservation and protection of land has been direct land acquisition. Such a method has proven costly but successful in preserving and providing public access and recreational opportunities. However, this type of acquisition has had little or no power in fostering additional preservation or stimulating the surrounding economic development of rural and suburban communities. Therefore, it is imperative that communities strive for "strategies of growth that maintain economic stability," such as with a recreation facility which benefits the community as a whole, and "allow aesthetic enjoyment of the land," (Brown, 1986, p.4). This notion is preserved in the Massachusetts state aid program which is used to fund the acquisition of open space and recreation areas.

Open space and conservation land serves several functions within a community. First it may provide for the establishment of a recreational opportunity within the town or city. Open space further helps in establishing an attractive community design norm as it maintains and conserves natural processes. A natural recreation facility serves not only recreation purposes, but also the need for pleasant, liveable and attractive communities. It is probably true that rigid large-lot zoning has bulldozed more land for fewer people while open space can and has relieved suburban areas from monotony by providing chunks, strips and buffers of undeveloped, protected areas. Open space and conservation land is a necessary ingredient in maintaining natural resources and providing for the coexistence of humans and their environment, (Little, 1968).

There is no doubt that conservation , open space and recreation areas serve many important functions within a community. The economic effects of such spaces, however, must also be considered at this point. In his 1968 book, Challenge of the Land, author Charles E. Little speaks of the economic advantages of open space. With increases in density comes an increase in municipal costs, he argues, but with an increase in amenities, (such as with open space or recreation areas), comes an increase in municipal revenues. Open and conserved space then, can be the controlling factor in terms of a community's economic see-saw. Density brings with it an increase demand for services which translates into an increase in costs to towns and cities. Open space steps into this continuum as the reversing agent. Economically speaking, a community can benefit from open space and conservation/recreation plans, and may now do so in Massachusetts with the benefit and support of state aid.

The Massachusetts Example:

In 1984, Governor Dukakis signed into law, a $200 million state-funded open space and recreation area program which would enable communities across the state to enjoy the benefits of open and recreational space, (Greene, 1985). Additionally, there are several other programs in the Commonwealth that have been available (and remain available), to towns and cities seeking to preserve some open space or recreational areas. However, this 1984 program remains the single-largest funding program for open space and recreation areas that Massachusetts has ever enacted, thus suggesting the increasing importance of such a commitment.

As an example of programs which municipalities may seek to retain their open space or recreation lands under, three may be summarized which are administered by the Division of Conservation Services in the Massachusetts Executive Office of Environmental Affairs: 1.)The Federal Land and Water Conservation, 2.)The Massachusetts Self-Help Program, and 3.)The Massachusetts Urban Self-Help Program. Each of these assist communities in the Commonwealth in acquiring and/or developing recreation, conservation or open space areas and facilities.

1.)The Federal Land and Water Conservation Fund

The Federal Land and Water Conservation Fund is geared to providing reimbursements for the acquisition and development of lands for the purposes of outdoor recreation. Established by an act of Congress in 1965, this fund can provide a 50 percent (or less) reimbursement to states and their political subdivisions for outdoor recreation land and its development as such. This fund, like the State Self-Help Funds, requires the submission of several planning documents such as conservation and recreation plans which are elements of a comprehensive master plan for the town or city.

2.)Self-Help Program

Massachusetts General Laws, c. 132A s.11, establishes the Massachusetts Self-Help Program. This particular measure of assistance can provide up to 80 percent reimbursement for the acquisition of conservation lands only. Additionally, these funds can only be distributed to qualifying communities with local conservation commissions established under M.G.L. c. 40 A s. 8c. Conservation plans prepared or updated within the past five years only are accepted for review. (This allows for a systematic method of meeting local and regional conservation and open space needs).

3.)Urban Self-Help Program

Finally the Massachusetts Urban Self-Help Program provides up to 90 percent reimbursement for the acquisition and development of park and recreation lands to Commonwealth cities and towns with a population of 35,000 or greater. Established by Massachusetts General Laws, chapter 933 of the Acts of 1977, the Urban Self-Help Program will only apply to those municipalities which have established park or recreation commissions as well as conservation commissions. Additionally, it a city or town can prove a particular proposal will provide a regional or statewide usage, the Secretary of Environmental Affairs may waive the requirement that a town have a minimum population of 35,000 persons.

Plan Formation and Purpose

Often a community considering the formidable application procedure for these funds may have to hire an outside planning or consulting group to aid them with the proper preparation of materials to be used by the Division of Conservation Services in reviewing an application. In 1986 the Valley Consulting Group, (VCG), did such work for the town of Adams in the northwest corner of Massachusetts. The final product was presented by the VCG to Adams and aided town officials in several ways:

1. By determining the current status of open space and recreation resources
2. By ensuring the continued use, development and preservation of those resources
3. By initiating the production of an action plan that would serve to enable Adams to meet future demands more completely and effectively
4. By preparing Adams for possible future of large developments

The completed report, findings and most importantly the open space and recreation plan enabled the town to apply for federal and state aid through the various funding programs discussed earlier.

Open space, conservation areas and recreational areas provide communities with many ecological, aesthetic and economic advatntages. The tools for acquiring such land must be used so that communities may creatively and knowledgeably be allowed to grow and not to be overrun with endless developments. "Just as zoning was once gingerly attempted as a means of controlling the physical environment, today the preservation of meaningful systems and parcels of open space is coming into use as the next logical step in coping with the inexorable forces of development," (Little, p.48). Additionally, the cost of such efforts are relatively small for the city or town yet not absent when considering the advantages of state and federal reimbursement programs which have proven themselves in Worcester, Middlesex, Barnstable and Essex Counties, (Peskin, 1978). Open space, conservation areas and recreational areas serve cities and towns across the state by providing communities with a fruitful heritage that is as fragile as it is priceless.

3. GROWTH MANAGEMENT PLANS

The third non-regulatory way which a Massachusetts town or city may control development and protect sensitive areas is through the establishment of a growth management plan. A plan such as this is a non-regulatory tool which gives direction to a municipality even though it may contain regulatory measures of control. The growth management plan is a rationale for a community. While elements such as zoning and bylaws are actual laws and thus regulatory by nature, (as well as a legislative technique), the plan is devised as a tool by which place, location and the quality of development is managed by a community.

Purpose and Rationale

The purpose of any community's growth management plan is essentially the same: to address issues taking full advantage of benefitial opportunities offered by growth in a city or town while effectively mitigating their potential negative side effects. Likewise, most growth management plans are typically comprised of a goals statement, policies, and supporting data. Policies, then, become the basis for future regulatory actions as they are an approach to achieving the stated goal. As a functional element of the growth management plan, a policy translates goals and values of residents and officials into guidelines for town administrators, (Dartmouth Growth Management

Plan, November 1987).

A. The Transient Society With a basic understanding of the function and purpose of a growth management plan, the factors and trends which make growth management so important in Massachusetts today must be considered. One of the primary reasons for society's increased interests in managing growth stems from the movement of a transient society and the increasing burdens placed on our environment. Increased employment opportunities, the development, extension and modernization of rapid transit to and from urban areas and enhanced municipal services in outlying areas have each been credited with influencing movement of people in ever-increasing numbers to once undeveloped and agricultural areas. Further, "the importance of growth problems today have been compounded by the environmental impacts of an increasing population which must compete and utilize finite resources," (McKean, 1986, p.2). These claims may be supported if it is considered that when such population growth is translated into land conversions, the United States alone has developed three million acres of rural land on a yearly basis since the 1950's, (Fabos, 1983).

Population and Home Market A second major reason for increased populations and pressures has been related to a "renewed prosperity which has significantly boosted the second home market" in addition to a strong push to build new residential subdivisions in rural Massachusetts communities. These trends "threaten to replace diverse, productive, beautiful landscapes with a homogenized landscape lacking defined centers and natural beauty," (Arendt, 1987, p.4). Thus growth management has been used as a non-regulatory technique to articulate the concerns, goals, and values of citizens in many communities.

It is crucially important that "if present growth trends in world population, industrialization, pollution, food production and resource depletion continues unchanged, the limits to growth on earth will be reached sometime within the coming century. By the same token, it is possible to manage these growth trends and to establish a condition of ecological and economic stability that is sustainable far into our future, (McElroy, 1985).

The Case for Growth Management Plans

"Why manage growth?" Simply stated, growth is inevitable and unstoppable, but the potential destruction in terms of society's rural heritage and natural resource base is not. It is society's challenge to accommodate growth using such tools as a growth management plan. Society must strive for sustainable development, according to Peter Jacobs in his 1985 article entitled, "Achieving Sustainable Development." It is a community's responsibility to insure that strategies and plans are "conceived in such a way as to satisfy basic human needs while maintaining and improving the living resource base upon which these strategies and plans depend."

The prolific Ian McHarg wrote in his 1971 classic, Design With Nature, that "uncontrolled growth is inevitably destructive, occuring sporadically, spreading without discrimination" and surely poised to slowly "obliterate the valleys, inexorably cover the landscape with its smear and irrevocably destroy all that is beautiful and memorable," (p. 83). In defense of growth management planning, McHarg argues that such planned and guided growth is more desirable and more profitable than unplanned growth.

<u>Growth Management Options</u>

If growth management is so important, and a growth management plan is so desired as a means of controlling development and protecting sensitive areas, what are some of the options, (or techniques) that are available to a city or town as part of such a plan? First, we must recognize that the responses of communities to the forces of growth pressures are linked to limited monetary sources. Thus, solutions, such as growth management plans, must respond to the planner's concern of providing for equitable use of the land alongside the dynamics of growth, (McKean, 1986).

Secondly, the growth management tools and techniques incorporated in a growth management plan influence many different aspects of a community including quantity of developments, types and character of developments, economic and environmental costs of growth, location of development, timing or rate of growth and the density of development, (Brower, 1984). It is essential to understand and to recognize which technique influences or produces which response so that such selected solutions serve to aid and support the goals of a successful growth management plan.

<u>1.</u> <u>Local Zoning and Subdivision Regulations</u> In terms of

managing growth rates, there are countless options that a community may select from. Various regulatory forms of control such as zoning and subdivision regulations, (to be discussed in greater depth in chapter four), are characterized as the traditional forms of land use control devices having been adopted by municipalities throughout Massachusetts in an attempt to contain, limit or control growth in one respect or another. For example, zoning includes density allocations for specifically identified zones; thus a theoretical maximum population figure is set for a particular jurisdiction. Likewise, subdivision regulations, by virtue of their purpose, also affect allowable population limits.

<u>2.</u> <u>Moratoriums</u> More recently, temporary controls, (regulatory in nature), have been used by many municipalities as an interim and immediate control for a limited time period. Moratorias on both zoning or facilities are two options which a town or city may opt to pursue in temporarily managing growth, (Herr, 1987). Typically these are used as emergency measures which stop development on a limited basis while community officials are given time to adjust to rapid, uncontrolled growth. It must be noted that moratoriums do not permanently stop development because while it is in effect, developer's plans may still be filed. This moratoria alternative may only be used for a short time as a growth management measure while the city or town takes the necessary steps in pursuing a longer term growth management plan.

<u>3.</u> <u>Federal Control</u> The federal and state government can also take steps towards implementing growth management. First,

the federal government receives its growth management powers from the police powers of the U.S. Constitution. The fifth amendment's police power allows eminent domain which permits the government to take private land for public benefit after proceedings that fairly notify and offer the property owner a judicial hearing and after just compensation has been awarded to the owner, (Cantanese, 1979). This is commonly referred to as the eminent domain or "taking" clause and has been the subject of numerous legal battles ranging from the definition of public use to the amount awarded for "just" compensation. The fifth and fourteenth amendments to the Constitution also speak to growth management in that they call for due process of law and equal protection for all. Additionally, federal regulatory authorities participate in the growth management process by creating and enforcing regulations which protect the environment. Congress may also enact new legislation which qualifies as a growth management measure.

<u>4.</u> <u>Statewide Control</u> Statewide growth management plans are not uncommon and can prove quite workable as evidenced from the example of Florida. As one of the fastest growing states in the nation, it "has undertaken a progressive statewide program of planning and growth management designed to anticipate future demands and to meet present needs caused by the rapid expansion of population and the use of its resources," (Lewis, 1986, p.1). The Floridian theme of an integrated, coordinated and consistent management strategy has slowly begun to help this state toward its goals in managing phenomenal population and development

growth throughout its 458 local cities and towns. Like the federal government, state agencies and legislatures equally participate in the process by creating legislation and regulations which control development through the growth management process.

Case Examples

Finally, the successes and failures of non-regulatory growth management plans in Massachusetts's local communities may be examined through the examples of Groton, Sandwich and Nantucket. Each of these Bay State towns experienced rapid increases in both population and development with accompanying pressures placed on natural resources. Each town incorporated different growth management methods with varying results:

Groton Groton, Massachusetts recognized early on that advanced planning, such as a growth management plan, was a necessity in order to ensure a harmonious balance between conservation and development. First, the newly-formed Growth Policy Committee produced a report which led to a temporary building moratorium and a request for a professional consultant to come in for assistance in revising the town's existing zoning by-laws. After this was accomplished, the town meeting approved of the proposed zoning changes which, among other things, called for a reduction from the original frontage requirement of 225' down to 40' while allowing no density increases. A total of 380 acres of open space, attributed to this growth management plan, has been preserved from 1980-1987 while allowing developers to continue to grow with the town, according to its rules for sound growth practices, (Arendt, 1987).

Sandwich The town of Sandwich is on Cape Cod and thus, has been receiving a large share of the Cape's unprecedented growth, both in seasonal and year round developments. Over the past 30 years the town attempted to manage growth by using several different planning techniques: one acre zoning, cluster subdivisions as an option in any district, and site plan review. However, Sandwich's population has increased 59 percent since 1980 and it now faces the prospect of building new schools, a new town hall, a new fire station and constructing a new sewer system. This Cape community's experiences have come as a result of one acre zoning which "programmed the town for an eventual population of 35,000" which is many times larger than desired and realized by voters at the time, and because cluster development served to frequently blanket previously open spaces with large house lots thus "creating a suburban character overnight." Other reasons were also responsible for this failure, but Sandwich is now updating its methods through the creation of an effective and comprehensive growth management plan, (Hoxie, 1986, p.5).

