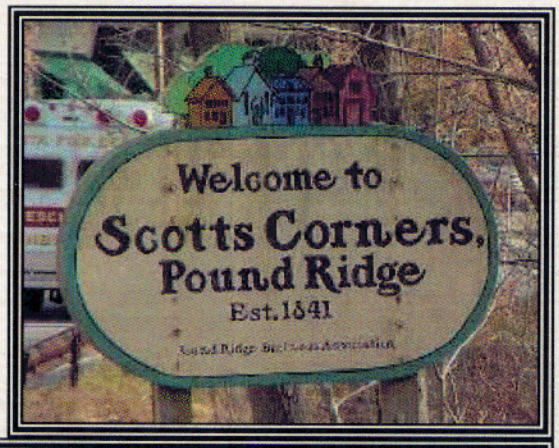
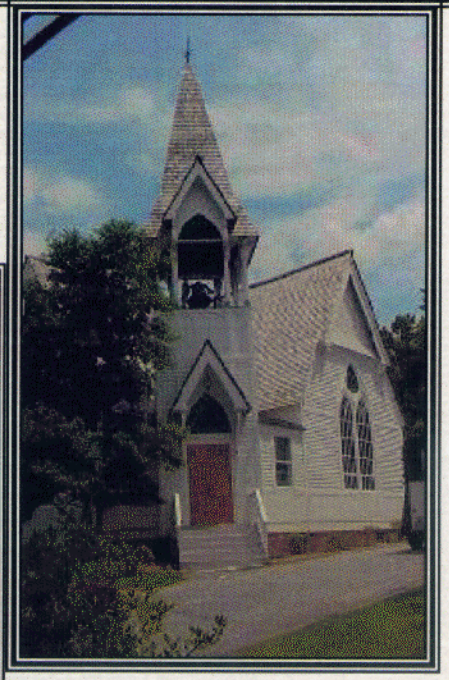
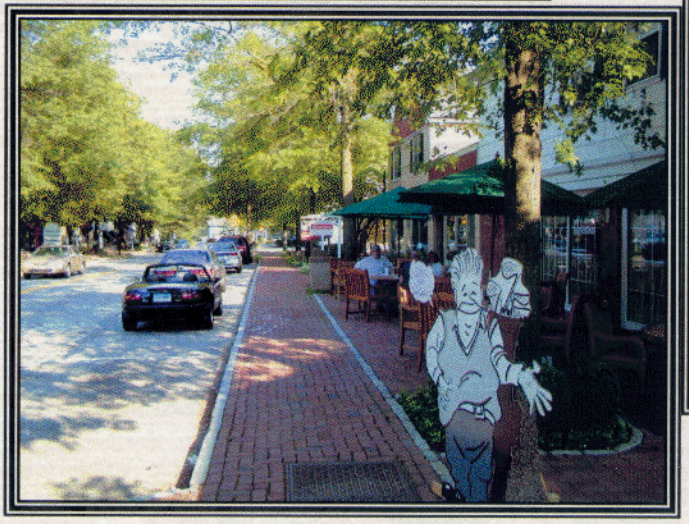
Comprehensive Plan

Town of Pound Ridge, New York







Adopted
November 4, 2010

Town of Pound Ridge, New York

This Comprehensive Plan was adopted by the Town Board on November 4, 2010

Town Board

Gary David Warshauer, Supervisor
Jon Powers, Deputy Supervisor

Peter J. Falco
Richard B. Lyman
Paul McConville
Daniel S. Paschkes

Planning Board

Clayton Fowler, Chair

John Bria
Andrew Brodnick
Peter Efremenko
Judy Kennedy
Steve Kushner
Sam Mlynar

Comprehensive Plan Committee

William Harding, Chair

Elyse Arnow
Josh Arnow
Clayton Fowler
Steve Kushner
Vince Manna
Sam Mlynar
Jon Powers

Comprehensive Plan Contributors

Bob Armes
Melinda Avelino
Gary Carlson
Jo Faraci
Alice Gabriel
Ellen Ivens
Gail Jankus
Mary Legrand
Richard B. Lyman
Les Maron
Richard Mendes
Sondra Peterson
Rob Powell
Robert Powers
Arthur Rappaport
Kent Redford
Susan Shapiro
Phyllis Shearer
Ray Smith
Deborah Tepper
Marc Vandenhoeck
Judith Webb
Jess Weiner
Conservation Board
Housing Board
Pound Ridge Business Assoc.
Pound Ridge Library District
Pound Ridge Partnership
Recreation Commission

James J. Sullivan, Esq. Town Attorney
Woodard & Curran, Town Engineer
Frederick P. Clark Associates, Inc., Town Planner

Table of Contents

TRANSPORTATION

COMMUNITY SERVICES, FACILITIES AND RECREATION

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Summary

SUMMARY OF THE PLAN

OVERVIEW OF THE TOWN

The Town of Pound Ridge, located in northern Westchester County, is 19 miles northeast of White Plains and 43 miles north of midtown Manhattan. The Town is approximately 23.2 square miles, or 14,833 acres in area.

Europeans settled Pound Ridge in the early 1700s, although Native Americans were residing in the area for quite some time before the 1700s. Pound Ridge was incorporated as a Town in 1788. In the early days, the Town's economy was based on agriculture and cottage industry, including basket and shoe making. At the end of the nineteenth century, industrial development and the establishment of transportation routes changed nearby communities, but bypassed Pound Ridge.

Pound Ridge has always been relatively remote and isolated compared to other communities in the region. The lack of direct railroad access and major regional highways has insulated Pound Ridge from many of the development pressures of more urbanized communities. Pound Ridge is also isolated physically by the Mianus River and Gorge along the western border, the Ward-Pound Ridge Reservation and escarpment to the north, and by the streams, reservoirs and watershed lands along and near the eastern border. These topographic, environmental and geographic characteristics have influenced the rate and type of development in Pound Ridge over the years.

In the 1950s and 1960s, the Town and the entire region grew considerably. The baby boom, increasing prosperity, the expansion of the suburbs, improved access and transportation, and more employment opportunities in Westchester County made Pound Ridge and other formerly remote communities more desirable places in which to live.

The Town of Pound Ridge anticipated this population growth and in 1959 rezoned a large area of the Town (11,600 acres) from 2 acres to a minimum of 3 acres per lot. This rezoning and later preparation of environmental regulations (Pound Ridge adopted New York's first local wetlands protection law in 1969) had a profound effect on the growth and development of Pound Ridge as we know it today.

CHANGES OVER THE LAST 25 YEARS

It has been more than 25 years since the completion of the Town's last comprehensive plan. Many of the goals and objectives of the 1981 Town Plan of Development still appear to be laudable and relevant. However, enough time has passed that they should be reviewed and re-evaluated in the context of existing conditions and circumstances, and with a fresh understanding of the long-term and projected changes and trends.

Pound Ridge is a small, primarily rural and low-density residential community. Major transportation routes and mass transit have bypassed the Town. Pound Ridge has a large amount of open space, a small amount of commercial development, and remains the lowest density community in Westchester County. The total population has grown less than 1% per year since 1970. There were only 176 more persons (4%) in 2000 than there were in 1990.

In other ways, the Town has changed more significantly. Although the total population has grown relatively little, the age distribution of residents has changed considerably. Two-thirds of the total population growth since 1970 has been in persons 55 or older. There were only 39 more children between the ages of 0 and 4 in 2000 than in 1970. The number of persons between the ages of 5 and 34 has decreased 21% since 1970. This shift in the age of Pound Ridge residents is expected to continue for at least the next 20 years according to projections by Westchester County.

There were nearly as many new houses constructed as there were additional people in Pound Ridge between 1990 and 2000, an increase of 11%. This illustrates the change in the average household size that has continued to decrease from 3.6 in 1960, to 3.1 in 1980, to 2.8 in 2000, to a new low of 2.6 persons per household in 2008. These figures reflect the changes from a community of predominantly young families in the 1960s and 1970s toward a community of empty nesters and more senior citizens. This trend is expected to continue according to Westchester County Department of Planning projections regarding growth of the senior population and based on the factors of education, income, available land supply, the effect of the aging baby boomers, and cohort survival in Pound Ridge.

The number and rate of new home construction in Pound Ridge has mirrored the changes in the economy. Despite peaks and valleys in the new homes per year, the long-term trend has been a decrease in the average number of new lots and the number of new homes per year. Housing and land values more than tripled between 1980 and 1990, and have continued to grow appreciably since then. Despite these increases in the property values, growth of the tax base (total taxable assessed value) has not kept up with inflation. Both Town and school district expenditures have increased steadily and independently of the increases in the Town population, the number of lots and the tax base. These expenditures have outpaced inflation and growth of the tax base.

The total amount of open space has increased over the years. Pound Ridge has more than three times the open space per person than any other community in Westchester County. Use of the Town Park facilities and participation in recreation programs has increased. The total average daily volume of traffic on the major roadways through Pound Ridge increased an average of 1% per year between 1991 and 1999, and between 1% and 2.5% annually since 1981. Total average daily volumes may have increased by as much as 16% between 1999 and 2000. This recent increase appears to be a result of commuters

passing through Pound Ridge to avoid congestion on Route 35. Traffic patterns have shifted.

One of the most difficult tasks of preparing a comprehensive plan is the drafting of goals and objectives. Thereafter, the preparation of action steps for implementation of the goals and objectives is when the process begins to bear the fruit of the Town's labor. Implementation of the new comprehensive plan will determine the relative success of the planning process.

GOALS

The goals below represent a rewriting and an updating of those found in the 1981 Town Plan of Development, as needed in order to appropriately address the conditions and circumstances which Pound Ridge faces as it enters the 21st century.

Residential Land Use

Pound Ridge is a semi-rural, low-density, residential community with many narrow roads lined by old stonewalls, mature hardwood trees and extensive woodlands. Environmental elements, particularly steep slopes, exposed rock and extensive wetlands, streams and water bodies have shaped the residential development of Pound Ridge. The Town contains a variety of single-family homes, both modest and elegant, from antique and historic colonials to very large and elaborate homes constructed largely since 1995. Pound Ridge is one of the last low-density housing areas available in the Tri-state region within commuting distance of New York City. Reliance on individual, on-site, private wells and septic systems contributes greatly to the Town's semi-rural character.

Smaller (generally older) homes provide an opportunity for seniors and others with more limited incomes to find moderately priced housing in the community. However, with increases in land prices and limited housing stock, these more modest homes are tear-down targets, which may reduce relatively moderately-priced housing opportunities.

Goal: The Town's present character as a single-family residential community should be maintained, with densities kept consistent with stated land use and natural resource goals. Further, the Town should seek to preserve the variety of housing that exists in Town, which consists of a small number of apartments, as well as small, medium and large homes. The Town should also maintain the opportunity for housing for a variety of household sizes, types and incomes, consistent with the Town's semi-rural character.

Nonresidential Land Use

The Town also contains a single, small commercial area, Scotts Corners, which serves as the shopping center for the community. Scotts Corners was originally constructed on easily developable soils (albeit abutted by wetlands), at an important intersection of the

then agricultural community. Scotts Corners has traditionally been oriented toward the needs of local area residents as opposed to becoming a regional commercial destination. Numerous studies and previous comprehensive plans have all concluded that Scotts Corners is the historic center of commerce in Town and should remain so.

Goal: The Town should retain Scotts Corner's small-town character and scale, due in part to the long-standing septic and water quality constraints there, that present both environmental and economic challenges to the business district and the community as a whole. Retail and service business development should be limited to the amount necessary to provide convenience shopping for the residents of the Town and neighboring communities. The Town's commercial districts should not be expanded. Careful attention should be given to monitoring all new commercial development proposals in terms of their environmental impact, particularly on water quality.

Community Services, Facilities and Recreation

Pound Ridge provides a variety of community services and facilities, including fire and police protection, school facilities, the library, highway services, recreation facilities and services, senior services and recycling. The desire for community services, from toddler programming and children's sports to senior activities and assistance, is expected to continue to increase.

Goal: The Town should continue to provide community services and facilities which meet the needs of its residents in a cost effective and appropriate manner, in keeping with the Town's semi-rural character and historic nature. The Town should also provide a wide range of active and passive parks, and recreational facilities and programs to meet the needs and interests of Pound Ridge residents.

Natural Resources

Pound Ridge is blessed with a particularly beautiful and interesting natural environment. Thousands of years of erosion and glaciations have left behind a rugged landscape of hills, steep slopes, ravines, and a complex and expansive system of streams, lakes, ponds and wetlands that often abut dramatic rock outcrops, exposed rock ledges and boulders. These features form some of the most attractive scenery in the area and are home to an abundant and wide variety of wildlife. The Town's numerous lakes and ponds serve as the headwaters for much of the region, and flow into a number of drinking water reservoir systems.

Goal: The Town should protect the environmental quality and ecological integrity of the Town's natural resources. This Plan is based on a strict policy of environmental conservation, using as a basis the environmental data accumulated by the Town over many years.

Open Space

The Town's environmental resources, particularly its steep slopes, exposed rock and the extensive wetlands, streams and water bodies are, in large part, defining elements of the Town's community character, identity, history and reputation. This character and reputation is often cited as the most common reason why people chose to live in Pound Ridge. Further, the preservation of open space has protected the Town's environmental resources, with none being more important than water quality and quantity.

In 1971, a Town Plan was adopted which contained an open space preservation concept. The 1981 Plan continued to embrace this comprehensive perspective and, more recently, an Open Space Acquisitions Committee was established as a result of a Town-wide referendum. This referendum authorized the use of tax-generated revenue to purchase valuable, undeveloped land to protect wetlands, community character, scenic views and wildlife habitat.

Goal: The Town should continue its forward-looking policy of acquiring and preserving open space for purposes including protecting: the quality and quantity of the Town's surface and subsurface water supply, the quality and variety of wildlife habitats in the Town, and the scenic beauty, semi-rural character and aesthetic appeal of the Town.

Transportation

There are approximately 84 miles of roads in Pound Ridge. Approximately 83% of these are Town-owned. The others are State and County roadways that form the backbone of the Town's roadway system; they are High Ridge, Long Ridge, Salem, Stone Hill, Bedford-Pound Ridge Road, and Westchester Avenue. Many of these roads date to pre-revolutionary times. Although extensively modified over the years to improve their condition, function and capacity, all remain two-lane roads without traffic signals. Older Town-owned roads closely follow the contours and features of the land. They were designed to avoid large trees, rock outcroppings and other environmental features. By doing so, these roads add to the scenic and semi-rural ambiance that defines the Town's character.

Goal: The Town should improve the function and condition of the existing roadway system, while maintaining its scenic, semi-rural character and protecting its environment.