Nantucket Finally, one of the most frequently cited examples of phenomenal growth in the Commonwealth is the island of Nantucket which boasts a significant area of coastal heathlands and comprises the largest historic district in the United States. From a build-out projection using the town's existing zoning by-laws, a research team at the University of Massachusetts determined that an additional 6,900 people would be allowed to build on the island. With this figure, it was immediately recognized what a tremendously negative impact such unchecked growth would have on island services such as traffic, parking and transportation, and on its natural resources and distinctive character. Nantucket took significant steps in preserving its visual, cultural, historical and natural integrity by creating a growth management plan which eliminated conventional zoning methods and incorporated newer, innovative strategies to manage growth such as performance zoning, development limits and land banking. Nantucket is now beginning to shape its own destiny through the creation of a comprehensive, non-regulatory growth management plan which incoporates regulatory control measures as a means of controlling development and protecting sensitive areas.

CONCLUSION

Direct land acquisition, open space/recreation plans and growth management plans each provide a non-regulatory means for a community to control development and protect sensitive areas. Each of the three methods allows cities and towns to use non-regulatory alternatives to respond to community values and concerns.

CHAPTER FOUR: REGULATORY TECHNIQUES

While it is true that any Massachusetts community may control development and protect sensitive areas through the enactment of the non-regulatory measures addressed in the previous chapter, it is also true that a city or town may implement regulatory-based control. Such control derives from regulations or laws created by federal, state and local governing bodies. It is also true that regulatory control often experiences more legal confrontations than does non-regulatory control.

Three broad categories of regulatory control shall be addressed in this chapter: 1.)zoning, 2.)subdivision regulations and 3.)wetland acts and bylaws. While no singular discussion of such control can adequately cover all the far-reaching aspects of zoning, subdivision and wetlands protection, it is the intention of this chapter to introduce these controls, their rationales and their use in Massachusetts's communities today.

1. ZONING

Definition

Certainly the most well-known, if not the most popular form of regulatory land use control is zoning. Richard Babcock, in his classic work, The Zoning Game, (p. 18), defines zoning in the following terms:

> "Zoning is a process. It is a part of the technique through which the use of private land is regulated."

Zoning is not the absolute means by which land use policies may be carried out. Instead, zoning is but one of the tools that can be used to implement such policies that typically represent the products of a comprehensive master plan. Although many tools have been created to regulate land use, zoning has been the principle tool used for controlling land use in the United States since the 1920's.

What is zoning and what can it do? First, zoning is derived from the police power; that is, it is based on the right of the local, state and federal government to regulate control for the advancement and protection of the health, safety, morals and general welfare of the community, (Callies and Freilich, 1986). Locally enacted and regulated, zoning can enable a city or town to regulate the location and use of buildings, structures, land for trade, industry, agriculture and residences. Further, it may regulate the size and width of lots, size of yards, open spaces, percentage of a lot to be covered by buildings and structures, height, number of stories, size of buildings and structures and density of population, (Planning Services Group, 1965). Zoning is primarily concerned with the regulation of use and density.

History

Historically speaking, the first zoning ordinance was used in New York City in 1916 as a tool to regulate building setbacks. It was eventually challenged and upheld in the classic 1926 Supreme Court decision, The Village of Euclid, Ohio

v. Ambler Realty Company. This case challenged the validity of zoning by raising the issue of whether a zoning ordinance deprived the Ambler Realty Company of liberty and prosperity without due process of law. The Supreme Court held that zoning was a cogent application of Euclid's authority. This seminal case established the constitutionality of comprehensive zoning, and additionally served to sustain the "credibility of planning analysis by recognizing that planning studies could rebut the complaint that zoning was inherently arbitrary and capricious," (Fluck, 1986, p.38).

Prior to this decision, courts had relied on common law, citing most cases as issues of nuisance. From 1926 to the mid 1960's land could be districted; private land was now subjected to public control. This placed a great deal of faith in local governments. Since the late 1960's, there has been a greater emphasis placed on evaluating the ability of a municipality to execute the proper police power. Emphasis has been focusing on taking a harder look at the use of zoning in communities, (Enghagen, 1987).

Fundamental to zoning practices today is the division of a community into districts in such a way that the landowners in each district will use their parcels harmoniously. Typically the districts are organized in a heirarchical format, (See figure 4, The Zoning Pyramid), with the most exclusive districts, agriculture and single-family residential being placed at the top of the pyramid while heavy industry is placed at the base, (Roberts, 1982). Accordingly, zoning is used to

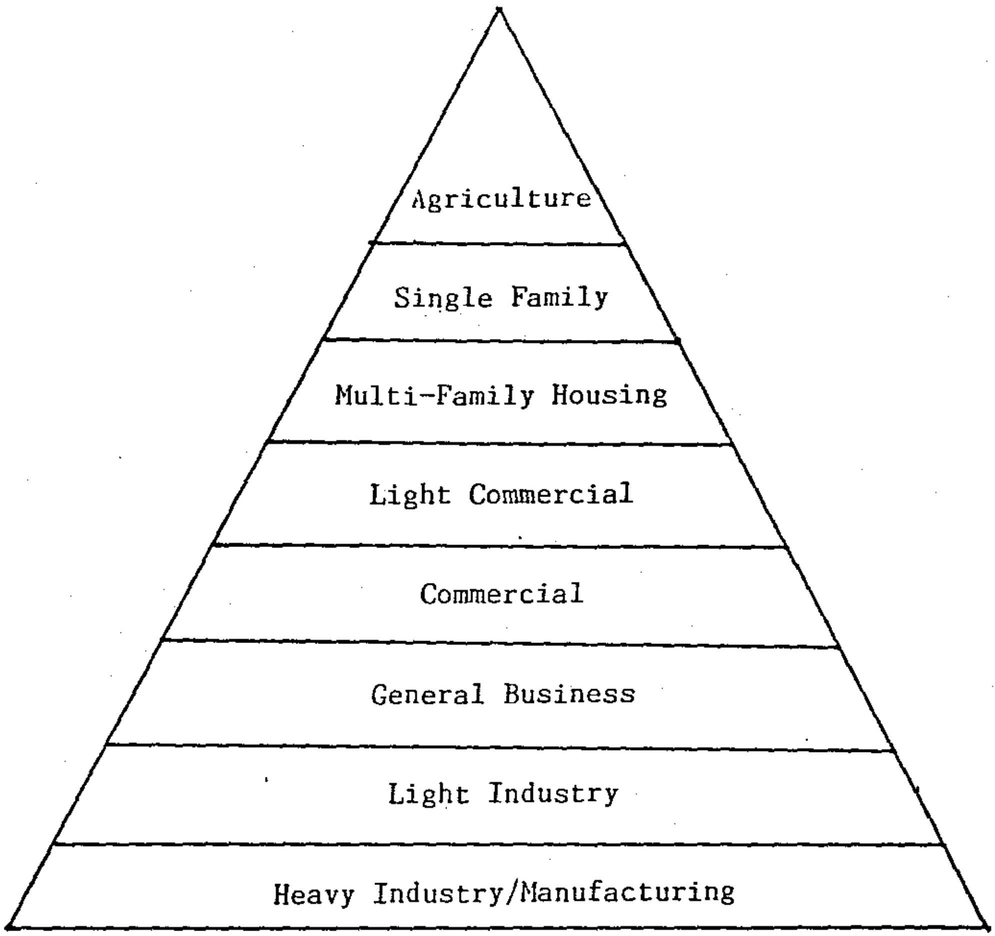


Figure 4: The Zoning Pyramid

dictate use and density restrictions specific to each district for the general public's good. This relates to one of the original notions that zoning should be used to protect higher uses such as single family housing from lower uses including manufacturing and heavy industry.

Scope of Zoning

A recent belief of many planners is that society has zoned too extensively, (Fabos, 1983). Yet zoning has assumed many positive forms by encouraging clustering, protecting floodplains, and most recently by permitting higher densities in exchange for amenities such as open space, (Peskin, 1978). Thus it is imperative that zoning, as a tool for regulatory land use control, be brought constantly under discussion so that it is an instrument finely tuned to public need and not simply a vague provision to be interpreted on an individual basis.

Zoning may take on different forms and respond to different functions. Each town or city can incorporate any one or several of these forms in response to their own comprehensive master plan or growth management plan. These various types of zoning may be broadly classified under the headings, "density-based control" which speaks to issues of population distribution and how that may be handled, and "alternative methods of control" which begins to illustrate a few of the many zoning variations available to a community in affording it the opportunity to "channel development into relatively orderly patterns," (Roberts, 1982, p.17).

Unfortunately, the blend produced between economics and conventional minimum lot requirements usually is one which resembles somber residential development which, by virtue of its homogeneity, elicites little reflection of the inherent qualities of that land. Additionally, such a combination only serves in the ultimate and unfortunate destruction of natural resources. Such residential development is traditionally excused as being unavoidable based on the economic necessity of maximizing the number of lots that are allowable on each parcel according to the inflexibility of conventional zoning, (Herr, 1987).

DENSITY BASED ZONING

Philip B. Herr states in his 1987 monograph that the same number of houses could be placed on the same parcel with a far greater sensitivity to land qualities if the regulations controlling density were directly aimed at the site level rather than on a lot-by-lot basis. "Direct density-based control gives the designer greater freedom to fit the development to the land" thereby giving the community "an opportunity to more sensitively guide development with a lessened conflict between economics and other values, (Herr, 1987, p.2). Such density-based control may take several forms: clusters, planned unit developments, planned development districts and flexible zoning.

Cluster Developments Clustering has been revered as the solution to suburban sprawl. As a classic form of density-based control, cluster development may assume one of two forms: the development of single family detached houses on smaller than individual lots with open space reserved as a compensatory measure for reduced individual lot areas, or multifamily structures and attached single family housing using the same principle. The key to clusters is that while density remains essentially constant, (some towns and cities do offer incentives in the form of density bonuses), open space and environmental resources are conserved and protected. (Herr, 1987). Cluster zoning is a means of preserving more open space without compromising the overall density requirements governing a tract of land, (Moss, 1977).

The clustering concept is as old as ancient Greece and Rome. It was particularly popular during the feudal period when homesteaders banded together for protection, security and commerce while they inadvertently left large tracts of land around the villages open for agricultural use and forest prodeuction. Residential neighbors clustered together and shared open land and common facilities, (Butcher, 1979).

Clustering enjoyed a rebirth during the twentieth century as communities in both Canada and the United States began to recognize the effects of suburban sprawl in the early 1960's. Additionally, during the late 1970's and into the present decade, clustering has been considered a great improvement with regards to developers crying economic hardship to local zoning boards of appeal after they follow rigid conventional local by-laws and can't realize a profit. Now through cluster zoning available in many communities, developers do not have the ability to claim hardship anymore. However, the adoption of this or any density-based control should not be considered a carte blanche for the developer. All clustering should be accompanied by design control through special design boards which are devised to augment planning boards, (Little, 1968).

By refining the idea and turning it into a density-based regulatory tool, clustering has been found to lower the cost of development for the builder, the buyer, and the community. Such higher density clusters with open space cost less to build and maintain than single family subdivisions, (EPA Report on Cluster Zoning, 1974). Much of the savings is actually experienced by towns and cities in that they only have to spend approximately two-thirds of what they would normally be forced to disperse into a subdivision for services, (developers provide roads, curbs, gutters, sewer and water tie ins and utility lines under clustering provisions).

Cluster development zoning clearly offers an array of benefits to both municipalities and developers: (Peskin, 1978)

1.) It is a legal and straightforward reulatory land use control
2.) It protects open space, (thus it serves to control development while protecting sensitive areas)
3.) It allows for flexibility in design alternatives
4.) It is economically more feasible to service than conventional subdivision layouts
5.) It keeps housing costs within reason by allowing for a lower overhead

One hundred Massachusetts communities are presently enjoying these kinds of benefits in conjunction with the issuance of special permits. Clustering by-laws in the Bay State provide cities and towns with a density-based tool which is an economically feasible method for preserving open space while providing single or multifamily housing.

<u>Planned Unit Developments</u> Planned Unit Developments, known as PUD's, are different from traditional clusters in terms of

scale and diversity. They were devised in response to the failure of the typical Euclidian Zoning District Classification scheme in addressing a variety of development. Thus, in the late 1950's, a search was implemented to identify more precise and flexible techniques for control. One of the most popular of these techniques was, and remains, the PUD, (Callies and Freilich, 1986).

Philip Herr, in his 1987 work entitled Density Zoning, defines PUDs as another classic form of density-based control. Planned Unit Developments allow both detached single family and multifamily dwellings subject to overall density rules, similar to the cluster technique. However, in addition to that, the PUD allows flexibility with allowed uses, often permitting small amounts of business and residential development to mix. Thus, under the theory of PUDs, the developer can propose a plan at odds with a community's existing requirements and, if approved, be subject to more precise regulatory control as mandated by the local government.

The PUD is typically a development proposal, (anywhere from two acres to thousands of acres), which is sent through a series of planning steps, (Cantanese and Snyder, 1979). In all PUDs, a designated amount of open space, (with the exception of parking areas), must be left open for residential enjoyment. Such a concept gained popular acceptance in the late 1960's as the demand for mixed-use clustered communities with shared and protected open space increased. In fact, as of 1978, the National Association of Home Builders estimated that there were close to 3,000 planned unit developments across the United States. A decade later, that figure has continued to increase. Today, one tenth of all Americans live in PUD housing, (Atlantic Monthly, March, 1988).

In terms of ownership, "the PUDs have separately owned lots with units that can be attached or detached and common areas owned (and oftentimes maintained) by a homeowner's association." As long as the hoeowner abides by the assessment obligations, property use restrictions and any regulations specific to that particular PUD, he or she may use the property and facilities of the PUD, (Rosenthal, 1984, p.45).