Community Character

The residents of Pound Ridge cherish the Town's natural resources, open space, historic resources and man-made features. Much of the character of Pound Ridge is also a direct result of talented volunteers, from members of the Pound Ridge Volunteer Fire

Department and Ambulance Corps, to members of Town boards and commissions, to members of various social and charitable organizations. These many dedicated volunteers give Pound Ridge a vibrant sense of community.

Goal: The Town should protect and enhance the physical and social aspects that define and contribute to the quality of life and sense of community in Pound Ridge.

Historic Preservation

Pound Ridge has one of the largest concentrations of antique and historic structures in the region. Pound Ridge has a historic district, the Hamlet, which contains many of the Town's important community institutions including the Hiram Halle Library, The Pound Ridge Community Church, Conant Hall, the Pound Ridge Museum, and approximately 34 of the 78 houses and structures that are currently landmarked in Town. Also within the Hamlet are a small number of commercial businesses housed within historic structures. Contiguous to the Hamlet is the Pound Ridge Elementary School, and further along Westchester Avenue are the Town's historic cemetery, and the Town House (which itself is a landmarked structure).

Goal: The Pound Ridge Hamlet should remain a community focal point with a scale and character consistent with its Historic District designation.

Community Character

A. COMMUNITY CHARACTER

The residents of Pound Ridge enjoy the Town's natural environment, open space, historic resources and structures that help define its character. The Town's numerous lakes and ponds serve as the headwaters for much of the region and, of special significance, flow into a number of drinking water reservoir systems. Pound Ridge's environmental resources have also had the effect of isolating the town from major transportation and commercial corridors and the more intensive development that entails. In recognition of its environmental features and constraints, established land use patterns and relative isolation from major transportation and commercial corridors, Pound Ridge has been consistently recommended for low density residential development and open space preservation by County, State and Regional planning agencies.

In addition to the environmental diversity and beauty, much of the character of Pound Ridge is also a direct result of talented volunteers who, by their strong level of active volunteer participation, bring vitality to the social fabric of the community. Whether it be members of the Pound Ridge Volunteer Fire Department and Ambulance Corps, or members of Town boards and commissions, to members of various social and charitable organizations, the citizens of Pound Ridge contribute their time and expertise to their community. These and other aspects of the Town's community character are discussed in the chapter entitled "Community Services, Facilities, and Recreation."

This chapter focuses on the Town's scenic and historic resources and other natural and human-built elements that contribute to the Town's character. The topic of the preservation of open space and natural resources and related issues, vitally relevant to protecting quality and life and community character, is addressed in the chapter entitled "Natural Resources and Open Space." Similarly, topics that impact community character including noise, commercial district standards and traffic are addressed in the "Land Use and Zoning" Chapter and the "Transportation" Chapter respectively. Certainly, community character protections not requiring their own section are seen throughout the entire document.

Scenic Resources

An essential part of the Town's community character is its scenic beauty. Since the early twentieth century, settlement patterns have favored privacy and the natural beauty of the land, and as such, have resulted in a pattern of dispersed development throughout Town. Most recently, land formerly left in its natural state because of the difficulties of building on steep slopes and other environmental constraints, has begun to be developed.

Because of this dispersed development, many of the unique and significant views that define the Town are experienced from its roadways. For example, a prime scenic vista

can be enjoyed while traveling along Salem Road (NYS Route 124), where there are expansive views across privately owned, open meadows, ponds, marshes and fields, punctuated by a complex of barns and older homes nestled into the landscape. Important to maintaining community character is the preservation of these types of open meadows, fields and viewsheds which are becoming increasingly rare in Pound Ridge as over time, many scenic meadows return to a wooded state or are developed.

Some of Pound Ridge's most distinctive human-made scenic features are the stone walls that line many of its roadways. These stone walls were often constructed by farmers with stone found on their farms, and were laid up in the classic dry-wall method along property lines and around fields and paddocks. As such, they are a symbol of the history of Pound Ridge. In 1975, the Town Board recognized this and decreed that all stone walls on Town property are protected Landmarks. Stone walls today on private property may be threatened by development or roadway placement, expansion or repair.

Certain newly-created stone walls and fences on private property in the Town may block or limit the public's ability to enjoy these viewsheds, thereby adversely affecting the character of Pound Ridge. The height, location, material and/or construction of many newer stone walls and fences in Pound Ridge are often in marked contrast to the traditional walls and fences in Town. A related concern has been the theft of old top-stones, presumably for use in reconstruction elsewhere.

A recent threat to the natural viewsheds and character of Pound Ridge is the increased illumination of driveway entrances, landscaping and buildings, and use of overly bright lights for security purposes. Some lights may be simply poorly located or installed, creating objectionable glare. Lighting of an unnecessary strength creates an ambient glow that detracts from the ability to see and enjoy a dark night sky. In addition, roadway signage, in areas where it can be regulated and controlled by the Town, should be in keeping with the historic and wooded character of Pound Ridge.

Historic Resources

Pound Ridge has one of the largest concentrations of antique and historic structures in the region. Pound Ridge has a historic district, the Hamlet, which contains many of the Town's important community institutions including the Hiram Halle Library, The Pound Ridge Community Church, Conant Hall, the Pound Ridge Museum, and approximately 34 of the 78 houses and structures that are currently landmarked in Town. Also within the Hamlet are a small number of commercial businesses housed within historic structures. Contiguous to the Hamlet is the Pound Ridge Elementary School, and further along Westchester Avenue are the Town's historic cemetery, and the Town House. Although Pound Ridge has an abundance of historically and architecturally significant structures, the protection of many of these community assets is in the hands of individual property owners.

With the goal of *protecting and enhancing the natural, historic and social aspects that define and contribute to the quality of life and sense of community in Pound Ridge*, this plan offers the following recommendations:

RECOMMENDATIONS

1. Planning Board Review

The Town should consider empowering the Planning Board with the authority to review land use applications for the purpose of preserving community character. The Planning Board's review and approval authority should include visual impacts of new construction on scenic viewsheds and roadways, as well as on the scale and historical context of the surrounding neighborhood. The Town should consider offering clear community impact review criteria through legislation for the Planning Board to utilize.

2. Preservation of Viewsheds and Roadways

a. Viewsheds and roadways that contribute to the Town's character should be defined, inventoried, mapped and possibly designated as a first step in ensuring their protection.

b. The Town should continue to support the efforts of local land trusts, the Pound Ridge Land Conservancy, the Town Open Space Acquisition Committee, and other Town conservation organizations and volunteer committees in working with property owners to promote the conservation of important viewsheds and land in its natural state.

c. Environmentally important land areas come in many different forms. Scenic vistas of open space, watercourses, natural forestland, historic properties, scenic roadways, natural habitats, and the like, all contribute to the Town's character. The Town should request that the Conservation Board, in conjunction with the Pound Ridge Land Conservancy and other land preservation groups in Town, compile an inventory of significant environmental areas and features. Such an inventory should include both Town-owned and privately-owned land. Simultaneously, the Town should consider the implementation of a program to protect and conserve these aspects of Town-owned lands.

d. Local Code that controls the placement of signage, including temporary signs, and other aspects of sign size, shape and consistency should be reviewed, and if necessary, updated and strengthened.

3. Hilltop and Ridgeline Preservation

Due to a scarcity of easily buildable land in the Town, development is increasingly being proposed on steep terrain, and on wooded hilltops and ridgelines, which are key aspects of the scenic beauty of the Town. The Town has recently amended its steep slope protection regulations. The Town should consider adopting hilltop and ridgeline protection regulations that would require visual impact analysis for all proposed construction-related activities that occur in close proximity to hilltops and ridgelines. These regulations should control the placement and height of structures relative to hilltop and ridgeline elevations and treelines for the purpose of protecting and preserving important vistas and viewsheds as well as the integrity of steep slopes for water purity, storm water protection and conservation purposes.

4. Protection of Historic Resources

a. To protect against the loss of important historic structures, the Town should explore the adoption of expanded local laws to protect and preserve historic structures and create a strong system of incentives to encourage the designation and protection of historic Landmarks. To these ends, the Town should:

(1) Consider offering property tax incentives (i.e., a reduced assessment) to homeowners whose homes are designated as Landmarks by the Town, or who voluntarily obtain Landmark status for their homes.

(2) Consider enacting a Historic Preservation Law pursuant to which the Town would designate significant historical structures as Landmarks, independent of owners' consent.

(3) Consider the establishment of Community Character Overlay Districts in which proposed development is subject to Planning Board and Landmark Commission review and approval pursuant to prescribed design guidelines.

b. The Town House is emblematic of the Town's historic character and should remain as its government and administrative center, and the location for community meetings and functions.

c. The Pound Ridge Hamlet should remain a community focal point with a scale and character consistent with its Historic District designation.

5. Tree Protection

a. The enforcement mechanisms in the Town's Tree Protection Law should be reviewed and, if needed, strengthened.

b. Consideration should be given to establishing restrictions pertaining to the clearing of vegetation within setbacks and buffers.

c. Consideration should be given to more significantly regulating the removal of specimen trees that add to the historic character of the community and to roadway viewsheds.

d. Efforts should be made to increase awareness of the Tree Protection Law among residents, tree service companies and landscape contractors via the Town's website and through mailings and publications, in order to improve compliance.

e. Consideration should be given to the creation and electronic distribution of a "newcomers" package that would include useful information concerning the Town's Tree Protection Law, stone wall and fence regulations, and other laws and practices that are intended to preserve community character.

f. To help with the enforcement of the Tree Protection Law, consideration should be given to requiring tree removal contactors working in Pound Ridge to register or be licensed with the Town.

g. The Town's tree regulations might include provisions pertaining to the removal of diseased or infested trees in order to encourage healthier woodlands.

6. Stone Wall Preservation

a. The Town should explore adopting regulations for the purpose of conferring Landmark status to historic stone walls on private properties which abut scenic roadways or viewsheds or which otherwise have historic value.

b. The Town should review its regulations so as to include current and specific penalties for the removal of Landmarked stone walls or their top-stones.

c. The Town should examine the inclusion of specific standards in its development regulations regarding the size, height, location, materials and construction methods for new and renovated stone walls.

7. Night Sky Protection

The Town should consider adopting lighting regulations designed to prevent glare, and to preserve/restore the ability to view a night sky which is free of excessive light intrusion as well as to preserve nighttime darkness and community character along roadway viewsheds. Such standards are especially necessary in commercial areas.

Land Use and Zoning

B. LAND USE AND ZONING

Pound Ridge is a semi-rural, low-density, residential community with many narrow roads lined by old stonewalls, mature hardwood trees and extensive woodlands. Environmental elements, particularly steep slopes, exposed rock and extensive wetlands, streams and water bodies have shaped the residential development of Pound Ridge. The Town contains a variety of single-family homes, both modest and elegant, from antique and historic colonials to very large and elaborate homes constructed largely since 1995. Reliance on individual, on-site, private wells and septic systems contributes greatly to the Town's semi-rural character.

Smaller (generally older) homes provide an opportunity for seniors and others with more limited incomes to find moderately priced housing in the community. However, with increases in land prices and limited housing stock, these more modest homes are tear-down targets, which may reduce relatively moderately-priced housing opportunities.

The Town also contains a single, small commercial area, Scotts Corners, which serves as the shopping center for the community. Scotts Corners was settled at an important intersection of the then agricultural community. Scotts Corners has traditionally been oriented toward the needs of local area residents as opposed to becoming a regional commercial destination. Numerous studies and previous comprehensive plans have all concluded that Scotts Corners is the historic center of commerce in Town and should remain so.

DEVELOPMENT PRESSURES AND LAND USE REGULATION

Pound Ridge has historically been a leader in natural resources based, conservation-focused land use planning and zoning, with its three-acre zoning district and substantial wetland setbacks. However, Pound Ridge is facing development pressure driven by a commuting population attracted to the Town's semi-rural setting and its abundant natural beauty. Land supply is finite, and without prudent land use planning and strict development regulations, fragile lands which have remained untouched will be developed to their fullest potential. Land development regulations are important for the protection of the Town's community character and its natural environment, including its watersheds, soils, animal habitats and biodiversity. Over the last century, the protection of land via these and other initiatives has caused an increase in property values, which in turn has added significantly to the Town's tax base.

REGIONAL CONTEXT

Westchester County

Pound Ridge is located in northeastern Westchester County, is 23.2 square miles in size, and is the County's least populated town with a 2008 population of 4,939 persons, which is a 5.3% increase from 2000. In *Patterns for Westchester: The Land and the People,*

Westchester County designates the northeastern portion of the County for the preservation of rural and low-density land uses, calling the region the "North County Watershed District." As such, the County recommends Pound Ridge remain a low-density, single-family residential area with zoning of up to five acres per lot, consistent with neighboring towns. Pound Ridge is the only town targeted for under 500 persons per square mile in the County.

Patterns for Westchester classifies Scotts Corners, the Town's only commercial area, as a "Hamlet" commercial zone. It is suitable only for support of the Town's residents and neighboring communities, due to the lack of water and wastewater infrastructure, absence of public transportation, and its geographic position in a drinking water supply watershed. It should be reflective of the Town's semi-rural character. The County Plan seeks to channel development wherever possible to existing centers which have the infrastructure and public transportation to support such development. Further, *Patterns for Westchester* describes the responsibility of Town government as, "each municipality's ability to direct development so as to be consistent with existing character and with watershed protection requirements. A watershed approach to infrastructure planning will be necessary."

PLANNING AND ZONING

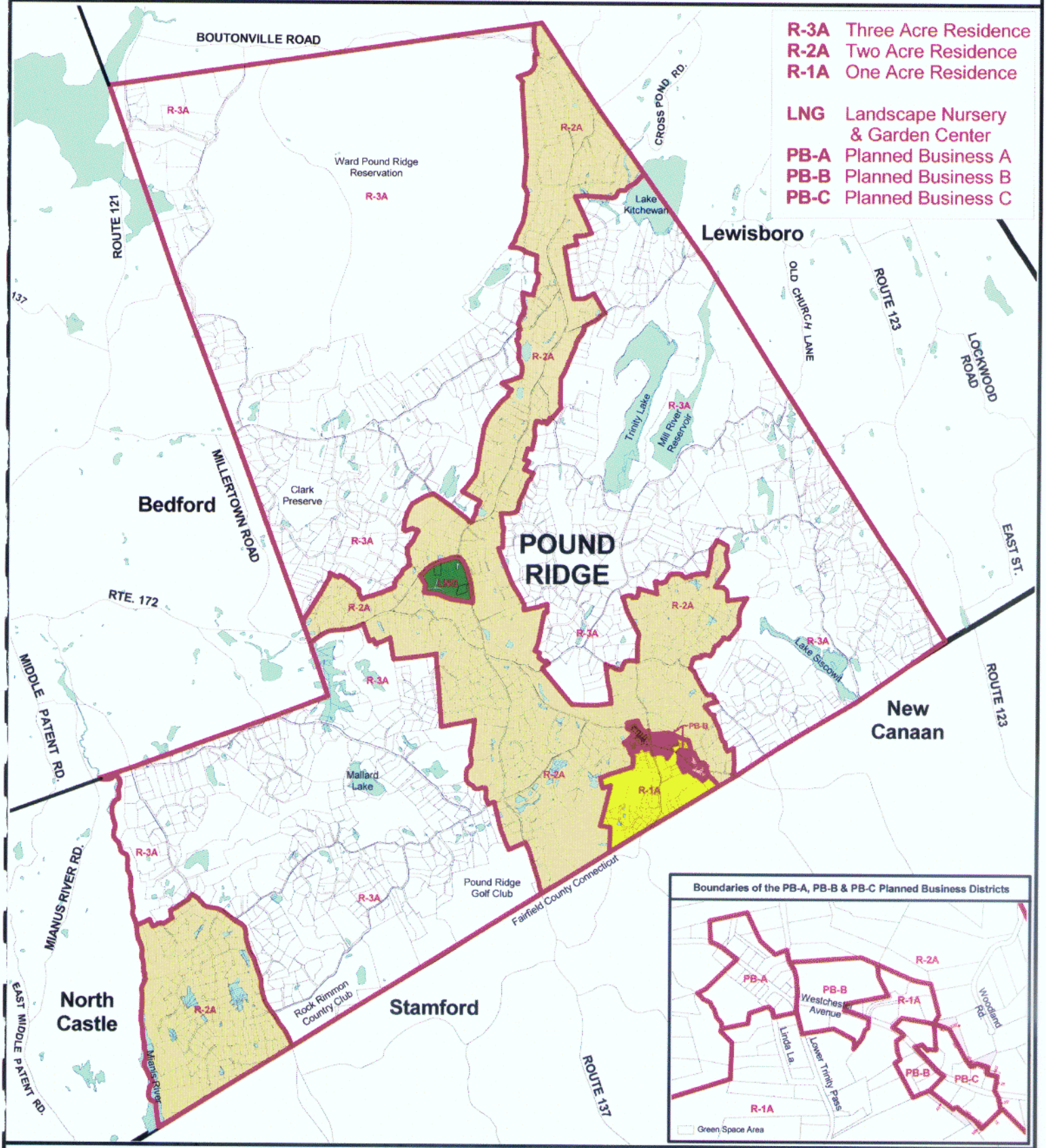
The first Town Plan for Pound Ridge was completed in 1957, revised in 1971 and updated in 1981. These plans have guided the development and use of land within the Town. Three-acre zoning, adopted in 1959, has been the maximum lot size zoning designation, and wetlands were originally protected by a 100-foot wide buffer zone. These regulations served as the main constraints on residential development, and in 1986, the wetlands buffer zone was increased to 150 feet in width.

The Town is divided into seven zoning districts. Approximately 14,750 acres (99% of the Town) is zoned for residential use; this includes the Ward Pound Ridge Reservation's 2,800+ acres. Seventy-six percent of the Town is in the R-3A (three acre) District, 22% is in the R-2A (two acre) District and slightly over 1% is zoned R-1A (one acre). Approximately 86 acres (0.6%) are zoned for commercial use. The Planned Business Districts in Scotts Corners comprise approximately 41 acres (0.3%) of the Town. The Landscape Nursery Garden District in the greater Hamlet area includes approximately 47 acres. If not used for nursery purposes, these lands are subject to the use and dimensional standards of the R-2A District.[1]

Significant changes to the Town's zoning occurred in 1966 after several years of extensive study. These modifications involved the creation of two new commercial districts: the Planned Business-A (PB-A) District to the west of Trinity Pass and the PB-B District to the east. The creation of the PB-B District involved the extension of commercial zoning to accommodate the anticipated demand for such development at that

[1] Figure 1 - Zoning Map.

ZONING



COMPREHENSIVE PLAN

Town of Pound Ridge, New York

June 2002

Note: This map is for general planning purposes only
Base map source: Weiler Mapping, Inc, Town of Pound Ridge tax maps, Frederick P. Clark Associates, Inc.

N

4800 0 4800 Feet

FREDERICK P. CLARK ASSOCIATES, INC.
Planning/Development/Environment/Transportation

Figure 1

point in time. This demand has not materialized. In the mid-1980s, 12 acres were rezoned from PB-B to R-1A.

Since the 1971 Plan, it has been the Town's policy to limit commercial development in Pound Ridge to that which is necessary to serve the Town's small population, and remain in concert with the Town's semi-rural, low density character. It was determined in the 1974 *Scotts Corners Study* and again in the 1981 Plan of Development that the amount of potential commercial development in Scotts Corners is far in excess of that needed to meet the demands of Town residents, based on the 1981 Plan, which projected a maximum population of 9,500 persons.

The Zoning Law last underwent a comprehensive review during the 1990s. Zoning revisions were adopted in 1998 which included provisions designed to mitigate the environmental and aesthetic impact of very large houses. In January 2002, the Town adopted performance and restoration bond legislation. The Town Board and Planning Board have also been reviewing possible amendments to the Zoning Law: (1) regarding non-conforming lots, and (2) for the purpose of allowing 100% of the permitted floor area under certain conditions in the Planned Business Districts to be used for residential development. The Town has recently completed the process of updating its regulations regarding steep slopes, environmentally sensitive lands, and stormwater, and is in the process of reviewing other local control of environmental constraints, and senior housing.

Pound Ridge currently has regulations in its Zoning Law which enable the Planning Board to examine proposed commercial development with respect to parking lot layout, landscaping, lighting, signage and building elevations during the Board's site plan review and approval process. On developed sites, the Planning Board has the ability to review these elements when a new use or expansion is proposed, with the goal of comprehensive and rigorous improvement in the overall aesthetics and character of the area.

Continuing Efforts to Address Fair and Affordable Housing Needs

The Town has made a number of efforts to address fair and affordable housing needs. In 1989, Section 113-39, Accessory Apartments, of the Zoning Law was enacted in "an effort to provide more housing for those of moderate income in the Town," and "to develop small, rental housing units designed to meet the special housing needs of single persons and couples of low and moderate income, both young and old, and of relatives of families living in Pound Ridge." The Town currently contains 30 accessory apartments.

Further, three "residential care facilities" (group homes) exist in Pound Ridge. These were established in the 1990s for adults with disabilities. These homes are managed by the New York State Office of Mental Retardation and Developmentally Disabled, the New York State Association of Retarded Citizens, and The Community Living Corporation of Mt. Kisco.

In 1991, the Town enacted Section 113-57, Senior Citizen Housing, of the Zoning Law which provides for a Town Board issued special permit for the development of projects with up to 50 units of senior multi-family housing in all of the residential zoning districts in the Town. In 2001, Pound Ridge joined the Westchester Urban County Consortium. Independent of Town efforts, the Pound Ridge Housing Partnership was created in 2001 for the purpose of defining and articulating the Town's housing needs.

In 2002, Section 113-39 was amended in an effort to increase housing options and "to promote the more efficient use of the Town's existing inventory of dwellings and accessory buildings," by means of permitting accessory apartments to be created in existing or newly constructed principal residences, and in accessory buildings existing as of January 1, 2002.

In addition, in 2003 the Pound Ridge Housing Corporation was formed in order to provide a vehicle to receive donations of property, conduct educational programs, seek grants and build affordable housing. The Town has also recently created a Housing Board, to best interface with the Town's housing matters.

Further, in 2007 the Town approved the A-HOME development in Pound Ridge, which is a constructed and occupied affordable housing project comprised of two two-story buildings, with each building containing six one-bedroom suites with individual bathroom facilities and one shared kitchen and sitting area per floor. This project is restricted to residents over 55 years of age, with priority given to Pound Ridge municipal employees and volunteers, as well as to local residents.

Existing Land Use

Pound Ridge is comprised of 2,447 parcels totaling 14,833 acres (including water bodies). A portion of the Ward Pound Ridge Reservation (2,842 acres) is located in Pound Ridge. This portion of the Reservation accounts for 19% of the Town's total area. The Town has no land use jurisdiction over the Reservation land as it is owned by the County of Westchester. Therefore, the Town has land use jurisdiction over 11,990 acres.[2]

Forty-one percent of the land in Town is developed for residential purposes. In addition, 46% of the Town is potentially developable residentially-zoned land, of which 1,922 acres are vacant, 1,857 acres are in residential use but are further subdividable, and 1,477 acres are owned by the Aquarion Water Company. The Aquarion Water Company provides drinking water for the City of Stamford. Seven percent of the Town (843 acres) is comprised of Town-owned government and recreation properties, roads, schools and cemeteries. Only 4% of Pound Ridge (486 acres) is permanently preserved by private trusts or is in land conservancy ownership.

[2] For purposes of this chapter, all percentages given are based on 11,990 acres because including the Reservation dramatically alters the perspective on the density calculations.

The small amount of hamlet style commercial development in Scotts Corners has traditionally been consistent with the retail and service needs of the residents of the Town, based upon the following two primary factors:

1. Market Area - Scotts Corners is limited by the small population which it serves and its location relative to much larger and more dynamic commercial centers elsewhere; and

2. Environmental Constraints – The capacity of the septic systems on which the properties in Scotts Corners rely are limited by generally unsuitable soils and other factors influencing sub-surface waste water disposal. The proximity of the area to Class AA (potable quality) streams that lead directly into public water supply reservoirs, the need to carefully control both the quantity and quality of stormwater runoff, coupled with the concern of potential groundwater pollution associated with commercial development, triggers strict regulations that further limit development.

It has been the recommended policy of the 1971, 1974 and 1981 Town Plans, and the stated intent of the PB-A, PB-B and PB-C zoning districts, to limit the commercial development of Scotts Corners to that needed to serve the convenience shopping and service needs of Town residents and neighboring communities. Given its vacancy rate and lack of expansion over the years, it appears that the Scotts Corners business area, as currently developed, is sized appropriately for the needs of the Town, and should undergo no further expansion.

Residential Development Potential

In Pound Ridge, the predominant land use is residential single-family homes. This pattern will continue, as the creation of additional commercial development opportunities in Town is unlikely due to local environmental constraints, the absence of water and wastewater infrastructure, transportation limitations, and the desire of Pound Ridge residents to preserve the existing low density community character.

Successfully managing the long-term implications of future residential land use, and its accompanying population growth, requires striking a careful balance among the interests of environmental protection, community character, property rights, and taxation levels.

By establishing a comprehensive plan for development and updating the zoning code to be consistent with such plan, community leaders will be better equipped to manage the long term fiscal implications of growth, control the level of Town taxes, and plan appropriately for essential services, recreation, and emergency preparedness, while minimizing adverse impacts on community character and environmental health.

In addition, due to the Town's limited commercial development potential, coupled with the prevailing low density residential pattern of past and future land use, it becomes necessary for Pound Ridge to balance the negative fiscal impacts of this pattern by maximizing other more fiscally positive land uses, such as the preservation of privately owned open space, and the prudent approval of new residential lots.

The Future of Residential Development

There are a total of 10,504 acres of residentially zoned land in Pound Ridge. Of that total 47% or 4,950 acres, have been subdivided into single-family lots which are no longer capable of further subdivision. The underlying zoning of the remaining 5,554 acres consists of 1, 2 and 3 acres per dwelling unit. This remaining land includes parcels capable of initial or further subdivision, land currently in use as golf courses and water supply watershed land surrounding several reservoirs owned by Aquarion Water Co.

Based upon a parcel-based numeric and spatial build-out analysis recently conducted for the Town by the Westchester County Department of Planning as part of the *Westchester 2025* initiative, 441 new residential lots could be created using existing zoning designations. However, the Westchester County analysis does not, but should include the potential for the possible future development of watershed lands, because there is no absolute guarantee that these lands can not be developed in the future.

At an average of 2.8 persons per household, this translates to an additional 1,235 persons living in the Town. Add this to the 4,726 people already occupying homes in Pound Ridge and the Town could contain 5,961 people, a 26% increase from current population levels. Such potential growth calls for constant vigilance by Town land use authorities, coupled with the use of active and current land use controls.

It is important to note that the lot density, or actual lot yield of any residential parcel, can vary due to on-site characteristics which may change densities from numerically projected build-out potentials, or, in certain cases housing density may be increased through the approval of Special Permit uses for multi-family, affordable, or senior housing. For example, despite zoning code designations of 1, 2 and 3 acres per lot, the historical average lot size of all lots created by subdivision or otherwise approved by the Town exceeds 4 acres per lot, due to on-site, environmental, or other community character constraints.

Impacts of Development

The cumulative demand on Town services will increase as new homes are built and population grows over the coming decades. Residents can expect potentially significant cost and delivery level impacts related to various Town services. These include but are not limited to:

- Volunteer Fire Department

- Volunteer Ambulance
- Police
- Public Schools
- Recreation Facilities
- Highway Department
- Town Government

A significantly increased population must match a carefully planned tax base. The level of taxation required to provide municipal services to a significantly larger residential population could adversely impact the Town's long term fiscal health, community character, natural beauty, privacy, peace and tranquility and environmental health, and could precipitate increases in:

- Loss of scenic vistas, historic stone walls, heritage trees and open meadows
- Vehicular traffic from more residents, visitors and service contractors
- Intrusion of noise and light pollution affecting residents and sensitive habitats
- Water pollution from chemical discharges to lawns and septic systems
- Road maintenance and the use of road salt due to expansion of the Town's road system
- Demand on aquifers to supply more water to more homes
- Air pollution from vehicle emissions and lawn maintenance equipment
- Fragmentation of forests leading to loss of biodiversity and habitat
- Fences and walls that prevent animal movement and impact scenic beauty
- Loss of vernal pools, wetlands, and wetland buffers
- Spread of invasive species due to habitat disturbance
- Carbon emissions due to increased traffic, loss of forest vegetation and from large energy consuming homes

There are a number of critical regulatory strategies and planning tools already in place, as well as new laws that should be considered, that would enable the Town to most effectively control future land use so that the extent of development will be in keeping with the character and environment of Pound Ridge. These new strategies should be designed to achieve the following goals:

- Establish a comprehensive residential zoning code that reflects current environmental and social needs
- Preserve community character by maintaining the overall pattern of low density development
- Ensure that development would not take place on environmentally sensitive lands including lands that are key to maintaining biodiversity, drinking water quality and wildlife corridors and habitats.

In order to preserve property values, community character, natural beauty, privacy, peace and tranquility, environmental health and a reasonable level of taxation, the Town should actively pursue a comprehensive process of achieving these goals.