For developers seeking to create a PUD in a community which has such density-based control in place, he or she must follow certain guidelines which include: conforming to strict regulations, leaving the prescribed percentages of open space within the PUD, providing adequate recreational facilities deemed adequate by the Federal Housing Authority, (FHA), for the planned number of units, and conforming to the rigid environmental impacts, (Butcher, 1979). Despite what seems to be an overbearing list of guidelines, PUDs still offer the designer greater flexibility in design, especially for the challenging New England Terrain, (Langdon, 1986). With the planned unit development, developers are able to package their product in terms of the entire community created by the site design. Guidelines such as a minimum requirement for open space serve in a regulatory fashion, but also give the developer something ephemeral to sell; that is, the buyer is getting more than a house, he or she is buying into a community.

The PUD, by virtue of its scope and requirements, is a successful response to the post-war quandry of mixed-use development. Further, the concept of such regulatory density-based control has had little trouble fufilling its initial objectives: to achieve flexibility, to provide a more desirable living environment than what would normally be possible through a conventional zoning ordinance or by-law requirements, to encourage developers to use a more creative approach in the development of their land, to encourage a more efficient and desirable use of open land and to encourage variety in the physical development pattern of the community, (Enghagen, 1987). Towns and cities in Massachusetts must give serious consideration to the notion of incorporating the PUD concept into their local laws.

Cluster developments and PUDs are not the only answers to controlling development and protecting sensitive areas on a regulatory level. In his 1986 monograph, Density Zoning, Philip Herr additionally suggests two other alternatives today: planned development districts, (PDD) and flexible zoning. Both take cluster developments and PUDs a step further.

Planned Development Districts First, planned development districts go beyond planned unit developments as they tend to allow a broader mixture of uses including businesses and services which may serve a regional market versus a more finite based market for PUD businesses. Unlike the PUD, the PDD requires a complete rezoning of the site in question. Here the key step towards development is a legislative one while the

PUD's key step is an administrative one.

Flexible Zoning Flexible zoning, like both clustering and PUDs, allows for flexibility within the site design which otherwise would have proven to be impossible under existing conventional zoning regulations. It is unlike cluster zoning, however, in that a common space is not necessarily required. Further, it differs from the PUD in that it does not necessarily involve mixed uses. In its simplest form, flexible zoning is a technique allowing variation in lot sizes and frontages subject to predetermined municipal guidelines.

Conclusion The concept of density-based control is a relatively new one which, although it is successful in many circles, is still considered by some to be a threat to community character. Once these citizens and community officials are educated about the objectives and consequences of such regulatory control, it is quite likely that one form or another shall be accepted and incorporated into a community's framework.

In Massachusetts, towns and cities who experience phenomenal growth rates almost immediately begin looking into just these kinds of options in hopes of preserving community character and open space. Each of the controls introduced thus far allow for this by keeping development from damaging critical land and local resources, encouraging variety in development patterns, and by facilitating the use of incentives, (such as density bonuses), to achieve community objectives. Density-based control is a legal, fair and equitable means of growth and preservation for both the public and the private sector.

ALTERNATIVE ZONING FORMS

Municipalities may also incorporate many other alternate forms of zoning in order to better control and protect various aspects of community life. The creation of overlay districts or use of performance and incentive zoning allow any town or city additional leverage in their struggle to grasp and manage future development and its potential consequences. Further, contract zoning, albeit and illegal option, and conditional zoning will be briefly explored as they relate to growth and protection.

Overlay Zoning Overlay zoning, or the use of overlay districts, is a set of specific development requirements created and enforced in addition to those already designated in an existing ordinance or by-law, (Cantanese and Snyder, 1979). The classic case of Euclid upheld the validity of height and area standards overlaying various use districts; therefore, overlay zoning districts, (which are typically not a part of general use district descriptions), are still a straightforward and legal means for a community to impose extra requirements, (Callies and Freilich, 1986).

Overlay districts are usually areas identified on tracing paper which may then be overlayed onto a zoning, or use-district map. Developments falling within an overlay boundary must conform to both sets of requirements or to the more restrictive of the two, (Cantanese and Snyder, 1979). It was estimated in 1987 that the state of Massachusetts had over one hundred communities using this alternative approach to land development control. A great majority of the state's cities and towns that use overlay districts implement them as a means of protecting important watershed and groundwater recharge areas, (Yaro, 1987). Zoning with overlay districts provides an additional layer of safeguards for development in sensitive areas.

Performance Zoning It can be said that overlay districts require specific standards of use to be met within certain boundaries overlayed on a conventional zoning may. Conversely, performance zoning employs standards relating to acceptable levels of nuisance and side effects of a development rather than specifying required, acceptable uses, (Fabos, 1983). This alternative sets the upper limits on the measurable characteristics of land use.

By offering a comprehensive solution, this technique gives public officials the most latitude. Instead of implementing a rigid list of what cannot be done, performance zoning offers a set of design criteria which must be met to be approved as a development, (Cantanese and Snyder, 1979).

Although performance zoning has been traditionally used in larger cities and towns across the United States, Joseph McElroy wrote in his 1985 article, "You Don't Have to be Big to Like Performance Zoning," about the case of Bath, Maine which voted in 1981 for its first zoning ordinance. In his article Mr. McElroy describes Bath's desire for a "hybrid between a specification-type ordinance and a completely performance-oriented approach." Thus, the town came up with a plan which used performance zoning in built-up areas or where significant growth was expected to occur. Such tailoring is both welcome and often necessary for towns and cities to take full advantage of such concepts.

Incentive Zoning Another variant of zoning comes in the form of a trade-off system between the landowner and the municipality. This method is called incentive zoning. Also referred to as bonus zoning, this alternative is a "sophisticated form of barter designed as a means of achieving both developer profit and municipal amenity," (Callies and Freilich, 1986, p. 623). Incentive zoning provides benefits for the developer, (such as density increases), in exchange for certain public benefits, (such as an outdoor public arena).

This form of zoning is most successful in communities that have a system of existing zoning which is rigid enough to inhibit development but allows the developer to realize a limited profit. Market demand for the space has to be strong enough to entice the developer into building and providing the required public benefits, (Cantanese and Snyder, 1979). In sum, additional density is allowed to occur based on the desirability of the developer-provided public amenity, (Callies and Freilich, 1986).

Contract Zoning Some cities and towns have been faced with contract and conditional zoning. Contract zoning is illegal and thus, is an invalid exercise of zoning control. It is considered to be a bargaining away of the police power of a municipality, something which constitutionally cannot be done. When a proposed development requires an amendment to the zoning map which would consequently permit other uses besides those which an applicant proposes, considerable pressures arise to try and limit such uses through a side agreement or "contract," (Callies and Freilich, 1986). By using contract zoning, a commitment is made of the part of the local government to rezone a site if an individual developer meets the requirements set forth in a bilateral contract. This means that the zoning is at the preference of the developer.

Conditional Zoning A town or city may use conditional zoning as a legal, valid method of achieving the same results as contract zoning. This variation obtains a promise from the property owner, (or developer), to limit development or follow specified conditions in exchange for approval. The difference between contract and conditional zoning is that if the conditions are unmet at any time, the municipality has the right to revoke any approval thus returning the land to its original use immediately under conditional zoning. Here there is no contract between parties; the municipality is given complete preference and authority over the matter, thus it has not bargained-away its police power, (Enghagen, 1987).

2. SUBDIVISION REGULATIONS

Definition

A second broad division of regulatory-based control is subdivision control or "subdivision regulations." Subdivisions for residential development are the most frequently occuring physical planning challenge in suburban areas. As these areas expand, "undeveloped tracts are often purchased by private individuals or firms, subdivided into individual lots with necessary roads and utilities supplied, and built-up by either developers or individual buyers," (Cantanese and Snyder, 1979, p. 198). A subdivision, then, may be defined as any land tract which may be divided into two or more lots off of a public way and may include both residential or nonresidential development, (Hagman and Juergensmeyer, 1986). Further, a subdivision is typically provided with paved access, infrastructure, (public services), and the public easements necessary to serve them, (American Institute of Real Estate Appraisers, 1986).

Accompanying this idea of subdivision comes subdivision regulations and subdivision controls. Subdivision regulations apply "when a proposed use of land will divide an existing parcel into two or more lots which will not have access to an approved public way." Subdivision control is "enforced by the planning board" which may set requirements on proposed roads, sewers, drainage, lighting, lot sizes and frontage, (Peskin, 1978, pgs. 71-72). Essentially, the terms subdivision regulations and subdivision control are interchangeable.

Subdivision regulations are the most common development control device after zoning. They are used to control the conversion of raw land into building sites through adequate public improvements, the enforcement of certain lot sizes and setbacks, and the assurance of developable, drained lots, (Fabos, 1983). Subdivision regulations are controls implemented during the development process, (Hagman and Juergensmeyer, 1986).

Massachusetts Subdivision Control Law

The Subdivision Control Law, Massachusetts General Laws, c.41, allows any community "to regulate the design and construction of roads, sanitary facilities, parks, open areas, and proposals submitted by a developer of private lands not abutting existing public ways." This law is intended to insure regard for each of the following:

1. The provision of adequate access to all lots in a subdivision by ways that will be safe and convenient for travel
2. Lessening of congestion in such ways as well as in adjacent public ways
3. Reducing danger to life and limb in the operation of cars and other vehicles
4. Safety in case of fire, flood, panic and other services
5. Compliance with applicable zoning ordinances or by-laws
6. Adequate provision for water, sewerage, drainage and other services
7. Coordination of the ways in a subdivision with each other and with other public ways, (Planning Services Group, 1965).

Once the overall lot areas are established through a community's existing zoning, a subdivider must present the street layout, (which will serve the newly created lots), to the local planning board for review.

3. WETLANDS: ACTS AND BY-LAWS

As subdivision regulations and controls may be considered an adjunct to the zoning requirements of a town or city, so to should wetlands acts and bylaws fall under this heading. As a third and powerful means of regulatory control, wetland acts and local wetlands bylaws must be examined first in terms of the definition and importance of wetlands, then by reviewing the Wetlands Protection Act and Wetlands Restrictive Acts for the Commonwealth of Massachusetts.

Massachusetts law defines wetlands as "any wet area where the groundwater level is at or near the surface of the ground for a long enough period during the year to support a community of wetland-type vegetation," (Massachusetts Wetland Protection Act, 1972, Buffer Addendum, 1973). Such areas include both fresh and salt-water marshes, meadows, swamps and bogs which must border any one of a list of water bodies: lakes, creeks, streams, rivers, ponds, estuaries, or the ocean. Wetlands are an excellent source of feeding and resting and resting not only for many species of waterfowl, but also for several varieties of land birds and small mammals such as muskrats and beavers, (Ursin, 1975).

The primary biological value of a wetland is the fact that as a whole, wetlands aid in the process of creating communities in which a greater variety of living organisms may exist and replicate. Unfortunately, wetlands have been the target of great destruction since the vast exploitation of the Americas by the Europeans. The first English colonists drained wetlands en mass and reshaped the entire face of the eastern seaboard. Such a cultural heritage costs a great deal as it has been estimated that 50 percent of the original New England wetlands alone were destroyed, (Ursin, 1975).

Function

Today, wetlands occupy only a small percentage of our total land area, (see figure 5, Wetland Loss Rates and figure 6, Wetland Losses In Various States). Additionally, they remain among the last vestiges of open space which, in this era of rapid development, equates wetland conservation with primary

STATE	LOSS RATE	SOURCE
Lower MI Alluvial Plain	165,000 acres/yr.	MacDonald, et.al. (1979)
Prarie Pothole Region	33,000 acres/yr.	Haddock & DeBates (1969)
Wisconsin	20,000 acres/yr.	Wisconsin D.N.R.
NJ's Coastal Marshes	3,084 acres/yr. *50 acres/yr.	Ferrigno, et al. (1973)
Maryland's Coastal Wetlands	1,000 acres/yr. *20 acres/yr.	Redelfs, (1983)

*Indicates the loss rate after the passage of state coastal wetland protection laws.

Figure 5: Wetland Loss Rates

STATE	ORIGINAL NUMBER WETLAND ACRES	PERCENTAGE OF WETLANDS LOST
CA	5,000,000	91
Mich.	11,200,000	71
ND	5,000,000	60
Minn.	18,400,000	53
SD	2,000,000	35
Wisc.	10,000,000	32

Figure 6: Wetland Losses in Various States

Source for both figures: Rodiek, Jon E. The Wetlands Landscape System, Department of Policy Administration and Landscape Architecture, Texas Tech University, Texas: 1984.

land use goals. Without wetlands society would jeopardize itself to a significant degree. "Left in their natural state, wetlands provide many free services" to a town or city. Such low areas can channel storm waters, provide temporary storage for flood waters, serve as sources of public or private water supplies, aid in the chemical break-down of pollutants into non-toxic compounds and of course, provide a valuable home life for wildlife, (The Dartmouth Conservation Commission, 1987).

Society has destroyed an estimated 40 percent of its wetlands nationwide, (Hagman and Juergensmeyer, 1986). Fortunately, federal, state and local governments have enacted regulations which require that developments include "precise and accurate information on the environment that is being considered for alteration, especially wetland landscapes," (Rodiek, 1984, p.37). Generally there are two basic schemes of state and local wetland regulations: local administration with state oversight or state control with local input. The Massachusetts trend toward increased home rule suggests that strong local administrations are favored, (Hagman and Juergensmeyer, 1986).

Wetland Protection Act

The state government of Massachusetts has two key laws which clarify the relationship a local authority may have with a state agency. The Wetlands Protection Act, (M.G.L., c.131, s.40), is administered by local conservation commissions according to regulations established by the Massachusetts Department of Environmental Quality Engineering, a division of the Executive Office of Environmental Affairs. This protection act safeguards wetlands, associated resource areas and floodplains from overdevelopment. A local conservation commission has the right to expand the local control of activities within these areas by developing their own bylaws. The Wetlands Protection Act requires that any person seeking to fill, dredge or alter an area fitting the legal definition of wetlands to follow certain procedures as prescribed by the state and typically, local wetlands bylaws, (Peskin, 1978).