COMMERCIAL DEVELOPMENT POTENTIAL

The existing and maximum development potential of the Scotts Corners business district is provided in the table below. Of the approximately 213,770 square feet of existing floor area in Scotts Corners, approximately 84% is commercial and 16% is residential. Since 1980, approximately 10% of the existing floor area has consistently been vacant.

As shown in the table below, current zoning permits approximately 174,000 square feet of additional floor area in Scotts Corners, split evenly between commercial and residential. If developed, this would result in nearly a 50% increase in commercial floor area. This available expansion runs counter to the planned design of Scotts Corners as defined in all prior Town Plans, as well as in County plans, where this commercial district is envisioned as a small-scale, local business environment.

Table 1
Scotts Corners Development Potential

District	Existing Floor Area	Maximum Floor Area	Remaining Floor Area
PB-A	93,681	212,505	118,824
PB-B	95,378	139,479	44,101
PB-C	24,707	35,544	10,837
Total Scotts Corners	**213,766**	**387,528**	**173,762**
Total Commercial	180,587	266,761	86,174
Total Residential	33,179	120,767	87,588

Note: Total existing commercial floor area includes vacant floor area. Maximum commercial floor area includes 75% of maximum permitted floor area in PB-A, and the maximum 10% floor area ratio in PB-B and PB-C Districts. Maximum permitted residential includes 25% of the maximum permitted floor area in the PB-A District, and 8% floor area ratio in the PB-B and 5% in the PB-C.

The Town's zoning has always permitted considerably more development in Scotts Corners than needed to meet the needs of Town residents, and this potential development has also exceeded the capacity of the environment to support such development. This has been documented in several studies over the years including the last two Town Plans of Development, the 1974 and 1990 Scotts Corners studies, the June 1992 wastewater treatment feasibility study and the 2003 Folchetti study.

ENVIRONMENTAL CONSIDERATIONS

The Presence of Environmentally Sensitive Lands

As discussed in more detail in other sections of this plan, Pound Ridge's natural environment is characterized by the presence of a variety of environmentally sensitive lands. Steep slopes, wetlands, watercourses, drinking water source aquifers, sensitive habitats, historic areas, viewsheds, soils depth to bedrock and groundwater, rock outcroppings, private wells and septics, and its geographic position in three important watersheds, all pose challenges to conventional subdivision and development. Land use decisions in such a context can be problematic, and most certainly require only the most current controls, tools, techniques and regulations to strike the appropriate balance between land use and environmental protection.

The *Town of Pound Ridge, Environmental Synthesis Report*, prepared in 1978 by the Town's Planning Consultants, Frederick P. Clark Associates, Inc., noted that 70% of the land in Pound Ridge has "severe" development constraints. In addition, this report noted that several areas were close to "tipping points, where "further development, improperly carried out, could lead to significant environmental degradation." In these areas and others, it was cautioned that serious soil erosion, septic failure and negative impacts to water quality could result from inappropriate disturbance and development.

According to a study completed in 2002 by Biologist Dr. Michael Klemens, certain lands within Pound Ridge have been scientifically determined to be part of a "biotic corridor." Klemen's defined a biotic corridor as land where distinctive flora and fauna exist due to the presence of unique and sensitive habitats. Land development can lead to the fragmentation of larger parcels of land that form and connect significant biotic corridors, which often include fragile watersheds, and wetlands. (Klemens, PRUP study and University of Connecticut NEMO Reports) It is also important to note that the Klemens report did not study the entire Town, but instead focused on the area to the east of Ward Pound Ridge Reservation. Similar biotic corridors may also exist throughout Town to the south and southwest of the Reservation.

New York City, Stamford, and Long Island Sound Shore Community Watersheds

Pound Ridge is located within three separate watersheds of importance. The northerly two-thirds of Pound Ridge contributes its surface water to the Croton System of the New York City Water Supply, which supplies drinking water to 9 million people in New York City and Westchester County. The southern one-third of the Town is split between the drinking water supply watershed for the City of Stamford, CT, and the former New York – American System serving a number of Long Island Sound shore communities, and fed by the Mianus River. All three of these watersheds pose significant regulatory and land use considerations for Pound Ridge.

RECOMMENDATIONS

1. General

a. The Town's present character as a semi rural single-family residential community should be maintained. The Town should seek to preserve the variety of housing that exists in Town, which consists of a small number of apartments, as well as small, medium and large homes. The Town should also maintain the opportunity for housing of a variety of household sizes, types and incomes, consistent with the Town's semi-rural character.

b. The Town should only allow commercial development that is compatible with the needs of its residents and a small surrounding area, and at a scale that is consistent with the Town's character and history.

c. The Town should consider the creation of an Architectural Review Board (ARB) or similar entity, to provide for a review of proposed developments, improvements, alterations or other activities within non-residential zones and designated historic areas, for the purpose of maintaining consistency and appropriateness of desired design, aesthetic and architectural standards.

d. All land use and development should be a result of review and approval processes that make use of only the most current land use and zoning regulations, administered by fully trained volunteers on the Town's various boards and committees.

2. Residential Development

a. Seek to establish a permanent source of Town funds to be used exclusively for open space acquisition. This could be accomplished by continuing the current Open Space Acquisition Tax and the Open Space Acquisition Fund and/or by enacting a real property transfer tax, the proceeds of which would be dedicated open space acquisition.

b. Examine the need to change the current R-3A zone (3-acre minimum lot size) to R-4A (4-acre minimum lot size), or larger, where appropriate, for residentially zoned lands in the Town, to more accurately reflect the Town's current overall land use patterns, its long term environmental protection objectives, and in recognition of its significant environmental constraints to development. As stated above, despite zoning code designations of 1, 2 and 3 acres per lot, the historical average lot size of all lots created by subdivision or otherwise approved by the Town exceeds 4 acres per lot, due to on-site, environmental or other community character constraints. Therefore, given the environmental characteristics of the subject lands, the recommended rezoning is an appropriate way of balancing the zoning of such lands with their actual development potential.

The current R-3A zoning designation, which was established in 1959, was at the time an appropriate response to land use pressures facing the Town. It was effective for many years but needs to be updated to reflect the need to maintain community character in the face of escalating economic, population and environmental pressures.

c. Consider the placement a conservation easement, conservation overlay zone, Critical Environmental Area designation, or larger minimum lot size over all public water supply lands to protect critical watershed land from development. In addition, consider rezoning all lands that fall within the Town's most environmentally sensitive areas, or in scientifically established biotic corridors to R-6A (6-acre minimum lot size).

d. Examine increased front and side yard zoning setbacks, undisturbed buffers, and minimize clear cuts in areas of particular environmental, scenic or historic quality or significance to ensure the preservation of community character.

e. Encourage the preservation of agricultural uses in the defined LNG Zoning District.

3. The Hamlet

The identity of the Hamlet as the historical and cultural center of the community should be preserved. The scale, character, and intensity of all uses in the Hamlet should be consistent with its Historic District designation. The existing library, museum and community theater/church are examples of such. Except for the current non-conforming uses, the Hamlet should not be used as or expanded into a commercial district. The Town Board should consider legislation that would offer additional protection for structures, spaces, buffers and settings within the Hamlet, and should consider enlarging the designated district to include additional properties of significance.

4. Special Character Overlay Districts

a. There are areas outside of the defined historic Hamlet which have special historical or community character significance, but which may not meet the criteria for formal designation. The Town should consider the creation of a Special Character Overlay District to protect the "greater" Hamlet area.[3] This proposed district would protect the approaches to the smaller defined historic Hamlet. In Special Character Overlay Districts, site plan and

[3] The "greater" Hamlet area is not only the historically-designated District, but rather as follows: southernmost border: the Town Cemetery / West Lane/ Town Park entrance; westernmost border: the entrance to West Lane on Rt. 172; northeastern border: the entrance to Lower Trinity Pass off of Route 124; and northwestern border: the westernmost boundary of Carolyn's Grove, including both sides of all roads described.

architectural review by the Planning Board would be required for all new construction, expansions, renovations, demolitions, signage, etc. Within any Special Character Overlay District, more restrictive bulk requirements, minimum setbacks to water and wetlands, and maximum amounts of disturbed area and lawns should be considered.

b. In addition, the creation of Special Character Overlay Districts would permit the Town to protect other areas across Town that are reflective of a period of Pound Ridge history and which contribute significantly to the Town's community character. The Town Board should examine the Town for small yet important areas which contain special geographic features or are especially environmentally sensitive, such as a biotic corridor, viewshed, unique geological formations which would be deserving of designation as Special Character Overlay Districts. Examples of potentially important areas can be found along the entrance roadways to Scotts Corners from the High Ridge/Rt. 124 intersection and from New Canaan, along portions of East Woods Road, and north on Route 124 from the hamlet.

5. Scotts Corners

a. Scotts Corners is the Town's sole commercial district, and is intended for the patronage of the residents of the Town and neighboring communities. As Pound Ridge's stated primary land use is residential, the PB-A, PB-B and PB-C zoning districts should not be expanded. Further, no new commercial districts, hamlets or centers should be developed anywhere in Town.

b. The bulk regulations for the PB-A, PB-B and PB-C zones should be modified so as to reflect the "small town" nature of these business districts. The potential for new commercial space should be significantly reduced to reflect the historical level of occupancy in these districts. These bulk regulations should be revised to eliminate the potential for an amount of development that would significantly change the existing density or scale of this area. In addition, the Town Board should examine current Site Plan regulations and provide for any necessary updates to ensure all development in Scott's Corners is in keeping with the appropriate scale, character, and visual beauty of the area. Specifically, revisions to maximum lot coverages, building separation, green space, traffic and pedestrian flow, parking, and façade/design standards should be examined to provide for the maintenance of the existing small town feel of the area.

c. The maximum permitted building height in commercial districts should be changed to 35 feet and 2-1/2 stories, with only one elevation allowed to reach 40 feet in height.

d. The Town should encourage residential and mixed uses, and public and community facilities in Scotts Corners which complement its semi-rural community character, and which add vibrancy and stability to the Pound Ridge business district and overall community. However, in the development of all uses, surface and groundwater quality must be protected and vehicular traffic impacts must be mitigated. The Town has explored the feasibility of improving the water supply and sewage disposal situation in Scotts Corners over the years, including in the June 1992 wastewater treatment feasibility study and the 2003 Folchetti study. Despite the completion of these two studies, as well as other Town and community based efforts over many years, a comprehensive solution to the water and wastewater issues in Scotts Corners has not yet been identified. In keeping with the recommended scale for Scotts Corners, the development of appropriate water and wastewater infrastructure solutions should continue to be explored. Further, the Town should continue to urge the Westchester County Department of Health to permit the use of leading-edge technology and design to repair or replace water, septic or other wastewater systems that are failing or in need of upgrading.

e. The Town should encourage the utilization of the residential development potential of Scotts Corners as a means of providing for a variety of household sizes, types and incomes in the Town, consistent with its semi-rural character. The following are specific recommendations in this regard:

(1) In PB-A and PB-B Districts, the Town should consider amending the Zoning Law to increase the allowable area of second floor residential use from 50% to 100% of the floor area below.

(2) In the PB-C District, the Town should consider allowing that 100% of the permitted floor area be used for residential development.

(3) In the PB-A, PB-B and PB-C Districts, the Town should limit second floor space to residential use.

6. Housing

a. The Town should seek ways in which to continue to provide a broad based array of housing types and opportunities for all, including for its emergency service providers, especially including its volunteer firefighters.

b. The Town should review its senior citizen special permit use provisions in order to permit senior citizen housing which is suitable for the Town, economically feasible and environmentally sensitive.

c. The Town should consider allowing income-qualified seniors to renovate their homes to include a first floor bedroom and bathroom without increasing the assessed value of their home, so long as the home is their primary residence. The Town should consider making a recommendation to the County and State that they create a similar exemption.

d. The Town should review its existing regulations and consider the creation of new provisions to encourage alternative types of housing which are compatible with the existing character and scale of Pound Ridge, in an effort to promote the increased opportunity for fair and affordable housing in the Town.

e. The demolition of smaller (usually older) homes and the construction of new larger homes in their place changes the character of the community one house at a time. To maintain a diversity of housing opportunities, and to retain community character, the Town should explore the adoption of legislation intended to discourage inappropriate demolition of existing structures (homes, barns, etc.,) possibly including the issuance of demolition permits following a review by the Town to determine whether an architecturally significant, historic, or otherwise important structure should be demolished. The Town should also consider the creation of incentives to the restoration of existing structures as an alternative to demolition. The Landmarks and Historic District Commission could also be authorized to review and approve any proposed demolitions or remodeling within Historic Districts criteria.

7. Environmentally Constrained Lots

The Town should consider mechanisms with which to limit development on environmentally constrained lots consistent with the ability of the lot to support development. Consideration should be given to the adoption of maximum floor area ratios, maximum building coverage and lot coverage limitations that are based upon a minimum contiguous buildable area. Slopes, wetlands, and other environmental constraints should be deducted from the minimum contiguous buildable area.

8. Recreation Zoning District

The Town should explore the creation of a new Recreation zoning district that would allow golf courses, tennis clubs, Town parks, the Ward Pound Ridge Reservation (although this is currently County-owned) and other recreation uses as the sole permitted uses in the district.

9. Town-Owned Properties

a. The Town should ensure that any changes or additions to the Town House, a unique government structure in the region, be in keeping with its current

clapboard-style architecture and historic character, and that its park-like grounds be maintained. Further, the Town should consider designating the Town House as a Historic Landmark within the Town's Historic Landmark Preservation Law.

b. The Town should place a conservation easement or other protective designation on Town-owned open space lands that are not dedicated park lands. In the alternative, the Town should investigate the transfer of ownership of such properties to a local land conservancy or trust, in order to protect them as open space in perpetuity.

10. Miscellaneous Land Use Regulations

a. The Town should strengthen the provisions of Section 113-33 of the Zoning Law regarding merged lots and new structures on non-conforming lots.

b The current minimum front, side and rear setbacks and buffers should be in creased in order to protect the Town's semi-rural character, animal habitat and woodland viewsheds, and to enhance privacy between neighbors. Further, the natural environment including geological occurrences, mature tree growth and vegetative under-story should be protected in these setback and buffer areas.

c. The Town should consider the creation of a Natural Resource officer, employed by the Town, to oversee and assist residents and businesses with environmental aspects such as turf management, water and septic usage, stormwater drainage, the use of pesticides, herbicides, fungicides and all other chemical applications, and other local environmental monitoring needs.

d. The requirement for a septic expansion area equal in size to the actual septic system creates unnecessary site disturbance due to the requirement to clear vegetation from the expansion area. Further, vegetative screening within the setback areas that once provided privacy and preservation of community character is reduced, and homes are therefore more visible. Given the size of currently constructed homes and their associated improvements, the need for adequate buffering can mean the need for larger lots. The Town should explore the feasibility of not requiring the full vegetative clearing of septic system expansion areas, in order to preserve woodlands, wildlife habitat and viewsheds.

Natural Resources and Open Space

C. NATURAL RESOURCES AND OPEN SPACE

Pound Ridge is home to a particularly beautiful and diverse natural environment, which contains an abundant and wide variety of wildlife. The Town's numerous lakes, ponds and watercourses serve as the headwaters for much of the region, and flow through three separate watersheds and reservoir systems.

Pound Ridge has traditionally strived to protect its wildlife habitats, scenic open space and natural resources. It is this precious heritage that distinguishes Pound Ridge from other communities and gives Pound Ridge a vitally important role in maintaining the health of the larger ecosystem to which the Town belongs.

Residents of Pound Ridge enjoy the rare privilege of living in the midst of a peaceful, natural environment located only 45 miles from Manhattan. With this privilege comes a challenge and a responsibility. The challenge is for the Town to maintain the quality of life made possible by its well-preserved semi-rural environment. The responsibility is for the Town to be a leader in the use of ecologically sustainable practices in the creation and management of existing and future development.

ENVIRONMENTAL PROTECTION – A POUND RIDGE TRADITION

The Town's environmental resources, particularly its steep slopes, exposed rock and the extensive wetlands, streams and water bodies are, in large part, defining elements of the Town's community character, identity, history and reputation. This character and reputation is often cited as the most common reason why people chose to live in Pound Ridge. Further, the preservation of open space has protected the Town's environmental resources, with none being more important than water quality and quantity.

Environmental quality and the protection of natural resources are long-standing and deeply felt concerns of the residents of the Town. These concerns have been expressed over the years through land use controls pertinent to the times. For example, in 1957, the Town issued its first Master Plan. Thereafter, environmental awareness facilitated the formation of the Conservation Advisory Council (now the Conservation Board) in 1968.

Through the use of land use planning, and zoning, the Town has historically preserved valuable undeveloped land and open space. In 1969, the Town became the first community in New York State to adopt freshwater wetlands protection legislation and to establish a Water Control Commission to administer these regulations.

In 1971, a second Town Master Plan was completed and this Plan contained an open space preservation concept. The third Town Master Plan, finished in 1981, reinforced this commitment, and included specific aims for protecting the quality and quantity of the surface and subsurface water supply, the quality and variety of wildlife habitats, and the scenic beauty and semi-rural character of the Town.

In 2000, an Open Space Acquisitions Committee was established following a successful Town-wide referendum authorizing the use of tax-generated revenue to fund the purchase of valuable undeveloped land for the protection of wetlands, community character, scenic views and wildlife habitat. As demonstrated by this initiative, it is the Town's forward-looking policy to acquire land for the protection of natural resources and open space.

In the period since Pound Ridge completed its last Master Plan, there have been important advances in environmental science, best management practices, mapping technology and sustainable (lower impact) land use planning and development. Because of these advances, there are now improved tools available to the Town as it strives to protect the health of its ecosystems for current and future generations.

Existing Conditions

Open Space

Pound Ridge contains a significant amount of open space. In fact, 35% of Pound Ridge (approximately 5,700 acres) is comprised of permanent and non-permanent open space. Pound Ridge ranks fifth in the County for the most acres of open space, is second only to the Town of Cortlandt for the most open space in Westchester as a percentage of the total Town area, and has the most open space per capita at 1.2 acres per person (more than three times more than any other community in Westchester County). It should be noted that almost one-half, or approximately 2,800 acres of this open space is Westchester County Parkland known as Ward Pound Ridge Reservation. Table 1 provides a summary of the Town's open space components.

Table 1
(2007 Open Space Components)

Land Use and Ownership	Lots	Acres	Percent Total
Ward-Pound Ridge Reservation	9	2,843	50%
Town Park and other Town-owned lands	45	250	4%
Pound Ridge Elementary School	2	15	<1%
Water Supply Protection Lands	60	1,477	26%
NY American Watershed	7	110	
Aquarion Watershed	50	1,316	
NYCDEP Watershed	3	51	
Lake Kitchawan	1	44	1%
Private Land Trusts	21	380	7%
Nature Conservancy (Bye Preserve)* this is now PRLC	8	189	
Pound Ridge Land Conservancy*	12	185	
Westchester Land Trust	1	6	
Private Clubs	4	298	5%

Home Owners Associations	12	123	2%
Cemeteries	10	5	<1%
Open Space via Pending	3	70	1%
Conservation Easements via Pending Subdivisions	11	198	3%
TOTAL	178	5,703	100%

Source: Town GIS.

As shown in Table 2, approximately 280 acres of land were permanently preserved as open space between 1981 and 2006. The breakdown of that amount is as follows: the Town received 49 acres of land, private land conservancies obtained 135 acres, and 98 acres of private open space (owned by a homeowners association) were preserved as part of the subdivision process. Further, additional land was preserved through the use of conservation easements. As of April 2003, the Westchester Land Trust reported a total of 251 acres of land under its control in Pound Ridge, which includes an increase of 245 acres since 2001.

Table 2
Changes in Open Space: 1981, 2001 and 2003

	Acreage					
Property	*1981*		*2001*		*2003*	
Westchester County – Ward Pound Ridge Reservation	2,850		2,843		2,843	
Subtotal Acres:		2,850		2,843		2,843
Water Company Lands:						
Bridgeport Hydraulic Company	1,312		1,316		1,316	
New York American	110		110		110	
New York City Department Environmental Protection	51		51		51	
Lake Kitchawan	44		44		44	
Subtotal Acres:		1,517		1,521		1,521
Town-Owned Open Space:						
Town Park	53		54		54	
Lawther Property	22		22		22	
Slade Property	20		16		16	
Town Hall	0		4		4	
Sachs Park	19		19		19	
Lands from Donations & Conservation Sub-divisions	87		135		141	
Subtotal Acres:		201		250		256
Land Trusts:						
Nature Conservancy	171		189		192	
Pound Ridge Land Conservancy	74		185		217	
Westchester Land Trust	0		6		251	
Subtotal Acres:		245		380		660
Homeowners Association	25		123		123	
Subtotal Acres:		25		123		123
Pound Ridge Elementary School	14		15		15	

Subtotal Acres:	14	15	15
Cemeteries	4	5	5
Subtotal Acres:	4	5	5
Private Recreational Open Space Lands:			
Pound Ridge Golf Club	170	170	170
Rockrimmon Country Club	115	115	115
Pound Ridge Tennis Club	7	7	7
Twin Ponds Homeowners Association	6	6	6
Subtotal Acres:	298	298	298
Total Acres:	5,154	5,435	5,721

Source: 1981 Town Plan of Development, Town GIS. Minor discrepancies between the 1981, 2001 and 2003 figures, and with other tables in this Plan, may be present due to variations in the measurement techniques used.

The Pound Ridge Land Conservancy Mapping Committee's Priority Parcel Report (2000) established criteria for the identification and selection of important open space/natural resource parcels for future preservation. In 2002, the Open Space Acquisitions Committee (OSAC) built upon this report and provided a framework for identifying priority parcels for preservation.[1] These research studies and working criteria provide a strong foundation for a future comprehensive natural resource and open space inventory to be used in further planning and preservation efforts.

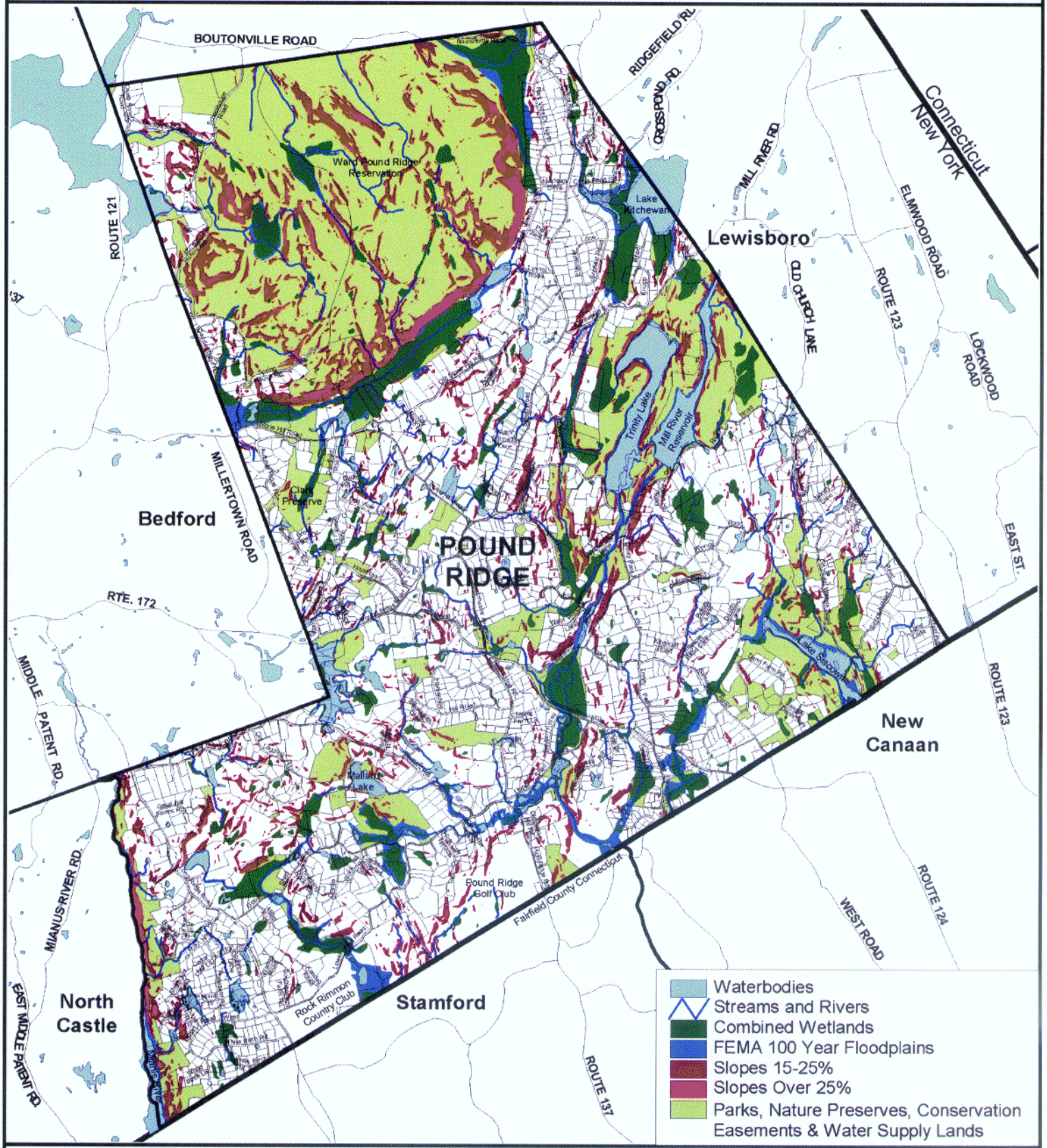
Natural Resources

Every property in Pound Ridge is dependent upon its own private well for potable water. There are nearly 1,500 acres of reservoir and adjacent protected land in the Town, and all of the surface water in Pound Ridge flows directly into three public drinking water supplies. The proper management of these resources is important to ensure the protection of the quantity and quality of the waters which serve Pound Ridge, several Connecticut municipalities, and New York City. These water resources are essential not only to human habitation, but also to the diverse wildlife habitat in the area.

Figure 1, entitled Environmental Features and Development Constraints, shows steep slopes, wetlands and floodplains, as well as parklands, nature preserves, conservation easements and water supply lands in the Town.[2] Site specific surveys typically reveal that these features comprise considerably more acreage than shown on available maps, particularly for wetlands and steep slopes. Nonetheless, as shown, there are approximately 2,000 acres of slopes in excess of 15% in the Town. Further, there are approximately 2,000 acres *each* of New York State-regulated and Federally-regulated wetlands in the Town, and another approximately 4,300 acres within 150-foot wide wetland buffer areas, which in total represent over 40% of the Town that is subject to wetland permit approval.

[1] See Appendix A of this Plan for list of OSAC's priority parcels for preservation.
[2] Figure 1 – Environmental Features and Development Constraints.

ENVIRONMENTAL FEATURES & DEVELOPMENT CONSTRAINTS



COMPREHENSIVE PLAN

Town of Pound Ridge, New York

June 2002

Note: This map is for general planning purposes only
Base map source: Weiler Mapping, Inc, Town of Pound Ridge tax maps, Frederick P. Clark Associates, Inc.

N

4800 0 4800 Feet

FREDERICK P. CLARK ASSOCIATES, INC.
Planning/Development/Environment/Transportation

Figure 1

Figure 1 also shows the most pronounced elements of the Town's natural resources. Numerous studies were conducted in the 1970s which inventoried other natural resources and constraints in far greater detail, including: watersheds, soils and slopes; vegetation; water quality; unique rock formations; unusual or exceptional existing vegetation, such as mature hemlock forests, conifer plantations and old field habitat areas; historic sites, cemeteries and archeological (Native American) sites; the Town's two Inwood Marble bedrock aquifers and areas of exceptional wildlife habitat.[3] These features are reflected on composite maps prepared as an appendix to the 1981 Master Plan.[4] These maps, incorporated herein by reference, contain a wealth of valuable information.

TRENDS AND OBSERVATIONS

Fragmentation of Natural Habitat and Open Space. The cumulative impact of development in the Town is the increasing fragmentation of open space and wildlife habitat areas. The result of such fragmentation is a reduction in biodiversity and increased vulnerability to invasive species.

Road Salt. While important to maintaining road safety, salt also kills roadside vegetation, harms wildlife, and is a known contaminant of surface and ground water. In recent years, some of the Town's oldest trees, often large Sugar Maples, that are integral to the Town's semi-rural and historic character and which line the Town's most traveled roadways, have fallen victim to road salt and other contaminants. In addition several wells have been found to contain elevated levels of sodium.

Fuel Tanks and Septic Systems. Leaking underground fuel tanks, failing septic systems, and the unsafe storage of toxic wastes threaten the Town's water resources.

Non-Indigenous Landscaping Practices, Fertilizers. and Pesticides. As housing development in the Town continues, more and more land is devoted to lawn and garden areas. Further, many residents choose non-indigenous plant materials for their gardens, which can become invasive and often require significant amounts of irrigation, fertilizers and other chemicals. Invasive species also often out-compete native species and adversely alter the wildlife habitat. The rapid spread of non-native species throughout town, including barberry, bittersweet vine, loosestrife, euonymus, Japanese knotweed, and a more recent influx of Japanese stilt grass is crowding out the native plants upon which wildlife depends. In addition, pesticide use has increased despite growing evidence that it has serious and sometimes fatal effects on local wildlife, especially birds.
Private Irrigation Systems. Private, extensive irrigation systems, which are on the increase in Town, waste precious potable water supplies when not monitored properly and used judiciously.