Wetland Restriction Act

The Wetland Restriction Act, (M.G.L. c.131 s.40A and c.130 s.105), has been successfully implemented in 75 coastal towns in the Commonwealth, but has not been used in inland towns as additional funding must first be appropriated by the State Legislature. With the Restrictive Act, activities are not regulated after they are proposed; instead, the intent of the Act is to identify and map significant local wetlands in advance, then restrict their future use. Local communities may circumvent this by using a local by-law to accomplish much the same thing, (Peskin, 1978).

Local Wetland By-laws

Local by-laws usually follow similar themes: "The purpose of this by-law is to protect the wetlands, related water resources, and adjoining land areas in this municipality by controlling activities deemed by the conservation commission likely to have a significant or cumulative effect upon wetland values...", (Dartmouth, Massachusetts Wetlands Protection By-Law, 1986).

CONCLUSION

The use of regulatory techniques by cities and towns across Massachusetts is extremely common and enjoys varying degrees of success throughout the state. Zoning is used in each of the 351 Massachusetts communities; likewise, subdivision regulations and wetland acts and by-laws are also widely used. Clearly regulatory techniques are widely practiced; however, each method must be individually selected, used and evaluated on a local basis. The future of regulatory techniques lies in a community's ability to continually fine-tune regulations to suit their changing needs.

CHAPTER FIVE: LEGISLATIVE TECHNIQUES

Local land protection techniques may evolve as a result of legislatively-based techniques. That is, land may be protected from uncontrolled development through such legislative measures as taxation. Local property taxes as well as government property tax reduction methods may aid in the land protection process. Additionally, the legislative technique of agricultural preservation restrictions, (APR), in Massachusetts and the notion of conservation easements are two other means available to the landowner threatened by foreclosure or tempted by developer's offers.

1. LOCAL PROPERTY TAXES

The most obvious example of the constitutional source of authority of land use taxing power is property tax. This is the major generator of local revenue, (Cantanese, 1979). Property tax is based on the market value of land, thus it is imposed based on potential land value. This can cause farmers to sell their land because they cannot compete with the taxes imposed on the basis that the land could be sold for residential subdivisions. Presently, municipalities are exploring the possibility of making land assessments according to existing uses rather than the highest and best use of the land. This would mean the farmer would pay property taxes based on the assessed value of the land as a farm, not as an industrial park or a subdivision.

"Property taxes are the number one source of revenue for educational and municipal services." When taxes rise, land is forced into development. High property taxes have a depressing effect with respect to the marketability of land in large chunks, (Little, 1968). Local property taxes must be used legally and uniformly throughout a community, but they must be based on just assessments calculated on the basis of existing uses. Further, these property taxes must offer some flexibility to the public by being imposed in conjunction with governmentally-sponsored reduction methods such as those enacted in Massachusetts.

While the majority of direct land use regulations occurs at the local government level in the form of zoning, most land use incentives are economic and arise in the form of tax benefits, (Pesking, 91978). Despite the fact that taxation and benefits lack the flexibility and precision of the police power, tax benefits can serve as the dominating influence when a landowner considers whether or not to deveop his or her land, (Coughlin, 1985).

2. LOCAL AND STATE GOVERNMENT TAX REDUCTION METHODS

Tax Fee Systems

Tax fee systems are employed to generate revenues. However, these systems can also have a significant controlling effect on potential land development and land use decisions; thus, taxation is another method of control, (Fabos, 1983). How do taxes act as a means of shaping such decisions if its effectiveness is restricted by equal protection and uniformity requirements under the law? Tax classification systems have long existed as a means of providing special tax treatment for certain types of land uses. Presently, forty-eight states have adopted statuatory and constitutional provisions allowing some form of different taxation. Such deviations from the uniformity standard are justified because those which enjoy tax benefits, (such as agricultural land), do not place the same demands, (sewerage, road maintenance, infrastructure), on government services, (Hagman and Juergensmeyer, 1986).

The Commonwealth has passed a tax classification system under Massachusetts General Laws, chapters 61, 61A and 61B which provides a means for the private landowner to receive tax breaks for forests, recreation and agricultural land which meets specific requirements. In the Leverett Growth Policy of 1976, a resolution was passed to seek ways in which the town could broaden its tax base and relieve the pending threat of increased taxes on land which agriculture and forestry practices were followed. The legislative techniques function as follows:

A. Chapter 61 Forest Lands Chapter 61 is concerned with the classification and taxation of forest land in the state of Massachusetts. Basically, the law provides tax benefits to owners of 10 contiguous acres or more of forested land who have applied and have been approved for such classification under c.61. When the owner of this classified land withdraws his or her land from classification or is withdrawn upon a final determination by the state, the landowner must pay a withdrawal penalty tax to the municipality equal to the difference between the amount of taxes which would have been paid under M.G.L. c.59 and the sum of a products tax established within c.61. No land under chapter 61 may be sold for, nor converted to, residential, industrial or commercial use while so taxed unless the taxing municipality has been notified of the intent to discontinue the forest use and c.61 certification.

This program is important as a means of maintaining forest lands in Massachusetts because the development potential of forest property as residential housing sites exceeds its potential for forestry uses. Most forest owners in the New England region retain ownership of their property for under ten years. It takes an average stand of Northern hardwoods, (sugar maples, yellow birch, beech, etc.), 120-150 years to reach peak maturity. With ten year interval turnovers, it is difficult to imagine over twelve owners allowing the stand to mature as taxes rise and the temptation of selling off land for development increases exponentially with each year, (Ross, 1986). Chapter 61 serves the economic needs of qualifying forest owners who wish to preserve their stands in the wake of development pressures.

B. Chapter 61B Recreation Land The legislation which seeks to control development and preserve recreation land is chapter 61B. Recreation land is defined in two ways: land that is no smaller than five acres in area that is "retained in substantially a natural, wild, or open condition is such a manner as to allow the preservation of wildlife or other natural and scenic resources," or, five or more acres devoted primarily to recreational use which does not interfere with the environmental benefits of the land. The eligibility of land for valuation, assessment and taxation under chapter 61B is determined separately for each tax year. If the owner should change the use of the classified land, the classification will be nullified and disallowed. Additionally, any buildings on 61B land occupied as a dwelling for the owner's family shall be valued, assessed and taxed by the same standards, methods and procedures as other taxable property.

Loss of Agricultural Land

Today, one of the most popular land types to be protected by legislative actions are agricultural lands. Throughout the United States, farms are being ravaged by both natural processes and encroaching land development. Because soil erosion is taking a toll on the midwest as great as during the dust bowl of the 1930's, Congress enacted a program in 1987 which removed 45 million acres of highly erodible cropland from production. Further, a 1981 USDA report entitled "The National Agricultural Lands Study" found that 30 million acres of farmland was lost to urban and non-agricultural uses between 1967 and 1975 alone. This devestating eight year loss equals the combined land areas of Vermont, New Hampshire, Rhode Island, Massachusetts, Connecticut, Delaware and New Jersey, (Gordon, 1987).

Farmland Benefit

Agriculture benefits many sectors of life in Massachusetts as well as across the country by increasing the quality of life for both urban and rural residents. Farmlands contribute to the environment in several ways: recreation, education, scenic beauty and as an "edge" aiding in the wildlife chain. Economically, agricultural lands contribute to the self-sufficiency of an area by providing locally produced foods, contribute to the economy by exporting some of its products, provide employment opportunities, and encourage tourist-related benefits based on its scenic beauty and character, (Braiterman, et. al., 1976).

History

Farmland dominated the landscape at the beginning of the nineteenth century. After the Civil War, the Reconstruction and Industrial Eras began to first bear witness to an abandonment of farmland for many reasons, including the development of transportation systems such as the railroads and canals, (Braiterman, et. al., 1976). At the end of World War II, Massachusetts had 35,000 farms representing almost 2,000,000 acres of agricultural land, (Roberts, 1982).

The critical turning point came between 1951 and 1971 when, for the first time in Massachusetts's history, the total area of agricultural land was exceeded by developed land. In 1978, Massachusetts had only 6,000 farms left representing 700,000 acres of agricultural land, (Peskin, 1978). Nationally, it is estimated that 35,000 acres of agricultural land are lost every week to development. (It should be noted that prime agricultural land and prime development land share similar characteristics: relatively free from vegetation, good drainage, accessible to transportation, and divided into large parcels). If these staggering trends continue, society's irreversible farm losses will be incomprehensible, (Hagman and Juergensmeyer, 1986).

The proceedings of the Northeast Agricultural Leadership Assembly in 1979 suggested that the impact of farmland conversion is greater than the sheer acreage would suggest. Productive farmlands need more than just land; they rely on support services and supportive institutions. But as land values begin to climb, banks become more reluctant to make long-term agricultural loans. Then, as areas develop, farm services either transplant themselves out of the region or are put out of business. Eventually conflicts arise between the developing community and the agricultural community and agricultural activities are severely restricted, (Davis, 1979).

In North America the concern for protecting agricultural land from development is a recent one because of a combination of factors. First, there has always been an implied myth of limitless land and too great a reliance on the brilliance of agricultural technology. Further clouding the reality of dwindling agricultural land acreage has been the production of large agricultural surplusses and a commitment to a free land market, (Bunce, 1985). Such a general reluctance to establish the importance of agricultural land over its use for speculative purposes has only served to hinder any intelligent effort to protect farmland.

<u>Case: Quebec's Agricultural Preservation System</u>

Fortunately, reluctance is beginning to succumb to the reality of losing millions of additional acres of prime agricultural land. Quebec has one of the strongest agricultural land protection policies in North America today. In late December of 1978, The Act to Preserve Agricultural Land, (Bill 90), was passed creating the "Commission de Protection du Territoire Agricole." This legislation is a process whereby the Commission temporarily declares part of a region as restricted in use; it allows a freeze on development instantaneously at different times in different places. Once decreed, affected municipalities negotiate with the ruling Commission to determine the definitive boundaries of the restricted use. Using a standard of land price determination equation, this restrictive use legislation reduces the price per acre of land and effectively allows agriculture to remain as a viable and productive mainstay of the local economy, (Vaillancourt and Monty, 1985).

<u>C. Chapter 61A Agricultural Lands</u> Massachusetts General Laws c.61A is the legislative tax classification and valuation system for agricultural lands, similar to those enacted for forests and recreation lands. Chapter 61A covers lands dedicated to either agricultural uses, (such as raising animals), or to horticultural uses, (such as raising foods for human consumption, feed for animals or other products including tobacco, greenhouse products and ornamental plants and shrubs). As passed under the recreation lands chapter 61B, qualifying land parcels must have a five acre minimum area. Eligibility requirements for this tax benefit program is determined every year and will be voided if the use of the land is changed at any

point.

Each of the governmental property tax reduction methods outlined, (M.G.L. chapters 61, 61B and 61A), work in fairly the same manner. While they represent different types of land use, each category is coming under increasingly strong development pressures. It is unclear, though, what the long-term impacts of tax classification programs are because the system is relatively new legislation. The program has been accused of encouraging leap frog development by allowing owners to retain properties for speculative purposes in the face of growing non-metropolitan development pressures, (Yaro, 1987). Hopefully time will show these laws as being successful mechanisms in providing necessary forests, recreation areas and agricultural lands for the future of the Bay State.

3. AGRICULTURAL PRESERVATION RESTRICTIONS

In the United States, agricultural preservation laws allow the state governments to enact zoning exemptions for farmland, right to farms laws and agricultural district enabling laws, (Callies and Freilich, 1986). The Massachusetts legislature has used some of this discretionary power and authorized a $5 million bond for the Department of Food and Agriculture's, (DFA), new program, Agricultural Preservation Restrictions, (APR). This money is used to purchase the development rights of farmland thereby compelling them to be assessed according to market value, (Roberts, 1982). So far, DFA Commissioner August Schumacher claims that 19,000 acres of agricultural land has been permanently preserved in Massachusetts, (Arendt, 1987).

Eventually the Commissioner would like to see individual towns and cities buying some of these development rights so that the state acts only as an assistant in the process. The only drawback of this program is that it is a long process; its strength lies in its simplicity. The Massachusetts APR is the most successful preservation restriction program in the United States today, (Hagman and Juergensmeyer, 1986).

4. CONSERVATION EASEMENTS

Legislative measures involving tax classification, reduction, and the Massachusetts APR program are positive options available to today's farmers and foresters so that they may keep and use their own land. Through additional legislative measures it is also possible for a landowner who donates development rights in the form of conservation easements, conservation restrictions and other charitable land gifts to receive federal, state and local tax breaks which make it economically feasible to participate in this style of private donation. This encourages the private sector to act a certain way by providing government-sponsored tax inducements.

Throughout this century, the continued conservation of natural resources has been achieved primarily through government actions. Almost unnoticed, however, has been the substantial contribution made by the private sector in pursuing wildlife habitats, scenic landscapes, historic structures, and most recently, agricultural lands. Much of this activity has been comprised of the donation of conservation easements to government agencies and non-profit organizations, (Gordon, 1987).

History Conservation easements were first used in the late 1800's to protect the parkways of Frederick Law Olmstead, Sr. in and around the growing city of Boston. The numbers of easements remained low until the early 1970's when an increasingly large number of states began passing legislation regarding their use. In 1976, the Tax Reform Act was the first piece of federal legislation explicitly recognizing conservation easements. Although they enjoy a great deal of popularity, conservation easements are still cautiously used as there is a lack of final regulations in place, (Journal of Land Trust Exchange, 1985).

Definition Conservation easements are a less-than-fee interest in real property that gives the holder the right to prevent certain activities on the land. As a flexible instrument of tax benefits and land conservation, the easement reduces the market value of the restricted property, thus reducing its property taxes. The conserved land may serve many purposes: public recreation and education, protection of habitat and ecosystem, the preservation of a historically significant area or structure, preservation of open space, and preservation of agricultural land or forest activities. It is essential that the donation yields a significant public benefit for it to qualify as an easement. Additionally, the conservation easement must be enforceable in perpetuity, (Gordon, 1987).

The Success of Conservation Easements

Conservation easements represent a middle ground between land ownership by conservation organizations and government regulation. It has been estimated that this method of protection has conserved more than 1.7 million acres of strategic natural land resources in the United States alone. So far the conservation easement has been used in 46 states by over 500 non-profit organizarions, (Journal of Land Trust Exchange, 1985). In the northeast, there are an incredible 561 easements protecting 58,628 acres alone, (see figure 7, Acreage Protected by Conservation Easements, and figure 8, Number and Acreage of Donated Easements Reported by Respondents). Surely this method of private land conservancy based on legislative tax relief is an effective approach to the protection of natural resources, (Bradley, 1984).

<u>Tax Benefits</u>

Charitable land gifts such as conservation easements and conservation restrictions, (which allow landowners to impose qualifying restrictions on their deed), may enjoy four specific tax benefits:

1. Reduction in federal income taxes
2. Reduction in federal and state capital gains tax
3. Reduction in local property taxes
4. Reduction in estate and gift taxes

By devaluation through easement donation, landowners may enjoy a reduction in their federal income taxes. The higher the donor's tax bracket, the greater the relief. While Massachusetts does not allow for this type of deduction under its state tax law, it does allow for a reduction in capital gains taxes, estate and property taxes. Of course, many variations and restrictions apply to these instances; it is always advised to seek professional legal advice before donating a conservation

	Federal	Gov't. Non-Federal	Non-Profit	Total
Purchased Easements	1,211,726	88,043	5,144	1,304,913
Donated Easements	12,741	116,883	331,853	461,477

Figure 7: Acreage Protected by Conservation Easements

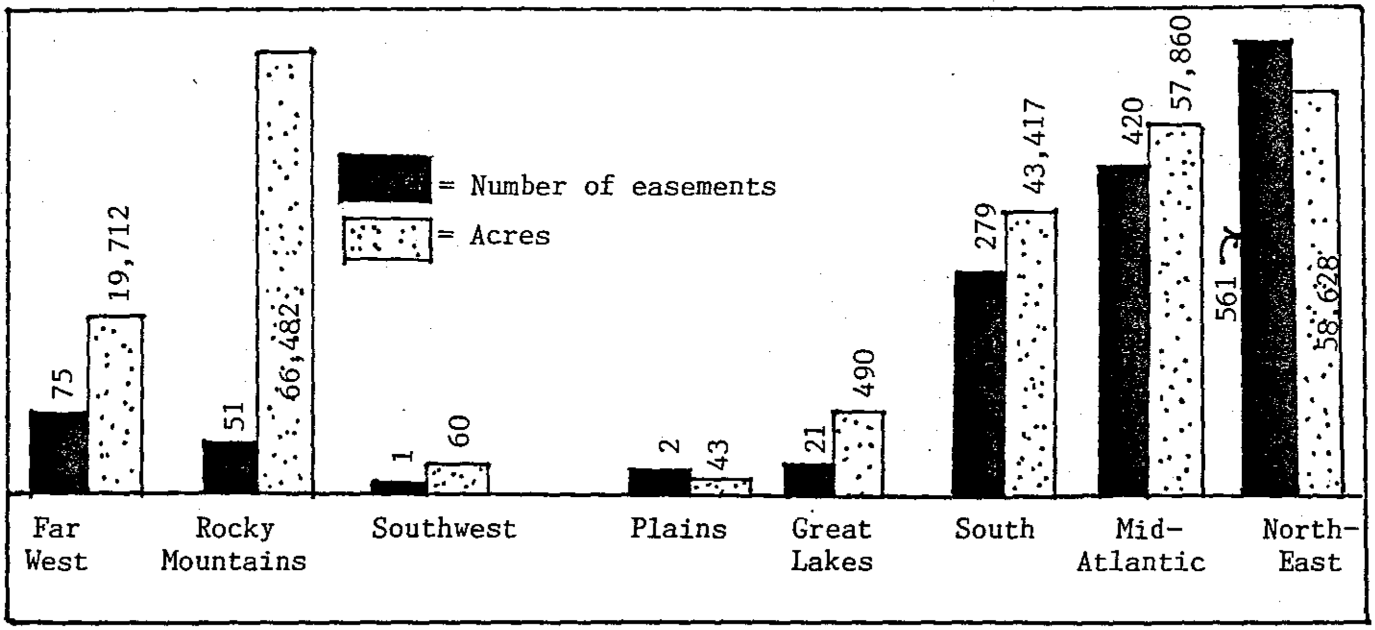


Figure 8: Number and Acreage of Donated Easements

Sources for both figures: Journal of Land Trust Exchange, December 1985.

easement, (Bradley, 1984).

CONCLUSION

Land control and protection through a private initiative such as a conservation easement, agricultural protection restriction or legislative tax relief is only part of the answer. Massachusetts must continue its work by maintaining and improving its non-regulatory, regulatory and legislative techniques so that our open space, working agricultural land, forested areas, scenic areas and natural resources are each preserved for the future.

CHAPTER SIX: LAND TRUSTS

The final category of techniques which can be used to protect local lands is the creation of land trusts. Unlike legislative, regulatory and non-regulatory techniques, land trusts are a more privately-oriented method of control which center around private initiative, enthusiasm and financial support. Moreover, land trusts come in several varieties although they all share the similar goal of land protection to some degree.

Definition

"There are many varieties of non-profit conservation organizations." However, for those who are interested in acquiring and managing land and water resources, the land trust is one of the most effective organizational formats, (Harper, 1985, p. III-1). Land trusts are traditionally non-profit organizations which are designed to acquire and manage land parcels and their use. Land is either directly purchased by the trust, or it is donated by individuals seeking to preserve their land while enjoying some of the financial benefits which accompany the donation of such a charitable gift. Trusts may either be set-up as a 1.)a community land trust, 2.)a neighborhood land trust, or 3.)a conservancy land trust, depending on the function they choose to serve within an area. Further, land trusts may vary in the geographical size which they deal with. For example, the Lloyd Land Trust may only be concerned with a two mile area around a saltmarsh while the internationally reknown Nature Conservancy operates as a world wide land trust based in Washington, D.C.

Despite such a spectrum of differences, all land trusts share the common goal of land protection. This is accomplished by making land conservation options available to owners of (primarily) undeveloped, or "raw" land, (Ross, 1987). By virtue of the land trust's non-profit status, any donation made to these organizations will qualify the landowner for sizable tax reductions and other financial incentives. While most land owners who consider making such donations are primarily concerned with seeing the land protected in perpetuity, such financial inducements often secure the idea on a feasible, practical level.

Advantages of a Land Trust

Stephen Harper's work for the State Coastal Conservancy in California produced a guidebook for land trusts entitled, The Non-Profit Primer. Often referred to as the bible for creating land trusts, Harper's work comprehensively describes the advantages of a land trust:

As a private organization, the land trust does several things. First, it can work to preserve vital resource lands on a more timely basis than a public organization would be able to. This is often a critical point as a landowner is faced with an option to profitably develop the land or donate it. If the bureaucracy tangles up the offer, the goodwill offer of donated land may simply become too much of a burden for the landowner.

Land trusts are specifically equipped to handle such transactions efficiently without red tape. Secondly, the private land trust can enjoy more cooperative working relationships with private landowners by virtue of their non-political, business stature. Finally, as a private organization, the land trust can better provide greater continuity of concern for a specific resource or site. Again, this advantage is directly related to its private, non-political backing.

As an incorporated, and typically non-profit organization, The Non-Profit Primer also suggests several additional advantages the land trust may enjoy. First, it can hold and manage land and financial assets. The trust can also provide personal liability to board members on the land trust's board of trustees. As a non-profit organization, the land trust also enjoys exemption from both federal and state taxes on income. Lastly, the non-profit land trust can accord income estate and gift tax deductability status to those landowners making a qualified contribution of land.

1. COMMUNITY LAND TRUSTS

There are three major kinds of land trusts: the community land trust, neighborhood land trust and the conservancy land trust. The most common of these is the community land trust. This model was developed by Robert Swann and Ralph Borsodi in the 1960's. The comunity land trust concept was conceived as a democratically controlled institution that would hold land for the common good of any community while making it available to individuals within the city or town through long-term leases, (The Institute for Community Economics, PA, 1982). The purpose of such a trust is to permanently remove land from the speculative marketplace.

Definition

Legally, the community land trust is not really a "trust" but instead is a profit or non-profit corporation that is chartered in the state in which it is located. It responds to a "community" as is defined in the bylaws of the trust and includes a board of trustees which is comprised in equal shares of people elected by the trust's general membership, people elected by leaseholders, and key members of local institutions or local interests. The trust and its board of trustees uses a democratic forum from which they may acquire land with an intention of retaining title in the property in perpetuity, (The Institute for Community Economics, MA, 1987).

The most interesting aspect of a community land trust is the idea that once title is acquired by the trust, the land may be leased out on the private market. Once an appropriate use of the land is determined by the land trust, the land is leased out to individuals, families, cooperatives, community organizations or businesses, or it is leased out specifically for community purposes. The key to leasing the land lies in the leaseholder's responsibility to use the land in an environmentally and socially responsible manner. The leaseholder may enjoy his or her property in this fashion without the interference of the community land trust in matters of personal beliefs, associates or activities. The fee for this lease is based on the use value of the property rather than on the typically higher market value, (The Institute for Community Economics, PA, 1982).

Leasing out the land makes both long term land use and home ownership possible for people who could not otherwise afford them. "However, for those who have incomes and resources sufficient enought to purchase the land and holdings, a community land trust leaseholder arrangement may not be a wise alternative; the only equity which may be accrued is through personal investment on improvements made to the land, (Institute for Community Economics, PA, 1982).

Purpose

It is the intention of the community land trust to hold on to the land in perpetuity. At times, however, some trusts find it prudent to sell off a parcel of land and use the proceeds towards the purchase of another piece of property. The community land trust may exchange land that is not appropriate for its own purposes for land which is. Leaseholders have security through long term leases which are automatically renewable and often inheritable, (Institute for Community Economics, MA, 1987). Thus, the community land trust holds land in trust for a community yet is not a trust in the traditional, legal sense of the word.

2. NEIGHBORHOOD LAND TRUSTS

While community land trusts are often broad-based in their geographical and philosophical approaches, neighborhood land trusts concentrate on smaller scale problems, particularly in urbanized areas. In order to understand the rationale for such a land trust, it is important to first realize that there are thousands of vacant and abandoned properties in low income neighborhoods across the country. Unfortunately, local governments are not in a position to remove or alleviate this condition. Here, the burden for improvement falls on the shoulders of people who live there in those neighborhoods, (Stein, 1987).

Function

A neighborhood land trust can "serve as a mechanism to provide local residents with the structure and the process to own urban open spaces on a cooperative basis." Further, this kind of land trust acts solely as a non-profit corporation of residents acting together to own property on behalf of all neighborhood residents. In urban areas, these land trusts can convert blighted vacant lots into neighborhood open space projects ranging from community vegetable gardens to playgrounds and plan lots, (Stein, 1987, P. 114). In suburban areas, similar land conversions are both practical and critical for the long-term welfare of the neighborhood.

Definition

Neighborhood land trusts are usually non-profit organizations with goals much less ambitious than those of the leaseheld community land trusts. They strive to stimulate community revitalization by providing community access to neighborhood trust land. Unlike the community land trust model, the neighborhood land trust is not concerned with the profitable use of land; rather it is concerned with a small scale neighborhood project of community access and amenity.

3. CONSERVANCY LAND TRUST

Opposite the community land trust is the conservancy land trust. The community land trust may or may not be a non-profit organization directed toward the profitable use of land. Conversely, the conservation trust is a non-profit organization which acquires land through gifts and purchases, holds and monitors restrictions on privately or publicly held land and allows only educational, recreational or scientific uses of the land, (Ross, 1986).

Definition

The Community Land Trust Handbook, 1982, describes conservancy land trusts as organizations which provide the maximum protection possible for distinctive or fragile natural areas or ecosystems. The description goes on to tell us that these trusts seek to prevent the development of certain lands, (as described), so that their natural characteristics can be preserved. It is indicated that there are over 700 local conservation land trusts across the United States setting out to preserve land from the irrevocable damages of development. Finally, the handbook compares community land trusts with conservation land trusts in the following way: Community land trusts are concerned with housing, economic development, and other basic land uses pertinent to lower income areas while the conservation land trusts, who withold all lands from human use, (with the exception of scientific, educational and passive recreational use), are the beneficiaries of a more affluent society. While it is true that conservation has always been regarded as a luxury only to be afforded, offered or appreciated by a wealthy community, the conservancy land trust model offers a vital means of maintaining crucial pockets of open space necessary for the survival of all society, both low and upper income. Its role is as important a mechanism for land protection as the more economically-based approaches of community and neighborhood land trusts.

Case Study: Ottauquechee Land Trust

One example of a conservation land trust shows that a slight variation in approach can produce positive results. The Ottauquechee Land Trust in Vermont was established in 1977 when citizens in the Ottauquechee valley became convinced that existing state and local land protection techniques "would not, by themselves, stem the loss of Vermont's farms, timberlands and important natural areas." The Trust was formed as a result of private initiative supplementing public action; it is a conservation trust which encourages productive use of agricultural and forest resources by creating unique opportunities for farmers and foresters to acquire land at prices which reflect its agricultural or timberland value rather than its development value. The Ottauquechee Trust preserves and protects open space and wildlife as is typical of all conservancy trusts. The Trust successfully negotiates with and counsels private landowners on land conservation matters which sometimes allows for agricultural and forest production activities, (Annual Report, Ottauquechee Land Trust, 1985, pgs.

1-3).