[3] See Appendix B of this Plan for Eastern Westchester Biotic Corridor Report, 2002.
[4] See Appendix C of this Plan for comprehensive maps from 1981 Master Plan.

Impervious Surfaces. New impervious surfaces for roadways, driveways and parking areas contribute to increased runoff and decreased groundwater recharge. *Cleared Areas.* The clearing of trees and other vegetation threatens species which rely on contiguous habitat areas for their survival.

Wetlands. Wetlands which are less than ¼ acre in size are not protected by the Town's Freshwater Wetlands Law. These unprotected wetland areas include small vernal pools (a specific kind of wetland area known for its significant value). As such, small vernal pools and their important upland buffer areas are potentially threatened by future development.

Deer Population. The uncontrolled growth of Westchester's white-tail deer population has in many cases devastated local plant communities, thereby destroying the food and habitat upon which many smaller animals depend, increasing the potential for soils erosion, and preventing the normal regeneration of indigenous plants. Further, the increased risk of Lyme disease resulting from forest fragmentation and the proliferation of disease vectors (deer and field mice, among others), has kept some residents from enjoying the natural environment. In addition, costly and dangerous collisions between the deer population and automobiles are on the rise.

Fencing. Fencing has become an impediment to wildlife movement through the Town. Higher and more visible fencing also adversely affects the semi-rural character of Town.

Methods of Preservation and Regulation

There are three primary approaches to achieving the Town's goals and objectives of open space and natural resource preservation, enhancement and protection:

1. Preservation – It is important to seize the opportunities to protect and preserve key open space and water resources while they still exist. It is difficult, costly, less effective and often impossible to achieve goals after development has occurred. Preserving land in its natural state effectively eliminates concerns regarding improper use and development and adverse impacts.

2. Regulation – When it is not possible or appropriate to preserve land or resources outright through direct ownership of land or development rights, proper regulation is necessary to ensure that private property rights are balanced with the responsibility to protect resources that benefit human and environmental health. Appropriate regulation generally follows the principles of avoidance, minimization and mitigation, in that order.

    a. Avoidance: The easiest, most effective and cost effective method of protecting and preserving open space and natural resources is to avoid their loss, disturbance or other impacts. For open space, permanent protection and preservation is often accomplished through fee-simple ownership and

through the use of conservation easements. Environmental and land development regulations are also designed to encourage avoidance and are designed to protect the values and functions of specific resources.

b. Minimization: Where development cannot be avoided, disturbance and loss of important resources, including open space and environmental features, should be minimized to the greatest extent possible and practicable. In Pound Ridge, this typically means permitting residential development where it has been demonstrated that the wetlands, water quality and quantity, wildlife habitat and other community, historic and cultural resources have been protected as much as possible. There are a variety of tools and methods of minimizing impacts, from conservation subdivision where the residential building areas are reduced in order to preserve larger contiguous areas of open space, to the implementation of best land development management practices as well as low impact development.

c. Mitigation: Where impacts cannot be avoided, and after they have been minimized to the extent practicable, it is important to mitigate to the extent reasonably practicable the impacts to environmental resources. Examples include treatment of stormwater runoff for water quality prior to release or discharge, full documentation of historic, cultural and archeological resources, relocation and reconstruction of stone walls, buildings or other historic or cultural resources; the restoration, enhancement or creation of wetlands; the preparation of planting and landscaping plans to restore, enhance and offset lost vegetation as a result of development including, but not limited to transition areas and meadows.

   An essential principle of the requirement of mitigation is to achieve a no net loss of the functions and values of the environmental features that otherwise cannot be avoided.

3. Education – Not only is it important to clarify the Town's goals and policies as they affect all levels of decisions and actions, but it is equally important to continue to educate and guide all levels of decision making about the impacts of seemingly innocuous individual actions, and available, appropriate and recommended alternative tools and techniques. In this manner, the cumulative impacts of all members of the community, from actions of the Town's elected and appointed officials, to the actions of Town commissions and departments, volunteer organizations and individual residents, can have a positive, or at least minimal adverse, impact upon the environment.

RECOMMENDATIONS

1. General

a. The Town should continue to protect the environmental quality and ecological integrity of the Town's natural resources.

b. The Town should continue its forward-looking policy of acquiring and preserving open space for purposes including protecting: the quality and quantity of the Town's surface and subsurface water supply, the quality and variety of wildlife habitats in the Town, and the scenic beauty, semi-rural character and aesthetic appeal of the Town.

c. The Town should consider providing ongoing education for its leadership and citizenry about best practices for conserving and protecting natural resources

2. Impervious Surfaces and Groundwater Recharge

a. The Town should consider amending its Zoning Law to establish a maximum percentage of impervious surface coverage for each lot. Consideration should also be given to requiring no net change in quality or quantity of stormwater between pre and post development conditions, in order to minimize stormwater impacts to the location, to other hydrologically connected properties, and to maximize groundwater recharge.

b. The Town should consider amending its land development regulations so as to incorporate best management practices for Low Impact Development, in accordance with guidelines and regulations for stormwater management and watershed protection, as promulgated by the U.S. Environmental Protection Agency, the New York City Department of Environmental Protection and the New York State Department of Environmental Conservation.

c. The Town should consider prohibiting large-scale withdrawal of groundwater without significant recharge, other than for public water supply purposes. The same should apply to water withdrawal from surface waters. All significant water consumers should be required to prepare and implement a water supply and quality management plan.

d. The Town should consider conducting a study to determine the locations and types of aquifers and aquifer recharge zones in the Town. Such a study should provide additional information such as yield, thickness, depth,

fracture locations and sustainable rate of withdrawal, and should be the basis for consideration of local aquifer protection legislation.[5]

e. The Town should maintain an on-going inventory of well data for the purpose of measuring aquifer yield trends. The information should be incorporated into the Town's Geographic Information System in order to track changes over time. New data should be compared with the Town-wide well survey conducted in the early 1970s.

f. The water quality monitoring program begun in the 1980s in the Scotts Corners business district should be continued in this overstressed area. The Town should institute a similar monitoring program in any other area of Town which shows similar signs of stress. All reasonable means of minimizing stress conditions should be pursued. Westchester County maintains a water quality testing program[6] which should be coordinated with the Town program(s).

g. In order to properly recognize the value of stormwater as a critical aquifer recharge resource, and to safeguard precious aquifers, the Town should consider creating Aquifer Protection Overlay Zones, within which the Town should impose low impact development standards, increase protective buffers to limit impervious surfaces, set forth prohibited uses, and require the use of alternative construction materials and practices that allow for water infiltration.

h. The Town should consider implementing a public education initiative to promote the conservation of water. Consideration should be given to limiting the use of groundwater for the irrigation of lawns and gardens. The Town could require that roof water be directed to lawns and landscaped areas and away from impervious surfaces as an alternative and/or supplement to consumptive irrigation systems. Homeowners should be encouraged to utilize stormwater collected through roof gutters, rain barrels and other devices for watering lawns and plantings.

i. The Planning Board should be empowered to improve overall site drainage through the use of depressional storage areas, bio-retention areas, dry wells and infiltration trenches, and other stormwater BMP's.

[5] See Appendix D of this Plan for Environmental Synthesis Report prepared by Clark Associates (1978) and existing baseline data as to site-specific aquifer vulnerability.

[6] http://www.westchestergov.com/waterquality.

3. Use of Road Salt

a. The use of road salt should be reduced to the minimum required for public safety. The Town should continue to implement a salt reduction plan including:

(1) Continue the use of new equipment designed to improve the efficiency and accuracy of salt applications.

(2) The reduction of salt application rates relative to:
   (a) Road characteristics and service functions (e.g., low speed and low volume roads; cul-de-sacs; dangerous intersections or curves; and straight, flat, well-draining segments of road).
   (b) Environmentally sensitive areas.
   (c) Weather conditions.

(3) The Highway Department should be required to develop a manual of best management practices including equipment maintenance and other standard operating procedures. Record-keeping should be required to objectively measure and improve the Department's performance relative to the management plan. This Plan should be kept current, should incorporate new materials and technologies over time, and should be responsive to MS4 requirements . Highway Department personnel should be trained in new technologies, practices and application procedures on an annual basis.

(4) The Town currently contracts with Westchester County to maintain Long Ridge Road, and the State maintains High Ridge, Long Ridge, Salem and Pound Ridge Roads, as well as part of Westchester Avenue. The Town should work closely with these agencies to balance road maintenance requirements with the Town's environmental concerns. In the event that State and County standards are applied to the detriment of the Town's natural resources, alternatives should be sought.

b. Best management practices should be implemented to divert, retain, or detain stormwater flows away from all sources of drinking water. In proximity to wells, streams and water bodies, the use of road salt should be minimized and not allowed to accumulate.

4. The Town's Phase 2 Stormwater Management Plan / MS4 Requirements

a. Pound Ridge should adopt standards and requirements which are compliant with the requirements of Phase 2 Stormwater MS4 Regulations, to improve the stormwater runoff quality from all existing roadways, Town parking lots and other sources of runoff, all the while preserving natural features

and community character. Specifically, the following should be considered:

(1) The Land Subdivision Regulations and Town road specifications should be revised to require the use of vegetated swales instead of curbs, drainage pipes and catch basins, wherever feasible.

(2) The site plan review standards should be amended to require the use of bio-retention basins, filtration systems, and other BMP's in parking lots.

(3) The Town should consider adding trees and landscaping to existing Town parking lots, where feasible.

(4) The Town should consider retro-fitting catch basins with larger sumps to trap sand and sediments and clean and maintain them regularly. Where appropriate, oil-water separators or other appropriate filtration systems should be used.

b. The Town should map its entire stormwater conveyance system, all outfalls, and identify areas where roadway runoff illicitly discharges into watercourses, as per the Phase 2 MS4 Stormwater Regulations. Such locations should have BMP's installed to improve stormwater quality and to control the quantity of discharge.

c. Regular maintenance and the cleaning of catch basins, settlement basins and sump basins should be made part of an overall Stormwater Management program administered by the Highway Department.

d. The Town should work with State and County departments to avoid, minimize and/or mitigate stormwater runoff from area roadways. The Town should continue to seek all available funding for such a program.

5. Underground Fuel Storage Tanks

a. The Town should consider requiring periodic proof of storage tank integrity for all existing underground fuel storage tanks. Evidence of such testing at an appropriate frequency should be a condition of the issuance of any building permit.

b. For all new construction, all such fuel tanks should be located above ground.

c. The Town should consider an initiative to educate the public about the potential ground water contamination from leaking underground fuel tanks and the resulting adverse impact on property values.

d. The Town should request that local realtors provide home buyers with an information packet which includes procedures for performing tank tightness tests, along with a list of local contractors who perform these tests.

6. Septic Systems

a. The Town should encourage the repair and upgrade of existing septic systems. The Town should also encourage the use of allowable emerging technologies to improve the function and capacity of these systems, as well as to minimize land disturbance.

b. Through the adoption of required local law, the Town should require periodic septic maintenance (pumping) for all such systems, in conformance with its MS4 Permit requirements.

c. The Town should implement a public education initiative to inform property owners about water conservation and wastewater management, e.g., the elimination of toxic discharges to septic systems.[7]

d. The Town should continue to educate residents and property owners regarding the proper disposal of hazardous wastes, both residential and commercial, including adding such information to the Town website.[8]

7. Use of Pesticides, Herbicides and Fertilizers

a. The Town should conduct a public education initiative regarding the environmental impacts of commonly used pesticides, herbicides and fertilizers on ground and surface water resources in Pound Ridge, including information on safe and effective alternatives.

b. The Highway and Recreation Departments should be required to utilize environmentally safe and effective alternatives to commonly used pesticides, herbicides and fertilizers in the maintenance and management of Town lands and rights-of-way.

c. The Town should investigate model ordinances designed to regulate the use of pesticides and herbicides, including provisions for the taking of water from surface water sources and utilizing it for herbicide and pesticide applications on private property.

[7] See, for example, www.westchestergov.com/health/SepticSystemManagement.htm.
[8] See, for example, www.westchestergov.com/waterquality.

8. Open Space Preservation and Protection of Non-Threatened Flora and Fauna

a. The Town should continue to seek the permanent preservation of ecologically significant and aesthetically important properties by gift, purchase in fee or via conservation easements. Such acquisitions should be by the Town or by appropriate non-profit organizations. The use of cross easements between the Town and such organizations should be continued as an additional method of ensuring that these lands will be properly preserved and managed.

b. The Town should use the selection criteria established by the Open Space Acquisitions Committee to guide the purchase of land and development rights, and should periodically review and update the Committee's list of desired acquisitions. The Town should seek to preserve as much of the Trinity Lake-Mill River Reservoir-Siscowit Reservoir corridor as possible, in a manner consistent with the water company's management needs. This area generally encompasses the water company land bordering the Mill River near Trinity Pass and Winterbottom Lane, individually-owned lands on Donbrook Road, Trinity Pass, Old Mill River Road, Old Church Land, Eastwoods Road, Siscowit Road, Hack Green Road, Laurel Road and Barnegat Road, Halle Ravine, the Town's Indian Hill open space and the Town Park.

c. The Town should seek to implement a comprehensive open space mapping program to facilitate the identification of top priority properties and the creation of strategies for their preservation. This mapping program should preserve, improve access to and supplement the knowledge contained in the many maps and studies conducted for the Town over the years. Emphasis should be given to the incorporation of the composite environmental analysis maps prepared for the 1981 Town Master Plan and the maps and visual analysis contained in the PRUP Study. The Town should utilize its GIS system for this purpose. This mapping could also be used by the Town's boards, commissions, staff and residents to help protect important natural resources during the development review process.

d. The Open Space Acquisitions Committee and the Conservation Board should be requested to maintain an inventory of all open space parcels (Open Space Inventory) and critical habitat areas in Pound Ridge, especially including threatened or endangered habitat areas.

e. The Town should promote and use a variety of techniques for open space preservation, including but not limited to obtaining rights of first refusal, the purchase or leasing of development rights, conservation easements, overlay zones, and other mechanisms that may be developed in the future.

f. Pound Ridge should seek to permanently protect existing open space, including golf courses, reservoir and water supply lands, large parcels and estates, scenic roads and viewsheds, and large tracts of unfragmented woodlands and wildlife habitat. Toward this end, the Town should:

(1) Work with Aquarion to determine the current level of open space protection of its watershed lands. Then, work to preserve these water supply lands and aquifer recharge areas by obtaining conservation easements and/or considering appropriate rezoning. Encourage the preservation of additional lands within the Mill River corridor which are essential to the protection of the public water supply, habitats, viewsheds and local aquifer recharge. Aquarion properties are integral to the Eastern Westchester Biotic Corridor, and are not yet permanently protected.