Case Study: The Nature Conservancy Trust

The largest conservation land trust is the Nature Conservancy which boasts an international membership roster. The Conservancy is concerned with the "global preservation of natural diversity." The mission of the organization is "to find, protect and maintain the best examples of communities, ecosystems and endangered species in the natural world." As of March, 1988, the Nature Conservancy and its members were responsible for protecting over 2.9 million acres of land in the United States, Canada, South America and the Caribbean, (Dodge, 1988).

The Conservancy transfers the management of many of these areas over to public and private conservation groups, yet owns and manages over 1,000 nature preserves in the world. Additionally, the original 1951 character of the Nature Conservancy states that it is to be operated for scientific and educational purposes, alone. This is the hallmark of the conservation land trust model.

The Nature Conservancy exemplifies how many land trusts accept gifts of land donations. A gift of appreciated real estate will allow the giver several financial and managerial pluses:

1. Income tax deduction, federal and state
2. Reinvested proceeds to pay a lifetime income
3. No management burdens
4. No capital gains tax nor ownership costs
5. Fast disposition

As stated earlier, the property owners who typically donate land to trusts do so primarily to see their land remain open in perpetuity, but the above incentives make the opportunity seem even more advantageous, (Dodge, 1988).

Land Trust Goals

All land trusts, by acquiring interests in land, can accomplish three important goals: 1. they may preserve resource lands or public access towards meeting local open space or recreation needs, 2. they may provide long term stewardship of important resources, and 3. land trusts may help public agencies acquire resource lands on a time and cost-effective basis through preacquisition and resale (to community organizations concerned with protection). Additionally, with a community orientation and support base, the land trust can provide for "local initiative in resource protection, maintain the tradition of private land ownership, increase public awareness and support of resource stewardship responsibilities and have direct connection with specific resources or sites," (Harper, 1985, p.III-1).

CONCLUSION

The notion of a land trust as a local land protection technique must be thought of in conjunction with the other techniques discussed in this section. Land trusts are not a substitute for public controls, but instead should be considered a supplement engineered to aid in the preservation of land for both environmentally-based uses as well as scientific and educational purposes. Land protection can successfully occur through the harmonious contributions of both publicly-sponsored controls and privately-initiated programs such as land trusts.

SECTION THREE

CONCLUSIONS

CHAPTER SEVEN: ON CONTROLLING DEVELOPMENT AND PROTECTING SENSITIVE AREAS

As populations grow, so to does the need for housing, services and industry. Such increasing numbers must be accommodated within the finite boundaries of society's precious natural resources. The issue is not whether land development should be allowed; instead, society must consider how such inevitable development must occur.

Economics plays a vital role in this issue. Dollar figures have traditionally steered the course for potential development as it is the primary directive for land developers to secure the highest return on their investment. Developers provide a service to the public by supplying them with the built environments they demand. However, developers may also provide a disservice to the public by developing land with a disregard for the natural environment, thus furthering the burdens humans place on nature. Therefore, it is essential that federal, state and local controls on development protect these fragile settings while at the same time providing economic incentives to the developer and allow growth to continue at a monitored pace.

The Role of Creative Land Use Design

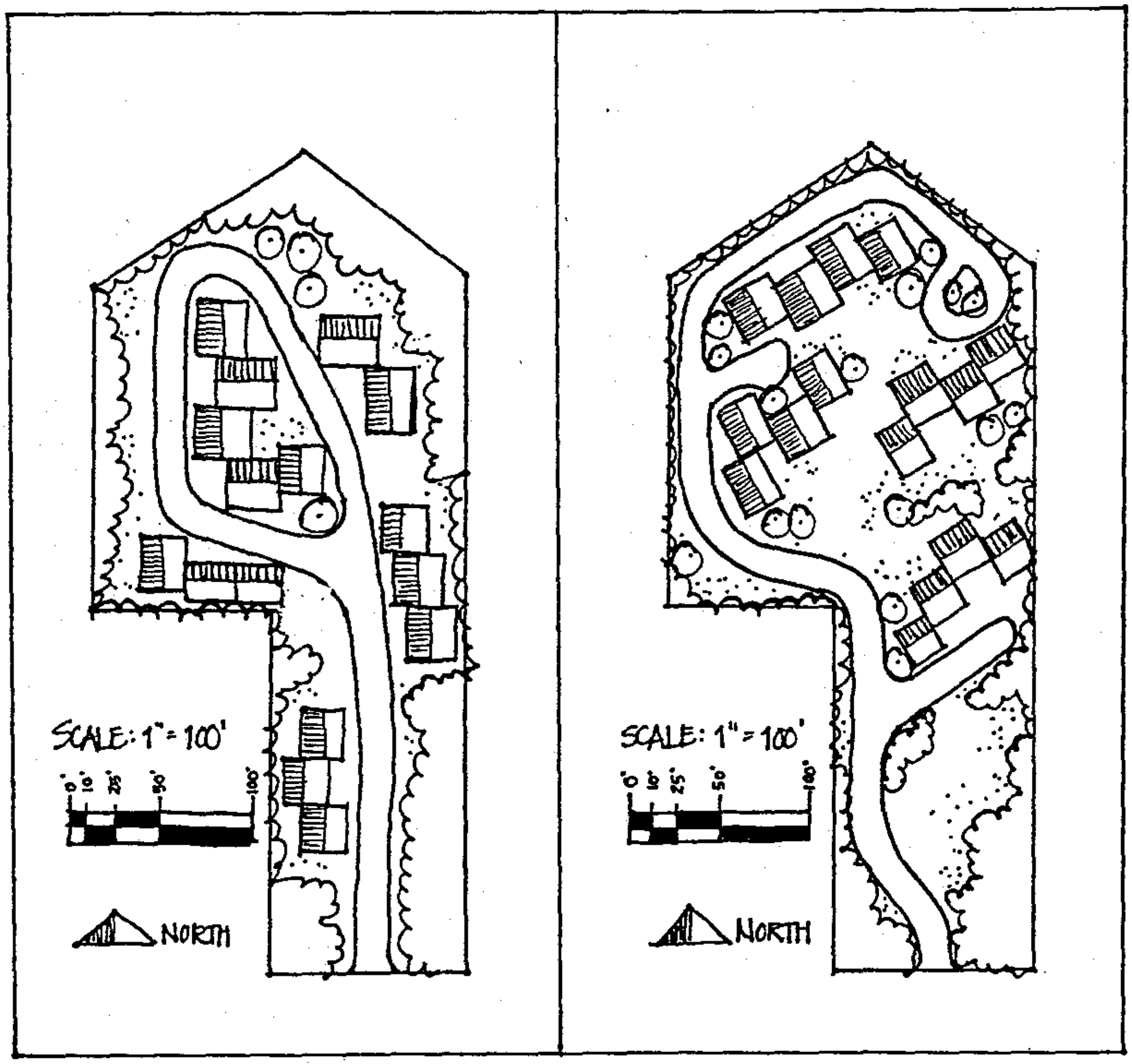
Strong controls will have a significant affect on land use, but when they are coupled with creative land use designs, their success will be even greater. Design issues cannot be adequately covered here, but it is important to recognize the compelling value which they have when considering any kind of land development issue.

For example, a developer may propose two very different cluster designs of the same site for approval, each reflecting the required limitations of existing regulation, (see figure 9, The Effects of Creative Land Use Design). Design A may be the bare minimum allowed by law in terms of meeting all building, planning and landscaping requirements and will thus reflect an adequate solution, both from an environmental and economic standpoint. On the other hand, Design B may be a more creative land use solution despite the fact that it is the same site and resolves the same land use issues. By carefully considering how structures should be sited, where circulation should occur and where patterns of activity will evolve, the creative designer can begin to produce an exciting plan which capitalizes on the natural elegance of a site while at the same time he or she forms an environment more desirable to the consumer. Creative land use design, used in conjunction with established land use controls, can serve both the environment, (by promoting its inherent beauty), and the developer, (by producing a setting which will encourage a higher market value).

In the last twenty years design has been recognized as an important component in the land use process. Communities vary in their response to design and its promotion. One response has been the creation of a design development district, or DDD. These districts permit certain industrial and commercial uses within residential districts if they are deemed to be adaptable

DESIGN A: According to bare minimum standards

DESIGN B: Incorporating creative land use design strategy



Cluster zoning permits a density of 16 attached units on 14 acres.

Figure 9: **The Effect of Creative Land Use Design**

to the area, if they do not cover an area greater than 15 percent of the site, and if they are designed so as not to detract from the cohesiveness of the neighborhood, (Little, 1968). Local districts are set-up with the ability to refuse a designed industrial or commercial use if it does not meet the standards of the community.

Design Review Boards

More recently, design review boards have begun to surface in several Massachusetts communities. Typically, these boards are comprised of five appointed members whose duty is to review new applications for construction, facade alterations, business expansions, new signs, landscaping, streetscapes and site improvements. The role of the board is an advisory one, not a regulatory one. The board advises applicants, town or city officials and local boards on the functional and aesthetic suitability of a project which has been proposed.

Such design review boards often come under criticism for being judgemental or harsh in their opinions. However, they provide a valuable service to communities by guiding the aesthetic and functional goals of a municipality. The procedures of design review boards are intended to accomplish several objectives:

1. Enhance the social and economic viability of a community by preserving property values and promoting the beauty of the city or town
2. Encourage the conservation of buildings and townscape with aesthetic and historical significance
3. Prevent incompatible alterations
4. Encourage flexibility and variety in development

"Good design is an effective way to improve the visual environment," (Amherst Design Review Board Handbook, 1983). Good design is also an effective way of improving land use development and protecting the scenic and natural environment.

Adapting to Change Through Innovation

As years pass and the community of the world increases in size, it will be necessary to update the control techniques so that development may continue to be checked and protect the world's natural resources. Society cannot be expected to solve the problems of tomorrow with the control tools of yesterday. It is imperative to further existing techniques and expand the palette of land use controls to meet the developments of the future. Society accomplishes this by continually producing innovative techniques which aid in controlling development and furthering the cause for environmental preservation.

Several innovations have proved successful in handling the unprecedented surge of development in the 1980's. Of these techniques, impact fees are the most economically-based. Impact fees, or exactions, are community imposed demands that require developers to provide land, public facilities or pay fees to handle the costs of growth in exchange for the permission to build, (Fulton, 1987). The search for such an innovative method for the financing of infrastructure improvements, and new facilities stems from the capital financing crisis, federal aid cutbacks, decreases in state and municipal taxes and the continually expanding population base. Exactions, such as impact fees, "help this financial burden and put the responsibility [of additional growth] onto developers and residents of new developments." Legally, a developer may wish to challenge such a fee, but the municipality has the health, safety and welfare of its citizens in mind when it is used. Impact fees have evolved to become a fair and legitimate method of land use control by requiring developers to pay for the socioeconomic costs imposed by their developments, (Connors and High, 1987, p.1).

Innovative Techniques

Several innovative regulatory techniques have surfaced as successful methods of accommodating development. Such techniques include: 1.)quantitative zoning, 2.)floating zones, 3.)annexation and 4.)zero-lot line development. Each regulatory control responds to particular problems and has been created as a direct response to specific circumstances.

1.) Quantitative Zoning Quantitative zoning is also referred to as zoning by the numbers. It is a means of employing spacing requirements so as to "control the location and the number of a variety of land use pariahs, (Babcock, 1985, p.27). Originally, zoning by the numbers was devised in New Orleans's Vieux Carre, (French Quarter), which was experiencing an overload of t-shirt-shops and souvenir stores. After an antique store shut-down, tourist stops would move in. The object of the spacing requirements, (particular number of uses allowed within a set space), was to prevent the over-proliferation of t-shirt shops within the French Quarter. A variation on this is used in Berkley, California where only specific numbers of buildings are allowed, (Babcock, 1985).

Such quantitative zoning, although still in its infancy, may prove a mainstay in the zoning ordinances and bylaws of many communities within the coming decade.

2). Floating Zones Floating zones, a second regulatory technique, are beginning to appear in several communities throughout Massachusetts. They are zones with specified purposes established by local bodies without being delineated on a zoning map. Floating zones work in this way: "when an opportunity arises to carry out the intended purposes of the zone on a particular tract of land, the local body responsible can pass an amendment to the existing zoning ordinance which finally establishes the actual boundaries of such a district," (Moss, 1977, p. 327). Floating zones allow for great flexibility on behalf of a municipality while at the same time avoids the illegalities of spot zoning, (where a small tract of land is singled out from the community at large and is not carried out as a part of a comprehensive zoning scheme).

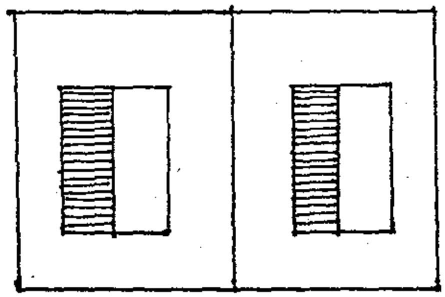
3.) Annexation A third innovative regulatory technique is the practice of annexation where developers seek annexation as a means of increasing profit by getting the maximum number of units per acre while using existing services. The technique is useful when the community to which annexation is occuring is fully, (or nearly), developed. Annexation provides developers with density bonuses while providing land to communities that are experiencing a depletion in resources, (Fabos, 1983).

4.) Zero-Lot Line Development Finally, the strategy of using zero-lot lines in infrastructure-oriented designs in subdivisions has gained popular acceptance across the sunbelt states. This technique allows at least one house wall, usually windowless, to sit directly on a property line, (see figure 10, Zero-Lot Line Development). When this is done in a series, such as those found in subdivisions, the result is that each house gets one, usable, relatively private side yard under its control, (Langdon, 1987).