(2) Study the creation of a Biotic Protection Overlay District(s) for all properties located within the Eastern Westchester Biotic Corridor (EWBC)[9] as well as for those biotic protection corridors that have yet to be formally studied and defined. (It is to be noted that there may be some overlap between biotic corridor lands and aquifer protection overlay districts. Such being the case, there is even more reason to create conservation overlay districts in these areas.) Further, consideration should be given to designating the EWBC as a Critical Environmental Area (CEA) in accordance with SEQRA.

g. With respect to property located within an environmentally protective overlay district:

(1) The Town should continue to pursue strategic partnerships with neighboring towns to maximize the protection of biotic/aquifer/environmentally protected corridors that traverse multiple jurisdictions. The Town, through the Conservation Board and in conjunction with private land preservation organizations such as the Pound Ridge Land Conservancy and the Westchester Land Trust, should facilitate Town and multi-town initiatives with respect to the biotic/aquifer protection districts.

(2) The Town should consider requiring a 'heightened review' of proposed activities on environmentally sensitive lands and in designated Biotic Corridors for all new construction, based upon specific standards. Specifically, such standards should include an

9 As defined in the Eastern Westchester Biotic Corridor Report, Nicholas Miller and Michael Klemens, Wildlife Conservation Society/ Metropolitan Conservation Alliance, 2002.

analysis of areas in proximity to wetlands, streams and water bodies. The Planning Board would use this information, at its discretion, to establish increased buffers, minimization of impervious surfaces, special lighting requirements, and other measures where necessary to protect the integrity of the biotic/aquifer corridors.

(3) The Town should seek to adopt a policy, consistent with safety concerns, to discourage the creation of connector roads, and to keep roads and driveways more narrow in biotic/aquifer protective areas, so that the roads do not become short cuts from one part of Town to another. Road construction guidelines should include low impact development standards including narrower pavement widths and no curbs.

(4) The Town should consider offering property tax incentives for landowners who place conservation easements on their properties for the protection of water resources, scenic viewsheds and/or wildlife habitats. Conservation easements on land which is not subdividable should be included, so long as the Conservation Board determines that the land is important for biotic/aquifer protection or acts as an important buffer to critical land.

(5) The Town should educate its citizens who live in critical environmental areas about the special care that these areas require.

(6) The Town should consider creating a "no net wetland loss" requirement for all new construction, and decrease the minimum required size of locally controlled wetlands to include protection for vernal pools, seasonal and intermittent watercourses/wetlands.

h. Many of the recommendations cited above may be applicable Town-wide or to other sensitive lands not within a biotic/aquifer protection overlay district. The Town should also seek to implement these recommended measures in other sensitive lands throughout the Town.

i. Conservation subdivisions are used, among other things, to:

(1) Preserve important scenic features, including mature forests, streams, gorges, rock outcroppings, scenic vistas and other existing open spaces.

(2) Encourage the preservation of open space in highly visible areas such as along roadsides, ridgelines, entrances, etc.

(3) Minimize the creation of impervious surfaces.

Currently, conservation subdivisions are only possible with the consent of the developer. The Town should adopt provisions which allow the Planning Board to mandate the submission of a conservation subdivision plan under certain prescribed conditions.

j. Pound Ridge should continue to plan for and encourage the preservation of a continuous linked open space network throughout the Town.

k. The town should urge County, State and federal officials to regulate the sale and use of pesticides, fertilizers, and other chemicals injurious to environmentally sensitive lands and water resources.

9. Public Access and Public Education

a. The Town should promote the construction of appropriately designed and located hiking trails which connect the major elements of the Town's open space system. In this regard, the Town should evaluate and pursue:

(1) The linking of Halle Ravine via the Indian Hill open space and Town Park to the Westchester Wilderness Walk trails.

(2) The linking of the Rock Rimmon and Pound Ridge Golf Clubs, the Haroche properties, the Bye Preserve and Hsu properties along the southern boundary of the Town with the Westchester Wilderness Walk and the Water Company lands along the Mill River corridor.

(3) The use of the remains of the Ridgefield and New York Railroad foundation to extent possible. Much of the stone foundations still exist along the Mill River east of Trinity Lake and Lake Kitchawan .

(4) Working with NYSE&G, the County of Westchester and property owners to allow the use of utility right-of-ways, easements and service roads as trails and connections, particularly into the Ward Pound Ridge Reservation.

(5) Promoting new trails and connections over privately owned lands via trail easements. The Town should familiarize land owners with NYS General Obligations Law, Article 9, which limits liability for property owners who make their land available to the public for use as trails.

(6) Seeking use of the Golf Club lands for off-hours and off-season walking and cross country skiing trails, subject to appropriate restrictions to protect the course from damage and liability.

(7) The development of an interpretive wetlands trail from Sachs Park to the Reservation, as well as the creation of a bird sanctuary consistent with the Park's natural use.

b. The Town should pursue initiatives to:

(1) Create improved maps of the Town's trail system and open space resources and make them readily available.

(2) Construct trailhead information kiosks at trail and open space entrances, as well as improved signage on the trails.

(3) Create and promote educational programs regarding the Town's trail system and open space resources.

(4) Consider the creation of limited, attractive and sensitively placed parking, where feasible and appropriate, for existing and future open space lands, such as parking off Donbrook Road, possibly on the nearby NYSEG property to provide improved access to and appreciation of the Halle Ravine.

10. Deer Impacts

The deer population has been estimated to be many times greater than normal and it has caused extensive damage to local vegetation. Pound Ridge should explore opportunities on a multi-town, county-wide or regional basis to control the white-tail deer population. Finding and implementing a method of deer population control is strongly recommended.

11. Changes to Existing Regulations

a. The Freshwater Wetlands Law.

(1) The current freshwater wetland provisions regulates wetlands which are at least ¼ acre in size. Consideration should be given to lowering this threshold.

(2) In the event of a wetland violation, the Town should require replacement, restoration or enhancement, or any combination thereof, with the objective of "no net loss of wetlands."

b. Tree Preservation Law.

(1) The Town should review this law with the intent of improving compliance with, and enforcement of, the law.

(2) An intact woodland is essential for protecting water quality and wildlife habitat. The Town should consider regulating the removal of naturally-occurring vegetation, including shrubs, small trees and understory, where they exist. Exceptions should be made, where practicable, for bittersweet, euonymus and barberry, Japanese knotweed, and other invasive species.

12. Native and Non-Native Plants; Invasive Species

The Town should continue to support and promote educational programs regarding use of native plants, and should discourage the use of non-native and invasive species by landscape suppliers, contractors and homeowners.

13. Energy Conservation

In the interest of energy conservation, Pound Ridge should:

a. Encourage the use of passive and active solar and alternative energy sources.

c. Develop a program for energy reduction and conservation for all existing and proposed public facilities.

d. Consider requiring Energy Star and LEED standards as minimum standards for construction, and encourage Green Buildings certification and similar programs which promote the use of available technologies to reduce energy consumption in new buildings.

Transportation

D. TRANSPORTATION

VEHICULAR TRANSPORTATION

There are approximately 84 miles of roads in Pound Ridge. Approximately 83% of these are Town-owned. The others are State and County roadways that form the backbone of the Town's roadway system; these are High Ridge, Long Ridge, Salem, Stone Hill and Bedford-Pound Ridge Roads and Westchester Avenue. Many of these roads date to pre-revolutionary times. Although extensively modified over the years to improve their condition, function and capacity, all remain two-lane roads without traffic signals. Older Town-owned roads closely follow the contours and features of the land. They were designed to avoid large trees, rock outcroppings and other environmental features. By doing so, these roads add to the scenic and semi-rural ambiance that defines the Town's character.

Transportation Network

The transportation network within the Town consists of two-lane arterial roadways, collector roads and local streets. The roadways within the Town are shown on Figure 1.[1]

Limited-Access Highways

Limited-access highways are designed to handle large amounts of traffic. These roadways do not have many access points, and generally have interchanges at major crossroads. There are no limited-access highways within Pound Ridge. The nearest limited-access highways are Interstate-684 (I-684) in Bedford (accessed by Route 172 or Route 35), and the Merritt Parkway in Stamford (accessed by High Ridge and Long Ridge Roads).

Arterial Roadways

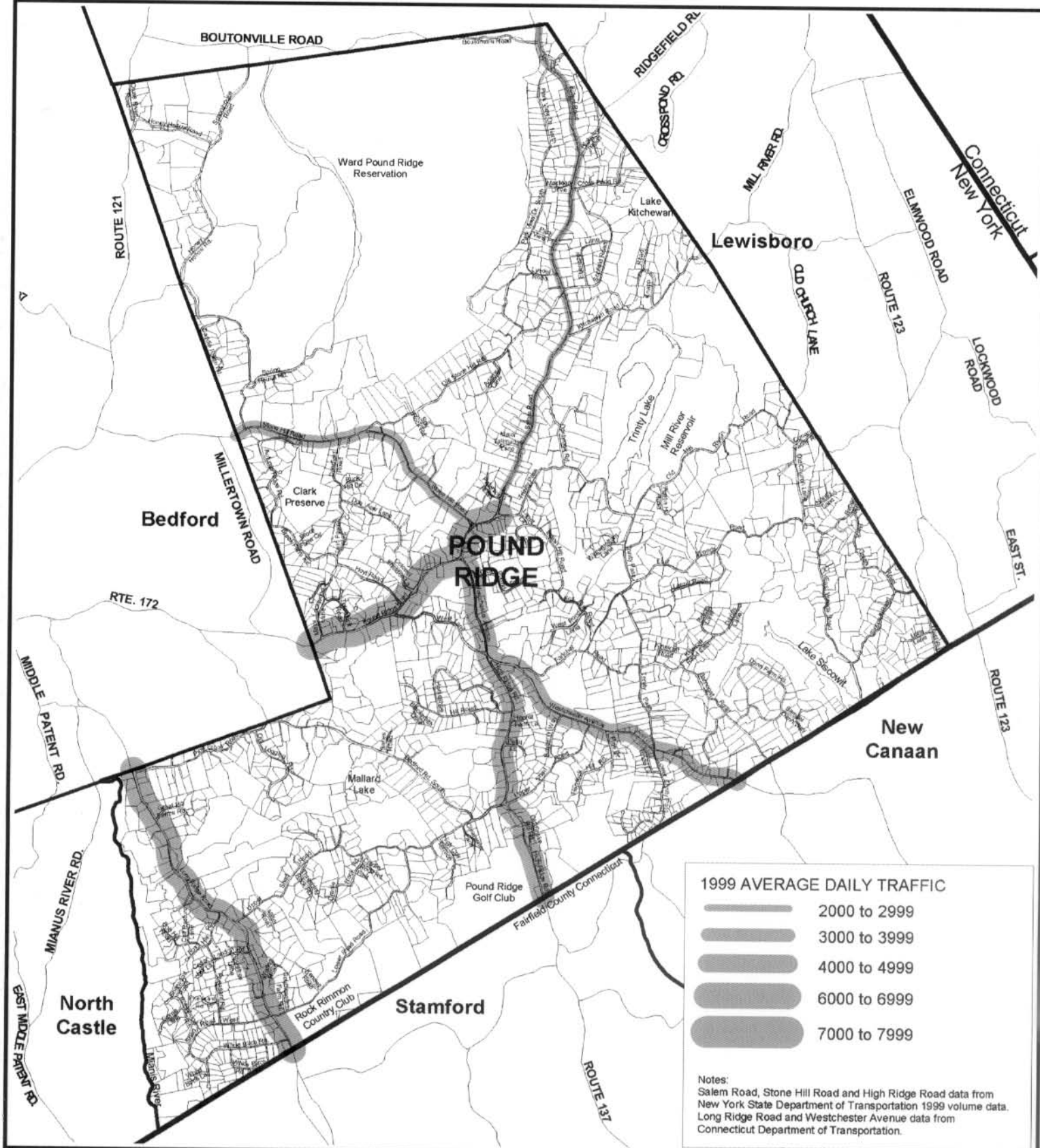
Pound Ridge's arterial roadways link it with highways which provide access to major employment and commercial centers. Arterial roadways serve relatively high volumes of traffic, often carry through traffic, and are typically under State or County jurisdiction. These agencies control many aspects of signage and speed.

The main arterial roadways in Pound Ridge are:

- Bedford-Pound Ridge Road (NYS Route 172) is an east-west, two-lane road linking Pound Ridge with Bedford and I-684, and is the route used to travel to the closest primary health care facility, Northern Westchester Hospital.

[1] Figure 1 Roadway network.

TRAFFIC CONDITIONS



BASIC STUDIES

Town of Pound Ridge, New York

October 2001

Note: This map is for general planning purposes only
Base map source: Weiler Mapping, Inc, Town of Pound Ridge tax maps, Frederick P. Clark Associates, Inc.

N

FREDERICK P. CLARK ASSOCIATES, INC.
Planning/Development/Environment/Transportation

4800 0 4800 Feet

Figure 1

- High Ridge/Stone Hill Roads (NYS Route 137) is a north-south, two-lane roadway from Stamford through the Hamlet and westerly into Bedford.

- Long Ridge Road (County Route 104) is a north-south, two-lane roadway between Stamford and the intersection with Bedford-Pound Ridge Road (NYS Route 172) in Bedford.

- Salem Road (NYS Route 124) is a north-south two-lane roadway linking the Hamlet to northern Pound Ridge and Lewisboro.

- Westchester Avenue is a north-south two-lane roadway between Connecticut and the intersection with Route 137.

Collector Roads
Collector roads link Pound Ridge's neighborhoods with its arterial roadway system. Collector roads carry lower traffic volumes at slower speeds than arterial roads. All of the collector roads in the Town are under local jurisdiction. These roadways include Upper Shad Road and Trinity Pass.

Local Streets
Most local streets in Pound Ridge are Town-owned and carry low traffic volumes. Many of the older local streets are characterized by narrow pavement widths and winding geometry. Newer roads in the Town have been constructed to standards that are more suburban in character, with wider, cleared right-of-ways, greater pavement widths, curbing and drainage facilities. However, the current trend is for local roads to be more in keeping with the scenic and semi-rural ambiance that defines the Town's character.

Traffic Volumes

Given the growth of the Town and its surrounding area, increased traffic volumes, particularly on local roadways, are inevitable. However, there is evidence of systemic increases in certain volumes that are indicative of outside pressures being put on the Town's roadway system. This is particularly true for specific segments of arterial roadways used by commuters passing through Pound Ridge.