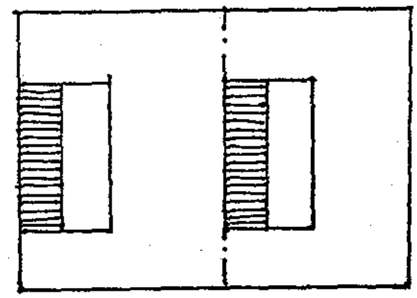
There are other techniques which are focused on elements outside what may be considered the traditional community development. Such innovative techniques include those inspired by rapid highway development. With increased population and development comes an increase in traffic and highway gridlocks. Advancements have also been made in the planning of highway systems which accommodate the increasing numbers of travelers. These advancements include express lanes, clearer signage and most recently, the creation of HOV, or "high-occupancy lanes." HOV lanes allow those vehicles such as buses, shuttles, vans and car-poolers to use special lanes set aside for their use exclusively, (Darnell, 1987). This type of ride-sharing provides faster access to destination points by virtue of the fact that there are fewer vehicles on the road carrying greater numbers of passengers. Such a time-related incentive promotes controls on air and noise pollution while furthering innovative strategies necessary for all growing communities.

<u>Physical Tools of the Future</u>

All of these techniques must be aided by effective physical planning tools such as state of the art computer systems and methods of analyses. One of the most successful innovations



Standard site plan placing structures in the center of the site.



Zero-lot line site plan placing structures right on a side lot line.

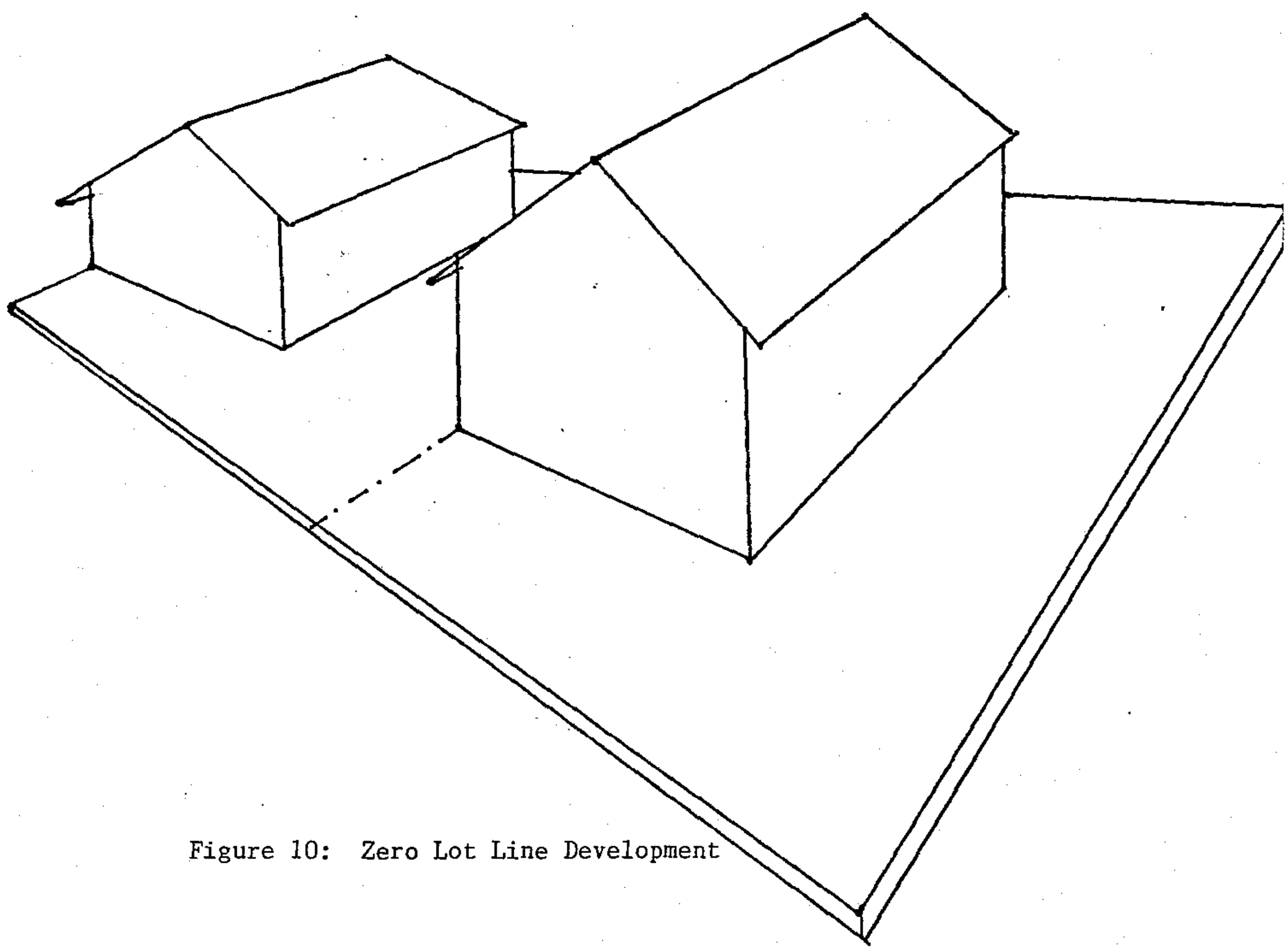
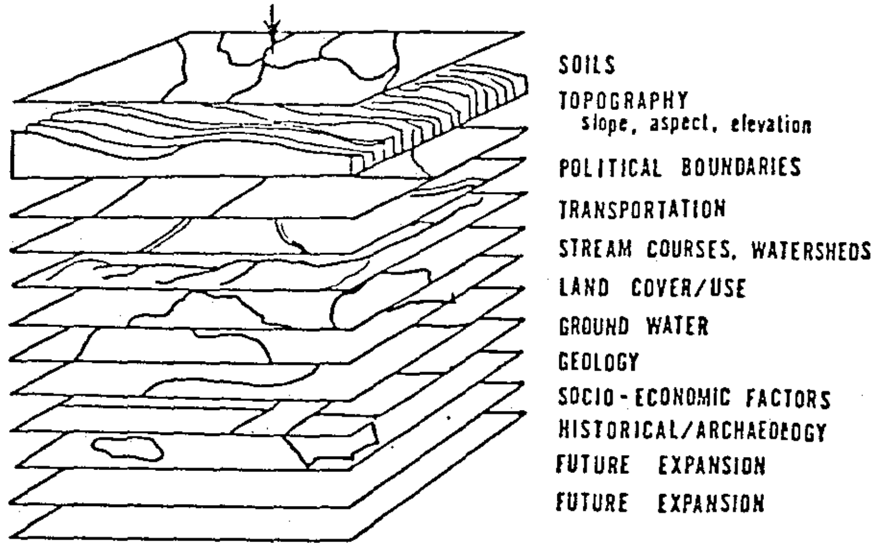


Figure 10: Zero Lot Line Development

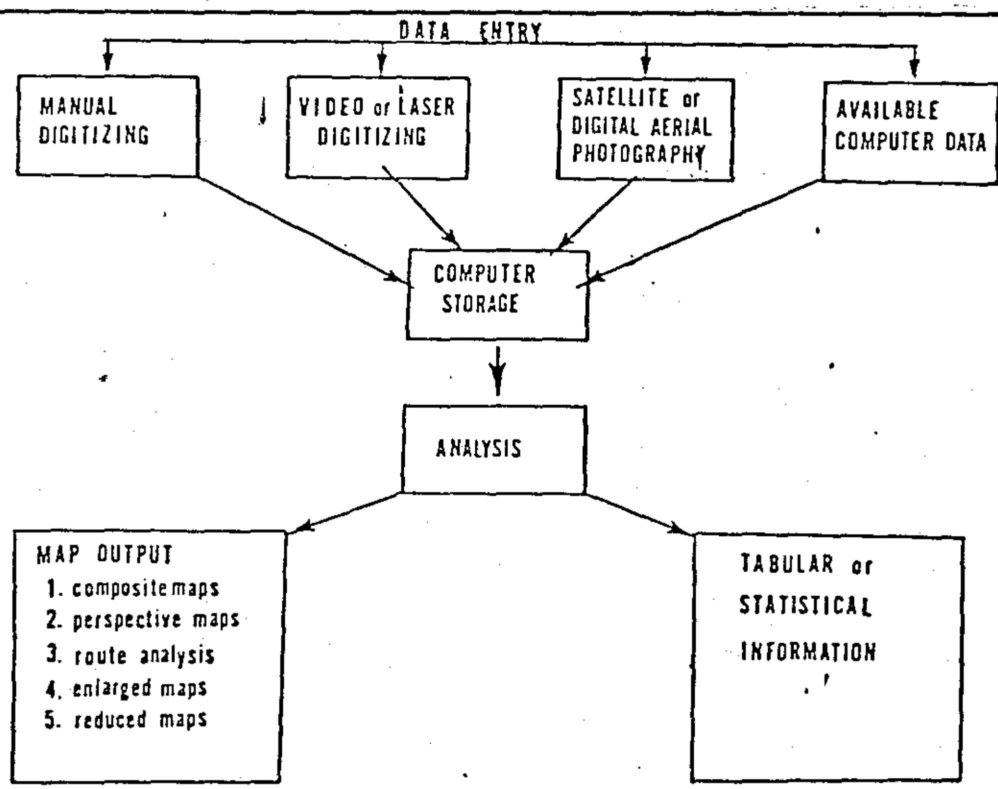
available to both the public and private sector is the Geographic Information System or GIS. This computer system is not designed for small site development work; instead it is to be used for larger scale land-planning issues and natural resource management, (Hendrix and Smith, 1985). Based on the McHargian overlay method, (see Design With Nature, 1971, Doubleday Press), the GIS takes various kinds of data, such as inventories of topography and soils, and overlays the information to reveal patterns and a broad range of informative clues for land use decisions. The data may be entered in a variety of ways and is then manipulated by the system operator so as to produce either a map or tabular and statistical information, (see figure 11, Application of GIS Technology). This simple concept of entering existing information, manipulating it and producing workable analyses is representative of the type of ongoing development of physical tools necessary to keep pace with a growing world.

CONCLUSION

The future of the environment, both physical and natural, depends upon society's ability to first, recognize the relationship between economics and nature and our dependence on such a relationship. Secondly, the ability to orchestrate local land protection techniques, from zoning to land trusts, will be a strong indicator against which our successes and failures will be measured. Finally, it is imperative to forge ahead, to uncover new strategies and planning tools, both theoretical and physical, to aid society in the unending challenge to control



Inventory information to be overlayed and manipulated through the GIS analysis phase.



Process of data entry, storage, analysis and output for the GIS.

Figure 11: The Application of Geographic Information Systems Technology

Source: Hendrix, William and Gary Smith, "The Application of GIS Technology for Resource Management and Landscape Planning," Landscape and Land Use Planning. University of Vermont, 1985.

land development and protect sensitive areas.

All of the techniques and methods explored herein must be carefully and conscienciously used so that communities may reap their maximum rewards. Some planning experts today lament on the general ineffectiveness of such land protection techniques because they exist half-heartedly along with an absence of proper planning and forethough, (Arendt, 1986). Administrative officials must work with the public so that serious consideration can be given to what their town or city specifically needs to achieve from the alternatives set before them.

By beginning to understand the importance of the environment and by recognizing the staggering growth increases and their consequences on the total community, it may be easier to identify the goals and objectives of towns and cities. Once those needs are diagnosed, the land use planning techniques of today and tomorrow will offer a way for communities to prepare for environmentally responsible land development.

A P P E N D I C I E S

APPENDIX I

Regulation and Control Concepts which may be used as Growth Management Tools

Source: Urban Land Institute. Management and Contol of Growth

Action planning	Incentive Zones
Administrative Delays	Industrial Recruitment
Aesthetic Controls	Initiative Method
Agricultural Zoning	Land Banking
ALI Proposals	Large-Lot Zoning
Amenities Requirements	Mandatory Housing Requirements
Annexation Policies	Maximum Bedrooms
Building Codes	Minimum Floor Space
Building Permits	Mobile Homes
Capital Budget	Moratoria-Building/Planning
Capital Programming	Moratoria-Sewers
Carrying Capacities	Multifamily Prohibitions
Compensable Regulations	Negotiation-Administration
Comprehensive Planning	Official Maps
Conditional Zoning	Open Space
Conservation Aoning	Over-Zoning
Construction Taxes	Parking Requirements
Contract Zoning	Performance Standards
Covenants Restrictions	Permit Review
Critical Areas	Point Systems
Dedication/Fees	Pollution Regulations
Development Rights Transfer	Population Caps
Districts-Tiered	Preferential Assessment
Down-Zoning	Preferred Use
Easements	Ramapo System
Eminent Domain	Rationing Methods
Energy Siting	Regional Taxation
Environmental Controls	Rezonings
Environmental Reviews	School Capacity
Environmental Standards	Service Areas
Excessive Condemnation	Sewer Facilities
Exclusive Districts	Social Analysis
Extraterritorial Powers	Special Districts
Facility Adequacy	Special Permits
Fair Share	State Planning
Federal Taxation	State Assistance
Fiscal Analysis	Subdivision Control
Floating Zones	Taxation Methods
Greenbelts	Timing/Phasing
Height Restrictions	Urban Renewal/Rehabs
Highway/Roads	User Fees
Historic Districts	Zoning
Holding Zones	
Impact Zoning	

APPENDIX II

Example of a Certificate of a Certificate of Incorporation for a conservancy land trust.

ASPETUCK LAND TRUST, INC.
CERTIFICATE OF INCORPORATION

We, the incorporators, certify that we hereby associate ourselves as a body politic and corporate under the Nonstock Corporate Act of the State of Connecticut.

1. The name of the Corporation is: ASPETUCK LAND TRUST, INC.

2. The nature of the activities to be conducted, or the purposes to be promoted or carried out by the corporation, are as follows:

(a) To engage in and otherwise promote for the benefit of the general public the preservation of natural resources of the State of Connecticut, including water resources, marshland, swamps, woodland and open spaces, and the plant and animal life therein and the preservation of unique historic and scenic sites;

(b) To engage in and otherwise promote the scientific study of and to educate the public regarding local natural resources including plants, animals, birds and other wildlife;

(c) To acquire, by gift, purchase or otherwise, real and personal property, both tangible and intangible, of every sort and description and to use such property in such manner as the directors of the corporation shall deem appropriate to carry out such purposes;

(d) To use all property held or controlled by this corporation and the net earnings thereof in the United States of America for the benefit of all the inhabitants of the State of Connecticut for the conservational, educational and scientific purposes for which the corporation is formed as set forth in this Article;

(e) In connection with the foregoing to do any and all things permitted by the Statutes of the State of Connecticut.

3. No part of the corporation's income is distributable to its members, directors or officers and the corporation shall not have or issue shares of stock or pay dividends.

4. The classes, the manner of election or appointment and the qualifications and rights of the members of each class, are as follows:

There shall be two classes of members; regular members and special gift members.

Regular members shall include those persons who have completed and submitted to the secretary a form of application to be determined from time to time by the Board of Directors and have paid dues as prescribed by the Board of Directors.

Special gift members shall include those persons who have conveyed by gift a minimum of one acre of land or an equivalent amount of money as determined from time to time in the By-Laws.

Any member may be expelled from the corporation upon recommendation of the Board of Directors and a vote of two-thirds of the members present and voting at any regular or special meeting of the corporation. Any membership shall be terminated upon the delinquency of payment of dues for a period in excess of two years unless such payment is specifically excused by the Board of Directors. All members shall be entitled to vote on any matter referred to the members by force of law or by act of the Board of Directors for decision. No member may vote by proxy or otherwise delegate his right to vote. Members shall annually elect directors to manage the affairs of the corporation.

5. The duration of the corporation shall be unlimited.

6. No part of the activities of the corporation shall consist of carrying on a propaganda, or otherwise attempting, to influence legislation, or participating in or intervening in, including the publishing or distributing of statements, any political campaign on behalf of any candidate for public office.

7. Upon the termination and liquidation of this corporation, all land and other assets owned by the corporation after payment of all obligations, shall be given to The Nature Conservancy, Washington, D. C. or similar organization.

APPENDIX III

For further information on Massachusetts's Tax Relief Programs, contact the following offices:

CHAPTER 61

Division of Forests and Parks
Department of Environmental MAnagement
100 Cambridge Street
Boston, MA 02202

CHAPTER 61A

Bureau of Land Use
Department of Food and Agriculture
100 Cambridge Street
Boston, MA 02202

CHAPTER 61B

Division of Local Services
Department of Revenue
100 Cambridge Street
Boston, MA 02202

BIBLIOGRAPHY

Amherst Review Board. Design Review Board Handbook. Amherst: 1983.

Arendt, Randall. Executive Summary: Conference on Growth and Change in Massachusetts Communities. Amherst: Center for Rural Massachusetts, 1986.

Arendt, Randall. Improving New Non-Residential Development: Regulations for Performance and Appearance. Amherst: Center for Rural Massachusetts, 1987.

Arnold, Dave, ed. "Book Remarks," Public Management. v.66, no.12, Washington, D.C.: International City Management Association, December, 1984.

Babcock, Richard. The Zoning Game. Madison, Wisconsin: University of Wisconsin Press, 1966.

Babcock, Richard and R. Marlin Smith. "Zoning by the Numbers," Planning. v.51, no.6, Chicago: The American Planning Association, June, 1985.

Bradley, Darby, et. al. Charitable Gifts of Land and Conservation Restrictions. Vermont, Essex County Greenbelt Association, 1984.

Braiterman, Marta, et. al. The Agricultural Land Resource Base of Massachusetts. Amherst: The Massachusetts Agricultural Experiment Station, 1976.

Brower, et. al. Managing Development in Small Towns. Chicago: APA Press, 1986.

Brown, Pamela. Landscape Planning in the Northern Tier Region of Massachusetts. Paper submitted to Land Use Planning Class, Spring, 1986.

Bunce, Michael F. "Agricultural Land as a Real Estate Commodity: Implications for Farmland Preservation in the North American Urban Fringe," Landscape Planning Journal. v.12, no.12, U.S.A.: Elsevier Science Publications, August, 1985.

Butcher, Leo. The Condominium Book. Toronto: Coles Publishers, Inc. Ltd., 1979.

Callies, David L. and Robert H. Freilich. Cases and Materials on Land Use. St. Paul, MN: American Casebook Series, West Publishing Company, 1986.

Camp Dresser McKee, Inc. Dartmouth Growth Management Plan. Boston: CDM, Inc., 1987.

Cantanese, Anthony and James Snyder, eds. Introduction to Urban Planning. New York: McGraw Hill, 1979.

Carn, Neil G. "Is Highest and Best Use a Justification for Zoning," Appraisal Journal. U.S.A.: American Institute of Real Estate Appraisers, April, 1984.

Coplan, Norman. "Maintaining Open Spaces in Cluster Zoning," Progressive Architecture. Ohio: Reinhold Publishing, January, 1984.

Connors, Donald and Mike High. The Expanding Circle of Exactions: From Dedication to Linkage. Law and Contemporary Publishers, 1987.

Coughlin, Robert E. "Land Ownership, Use and Regulation: A Case Study Analysis of a Township in the Early Stages of Urban Development," Landscape Planning Journal. v.12, no. 12, Elsevier Publications, August, 1985.

Darnell, Tim. "Gridlock," American City and County Magazine. Atlanta, GA: Communication Channels, Inc., August, 1987.

Dasmann, Raymond F. Environmental Conservation. NY: John Wiley and Sons, Inc., Fifth Edition, 1984.

Davis, Hugh. Proceedings of the Northeast Agricultural Leadership Assembly. Amherst: Environmental Institute, 1979.

Dodge, Susan, ed. The Nature Conservancy Magazine. U.S.A.: Winter Issue, 1988.

ELM Education Fund. Land Bank Funds. Boston: Environmental Lobby of Massachusetts, September, 1986.

Enghagen, Linda. Planning Law. Amherst: Lecture Series, Spring, 1987.

Ferguson, Jerry T. and Robert Plattner. "Can Property Owners Get Compensation for Takings By Zoning Laws?" Real Estate Review. v.16, no.4, U.S.A.: Warren, Gorham, Lamont Publications, Winter, 1987.

Fluck, Timothy Alan. "Euclid versus Ambler: A Retrospective," American Planning Magazine. v.52, no.6, Chicago: American Planning Association, June, 1986.

Fulton, William. "Exactions Put to the Test," Planning. v.53, no.12, Chicago: American Planning Association, December, 1987.

Galaty, Fillmore W. Modern Real Estate Practice. Eleventh ed., Chicago: Real Estate Education Company, 1988.

Garcia, Christina. "Florida's Growing Pains," Time. v.131, no.4, January 25, 1988.

Gordon, Noah J. 1987 Zoning and Planning Law Handbook. U.S.A.: Clark Boardman Co., Ltd., 1987.

Greene, Christopher. "The Greening of Massachusetts: Public Policy Shaped by Landscape Architects," ASLA Conference Papers. American Society of Landscape Architects, 1985.

Hagman, Donald G. and Julian Conrad Juergensmeyer, Urban Planning and Land Development Control Law. St. Paul, MN: West Publishing Company, Second Edition, 1986.

Hall, Bill. "Land Use Proposals Unveiled," The Chronicle. Somerset, MA: Hathaway Publishing Co., February 3, 1988.

Harper, Stephen. A Guidebook for Land Trusts: The Non-Profit Primer. California: The State Coastal Conservancy, 1985.

Hendrix, William and Gary Smith. "The Application of GIS Technology for Resource Management and Landscape Planning," Landscape and Land Use Planning. University of Vermont, 1985.

Herbers, John. "Take Me Home, Country Roads," Planning. v.53, no.11, Chicago: American Planning Association Press, November, 1987.

Herr, Philip B. Managing Growth Rates and Amounts. Amherst: Center for Rural Massachusetts, 1987.

Herr, Philip B. and Associates. Density Zoning. Amherst: Center for Rural Massachusetts, 1986.

Hull, Jon D. "Not In My Neighborhood," Time. v.131, no.4, January 25, 1988.

Institute for Community Economics. Community Land Trust Handbook. PA: Rodale Press, 1982.

Institute for Community Economics. Twenty Most Frequently Asked Questions about Community Land Trusts. Greenfield, MA: Draft, 1985.

Jacobs, Peter. "Achieving Sustainable Development," Landscape Planning Journal. v.12, no.3, U.S.A.: Elsevier Science Publishers, November, 1985.

____________. Journal of Land Trust Exchange. U.S.A.: December, 1985.

Landscape Architecture and Regional Planning. Nantucket: Growth Impact Study Final Report. Amherst: University of Massachusetts, 1987.

Langdon, Phillip. "A Good Place to Live," The Atlantic. v.261, no.3, March, 1988.

Langdon, Phillip. "Planning to Save," Journal of the American Planning Association. v.52, no.7, Chicago: American Planning Association Press, July, 1986.

____________. Leverett Growth Policy. U.S.A.: June, 1976.

Lewis, Thomas Jr. "New Approaches in State and Public Sector Planning: Florida's Growth Management Program," Executive Summary: Conference on Growth and Change in Massachusetts Communities. Amherst: Center for Rural Massachusetts, 1986.

Little, Charles E. Challenge of the Land. New York: Open Space Action Institute, Inc., 1968.

Lovejoy, Derek, ed. Land Use and Landscape Planning. U.S.A.: International Textbook Company, Ltd., 1973.

Lynch, Kevin. The Image of the City. Cambridge, MA: MIT Press, 1960.

Lynch, Kevin and Gary Hack. Site Planning. Cambridge, MA: 1985.

Massachusetts General Laws Cited: C.41, c.59, c.61, c.61A, c.61B, c.130 s.105, c.131 s.40, c.131 s.40A.

McClellan, Grant S., ed. Land Use In the United States. v.43, no.2, "Exploitation of Conservation," New York: The Wilson Co., 1971.

McElroy, Joseph J. "You Don't Have to be Big to Like Performance Zoning," Planning. v.51, no.5, Chicago: American Planning Association Press, May, 1985.

McHarg, Ian. Design With Nature. Garden City, NY: Doubleday, Inc., 1971.

McKean, Lauren. Opportunities in Computer-Aided Growth Management. Paper submitted to Land Use Planning Class, Spring, 1986.

Miner, Ralph. Conservation of Historic and Cultural Resources. Chicago: American Society of Planning Officials, 1969.

Moss, Elaine, ed. A Handbook on the Legal Rights of Citizens: Land Use Controls in the United States. New York: Natural Resource Defense Council, Inc., 1977.

Mullin, John. Economic and Fiscal Issues. Amherst: Lecture Series, Spring, 1987.

Natural Resources Defense Council, Inc. Land Use Controls in the United States: A Handbook on the Legal Rights of Citizens. New York: The Dial Press, 1977.

Ostro, Bart David. The Economics of the New England Environment. Massachusetts: Lincoln Center for Citizenship and Public Affairs and Tufts University Graduate Program in Urban Social and Environmental Policy, April 29-30, 1977.

Ottauquechee Land Trust. Ottauquechee Land Trust Annual Report. Vermont, 1986.

Peskin, Sarah. A Handbook for the Massachusetts Citizen: Guiding Growth and Change. Boston: The Massachusetts Audobon Society, 1978.

Planning Services Group. Zoning and Subdivision Control in the Lower Pioneer Valley. Cambridge, MA: Planning Services Group, 1965.

Roberts, E.F. The Law and The Preservation of Agricultural Land. Ithaca, New York: Northeast Regional Center for Rural Development, 1982.

Rodiek, Jon E. "The Wetlands Landscape System," American Society of Landscape Architects Conference Proceedings. U.S.A.: ASLA, 1984.

Rosenthal, Ava C. "Condominium and PUD Projects: Steps to Approval," Mortgage Banking. v.44, Washington, D.C.: Mortgage Banker's Association of America, 1984.

Ross, Keith. Keeping Forest Land Under Long Term Management. Wendell, MA: Atlantic Forestry, Inc., Draft #6, 1986.

Schell, Jonathan. The Fate of the Earth. New York: Avon Publishers, 1982.

Senecal, Kenneth E. Thirteen Perspectives on Regulatory Simplification. Washington, D.C.: Urban Land Institute, 1979.

Steahr, Thomas E. and A.E. Luloff, eds. The Structure and Impact of Population Redistribution in New England. Pennsylvania: Penn State University, 1985.

Stein, Peter. "Neighborhod Land Trusts," Urban Open Spaces. U.S.A.: The Cooper-Hewitt Museum, Rizzoli International Publications, Inc., 1981.

Stockman, Leslie Enser. "Bucking the Trend," Builder Magazine. U.S.A.: Hanley-Wood, Inc., September, 1986.

Stuart, DeBard. The Conservation Commission Handbook. Boston: Massachusetts Association of Conservation Commissions, 1967.

____________. "Subdivision Analysis and Valuation," Appraisal Journal. U.S.A.: American Institute of Real Estate Appraisers, October, 1986.

Vaillancourt, Francois and Luc Monty. "The Effect of Agricultural Zoning on Land Prices, Quebec 1975-1981," Journal of Land Economics. v.61, no.1, Wisconsin: University of Wisconsin Press, February, 1985.

Valley Consulting Group. Adams Open Space and Recreation Master Plan. Amherst: Regional Planning Program, University of Massachusetts, 1986.

Van der Ryn, Sim and Peter Calthorpe. Sustainable Communities: A New Design Synthesis for Cities, Suburbs and Towns. San Francisco: Sierra Club Books, 1986.

Ursin, Michael J. Life In and Around Freshwater Wetlands. New York: Thomas Y. Crowell Company, 1975.

Wilhelm, Douglas. "Land Trusts Seeking to Preserve Open Space," The Boston Globe. Boston: November 15, 1987, p.87.

Yaro, Robert D. Preserving Open Space in Rural and Suburban Communities. Amherst: Center for Rural Massachusetts, 1987.

Youngquist, Walter. Investing in Natural Resources. Homewood, Illinois: Dow Jones-Irwin, Inc., 1975.