The State and County Departments of Transportation record average daily traffic volumes for certain roadways in Westchester County. In the Town of Pound Ridge, traffic counts have been collected for the segments of the New York State routes shown in Table 1.[2]

[2] It should be noted that the average daily volume counts are snapshots of traffic for certain road segments. The counts are not coordinated and are often conducted at different times of the year for each road segment. The counts vary considerably based upon time of year, weather and other circumstances and conditions. Peak hour volumes and turning movement counts are the most accurate and consistent

Table 1
Average Daily Traffic Volumes for Primary Roads

ROAD	ROAD SEGMENT BETWEEN:		AVERAGE DAILY VOLUMES					
			1981	1991	1996	1999	2000	2002-2009
Salem Road (Route 124)	Route 137 overlap	Spring Street overlap	1,000-2,000	2,600	2,850 (Oct.)	2,650 (e)	4,800 (June)	3,446 (April '09)
	Spring Street overlap (western leg)	Route 35	1,000-2,000	1,850	2,250 (April)	2,300 (June)	2,350 (e)	2,188 (March '08)
Westchester Avenue	Route 124	Connecticut State line	4,000-5,000	5,000	4,800	4,900	5,300	--
High Ridge, Salem, Stone Hill Roads (Route 137)	Connecticut State line	Route 172	--	9,100 (e)	8,950 (June)	9,000 (e) 4,200 (e) (July)	9,400 (e) 4,350 (July)	4,043 (May'06)
	Westchester Avenue	Route 172	9,000-10,000	--	--	--	--	--
	Connecticut State line	Westchester Avenue	4,000-5,000	--	--	--	--	--
	Route 172	Route 124	--	7,250	7,600 (Nov.)	7,950 (June)	8,150 (e)	7,146 (March '08)
	Route 124	Route 121	1,000-2,000	2,400 (e)	2,800 (Nov.)	3,000 (June)	3,050 (e)	3,543 (March '08)
Bedford-Pound Ridge Road (Route 172)	Route 22	Route 137	5,000-6,000	6,750	7,000 (e)	7,100 (e)	9,300 (July)	5,895 (May '09)
Long Ridge Road (Route 104)	Pine Brook	Connecticut State line	4,000-5,000	4,800	5,400	6,200	7,800	6,943 (Aug. '02)
TOTAL (e)	**All Major Segments**		**29,000-37,000**	**39,750**	**41,650**	**43,100**	**50,100**	**33,204**

Source: New York State Department of Transportation (NYSDOT) Traffic Volume Reports, 1981 Town Plan of Development, Connecticut Department of Transportation. Prepared by Frederick P. Clark Associates, Inc. "(e)" signifies estimates based on prior counts. The months of the counts are noted where available. The 1999 and 2000 figures of 9,000 and 9,400 vehicles for Route 137 between the State line and Route 172 are estimates based on 1997 counts of 8,850 and 4,100 in March and July of 1997 and 4,300 in July of 2000. NYSDOT previously estimated the seasonally adjusted figure for 1999 as 6,600. The March count was used as the most typical and valid count for the estimates.

As shown in the table above, there has been a total increase of approximately 8% in the number of average daily vehicle trips within and through Pound Ridge between 1991 and 1999. This is in contrast to a 4% increase in population for Pound Ridge during the same period. However, it appears that average daily volumes in the Town may have increased by as much as 16% between 1999 and 2000. This significant increase may result from commuters who travel through Pound Ridge to avoid congestion on Route 35, in order to get to destinations including Stamford, New Canaan and Ridgefield.

measure of traffic conditions. Traffic patterns and volumes also significantly change between weekday and weekend use, which is not reflected in the data.

With this increase in volume, it becomes substantially more difficult for residents to access arterial and collector roads from local streets and driveways, particularly during peak morning and evening periods. All in all, the changes in volumes and patterns adversely affect the roads and residents of the Town. The following are highlights from the table above.

Salem Road (Route 124)
Counts suggest that Salem Road, between the Route 137 overlap and the Spring Street overlap, experienced a very significant total increase (1,950 vehicles, 68%) in total daily traffic volumes between 1996 and 2000.

The increased use of the Spring Street overlap (the western portion connecting to Route 35), suggests that more persons are traveling west on Route 35. However, in comparison to the increased traffic farther south on Salem Road, it appears that most of the additional vehicles are daily commuters using Pound Ridge as an alternate route between eastern Route 35 and I-684.

Westchester Avenue (High Ridge Road to the Connecticut Line)
There was no significant change in the average daily volume of traffic on this roadway segment between 1981 and 1999. This suggests that traffic on this roadway segment is comprised of local commuter and local destination-oriented traffic, as opposed to through traffic. The counts suggest an 8% increase in daily volume from 1999 to 2000.

High Ridge and Stone Hill Roads (Route 137)
There appears to have been a significant increase (4%) in daily traffic volume on High Ridge and Stone Hill Roads between 1999 and 2000. The Stone Hill segment of Route 137 between Route 124/Salem Road and Route 121 in Bedford increased 25% between 1991 and 1999 (the last year with an actual count). In comparison to the 1981 figures, it appears that use of this segment has increased by at least 50%.

Bedford-Pound Ridge Road (Route 172)
The traffic count in 2000 indicates a 38% increase in average annual volume on this roadway between 1991 and 2000. Based on an analysis of all available counts, it appears that the majority of this increase occurred as a result of commuter traffic traveling through Pound Ridge to avoid congestion on Route 35.

Long Ridge Road (Route 104)
The counts suggest that total daily volumes on Long Ridge Road increased 63% between 1991 and 2000.

Roadway Design

During the course of this comprehensive planning effort, concerns arose regarding roadway design. It has been highlighted that local roads should be reflective of, and contribute to, community character. Narrow pavement widths, and the avoidance of widening and straightening of roads, contribute to the preservation of scenic character, can slow traffic movements, and are indicative of a small-town lifestyle. The need for the establishment of design standards for bridges, drainage abutments and guard rails to fit with the historic and semi-rural character of Town as well as the avoidance of clearing mature trees in road rights-of-way, have also been raised as community concerns. The use of curbing has both positive and negative implications. While curbs can contribute to safety and roadway definition, they can also create stormwater problems and wildlife hurdles. The need for additional catch basins and other stormwater infrastructure along with their associated costs, generally expands as the use of curbing increases.

Roadway Maintenance

Road maintenance, particularly the use of sand and salt in winter months, continues to be an issue for the Town, and remains a focus of the Highway Department in balancing the need to meet resident expectations for keeping roads passable with the responsibility to protect the Town's natural resources, particularly its drinking water. The Natural Resources and Open Space chapter of this Plan includes a more complete discussion and specific recommendations for the reduced use of salt and other deicing materials.

Many roadways in Pound Ridge follow historic pathways that have been used as transportation corridors for centuries. In many cases, the clear-cutting for farm field creation and maintenance that was pervasive in northern Westchester for centuries did not occur along areas immediately adjacent to roadways. Thus, some of the most valuable and exemplary specimen trees can still be found along the roadsides of Pound Ridge. Tree trimming and general maintenance by utilities and other non-Town entities bears upon roadside character through the piecemeal destruction of roadside trees, as does the use of roadway de-icers.

Pedestrian and Bicycle Transportation

The one existing improved path extends about 1.2 miles; it begins at the Town Park parking lot and runs along the north side of Westchester Avenue to the outskirts of Scotts Corners. Pedestrian and bicycle safety are important concerns for Town residents. Vehicular speeding and roadway/intersection conditions pose a challenge to pedestrians and bicyclists.

COMMUTER RAIL SERVICE

Passenger rail service to and from NYC is available to Town residents on the Harlem and New Haven lines of Metro-North Railroad. The nearest train stations to Pound Ridge are

in New Canaan (New Haven Line), and along the Harlem Line in Katonah, Bedford Hills, and Mount Kisco. The Amtrak stop in Stamford connects long-distance commuters with Boston and Washington.

There are no official "park and ride" lots in Pound Ridge. Rail commuters drive to various stations where they park or are dropped off. The short supply of parking at the various train stations mentioned above is a chronic problem for Pound Ridge commuting residents. The Town had been working with the County and other agencies on commuter parking and the possible provision of bus service to the railroad stations. Residents have expressed a preference for more parking at the stations over commuter bus service.

In September 2008, as part of the I-287 Corridor and Tappan Zee Bridge Plan, the New York State Department of Transportation announced that a Bus Rapid Transit system (BRT) will be constructed along the I-287 corridor in Rockland and Westchester counties as part of the project to replace the Tappan Zee Bridge (TZB). The new BRT system is expected to be operational the day that the new bridge opens and will be the first east-west rapid transit system in the county. Not only will the transit system help relieve congestion, it will provide linkages between the county's three existing north-south rail systems.[3] The Town seeks to develop transportation opportunities for its residents in conjunction with this initiative.

RECOMMENDATIONS

1. **General**

   The Town should maintain and improve the function of the existing roadway system, and should encourage and increase safe pedestrian and bicycle traveling opportunities, while protecting the Town's environment, as well as its scenic and semi-rural character.

2. **Roadway System and Land Use Pattern**

   The existing roadway system and land use pattern in and around Pound Ridge is well established. It is the recommendation of this Plan that no new major roads, expansions or connections between roads in or immediately around Pound Ridge be planned or built. Town officials should continue to keep abreast of all planning activities within the State, County and adjoining towns, to ensure that the Town's planned low-density character and corresponding transportation policies are respected.

3. **Traffic Volumes**

   The Town should continue to collect and review data to determine which roadways are most frequently used by non-resident commuters. The use of roads in Pound

[3] Westchester County Department of Planning, 2010

Ridge for through traffic and as an alternative to primary commuter routes should be discouraged. Commuter traffic should be kept on State roads. This can be accomplished by means of speed reductions, traffic calming measures and regulations against through traffic on local roads. The Town should work with the State, County and neighboring communities to monitor traffic patterns, and to make changes where necessary and possible to limit speeds and volumes.

4. Commuter Parking and Transportation

Pound Ridge should continue to work with other towns, Westchester County and Metro-North to obtain and increase commuter parking at various train stations, and to develop other transportation options through the I-287 Corridor and Tappan Zee Bridge Plan. The Town should continue to review the feasibility of providing effective bus/shuttle service to the train stations, where consistent with the Town's transportation policies.

5. Pedestrian and Bicycle Opportunities

The Town should evaluate methods by which to enhance pedestrian and bicycle opportunities in the Town, and to reduce vehicular conflicts, including:

a. Working with the County as it develops the Mid-Hudson South Region Bicycle and Pedestrian Master Plan, as well as working with adjacent towns and the State to coordinate pedestrian and bicycle routes and improvements.

b. Installing "Share the Road" signs on primary bicycle routes, and educating the public regarding the safe use of roadways for pedestrians and bicyclists.

c. Evaluating intersection and roadway improvements designed to enhance pedestrian, bicyclist and vehicular safety and function, while maintaining the Town's scenic and semi-rural character.

d. Extending the existing improved path from the Town Park to the Hamlet and the Pound Ridge Elementary School and possibly to Bedford along Route 172 to the north, and from Scotts Corners Market to the south along Westchester Avenue. Any extension or refurbishment of the bike path should be consistent with the Town's semi-rural and scenic character.

e. The installation of bicycle racks at appropriate locations throughout town.

6. Scotts Corners and the Hamlet

Parking and circulation in Scotts Corners and the Hamlet should be enhanced through:

a. Improved maintenance of sidewalks, curbing and landscaping.

b. Improved barrier-free accessibility.

c. Enforcement of parking, speed, and traffic regulations within the parking district.

d. Consideration of traffic calming devices to reduce vehicular speeds at the entrances to Scotts Corners and the Hamlet.

7. Roadway Design

Pound Ridge should consider revising its Town road design standards for the purpose of protecting the Town's character and discouraging speeding, while maintaining roadway safety. New roadways should be designed to reflect the scenic qualities of older roadways in the Town. Rural road standards should permit narrower pavement widths, more flexibility regarding roadway geometry, minimized clearing of shoulders, reduced curbing, and the preservation of trees, rock outcroppings and other natural features of the landscape. Barnegat, East Woods, Honey Hollow, Fancher and Upper and Lower Shad Roads are examples of historic, narrow, and often winding roads that serve to help define the Town's character.

The Town should develop standards for attractive bridges and guide rails to blend in with its rural scenery. The Town should also re-evaluate its signage regulations so as to enable the appropriate use of signage while minimizing sign clutter. Pound Ridge should also work with the State and County to limit highway improvements that would encourage increased through traffic, and to ensure that any such improvements maintain the Town's semi-rural and scenic character, as well as its natural resources.

8. Roadway Maintenance

Roadway maintenance best management practices should be implemented for the protection of the environment and the Town's scenic beauty. These practices should include road sweeping, winter deicing, the clearing of unwanted roadside vegetation, stormwater improvements, the preservation of native vegetation and trees along roadways, and stone wall preservation within the Town's right-of-ways. Consistent with safety concerns and wherever possible, road striping should be minimized.

9. Preservation of Scenic Roadways

The Town should consider adopting a process by which it could designate scenic roads and establish appropriate standards to protect the features that contribute to

their scenic designation. The scenic roads described in the Pound Ridge Land Conservancy's *Mapping Committee Report* (December 2000) provide a benchmark for scenic roads in the Town.

The Town should also consider a designation process which could be initiated by land owners along a specific road. The designation would include voluntary techniques (e.g., conservation easements) for preserving the road's scenic qualities. Road maintenance and improvements by the Town could also be subject to special standards and policies established for such roads.

Community Services and Recreation Facilities

E. COMMUNITY SERVICES, FACILITIES AND RECREATION

Pound Ridge provides a variety of community services and facilities, including fire, ambulance and police protection, the library, highway services, recreation facilities and services, senior services and recycling. The desire for community services, from toddler programming and children's sports to senior activities and assistance, is expected to continue to increase. Community services depend, in large part, on volunteer involvement. Pound Ridge has as a long-standing tradition of contribution by individuals and groups who have volunteered their time, effort and/or financial resources to a variety of activities and causes.

RECREATIONAL FACILITIES

Town Park and Associated Facilities

The Town Park and adjoining Town House, police station and Pine Terrace facilities occupy 74 acres on six parcels of land. The Town Park, Town House and associated facilities were generously given to the Town by the Pound Ridge Fire Department and the C.F. Roe Slade Foundation. The police station was subsequently constructed on the Town House site. The approximately 70 acre Town Park is used for a variety of purposes by many Town groups under the direction of the Pound Ridge Recreation Department. Some of this land remains as undeveloped woodland for passive recreation.

The Town Park is the principal public recreation site in the Town. The Town Park includes the following facilities:

- Four hard surface tennis courts.
- One paved, multi-play, basketball/volleyball court.
- One large ball field with two diamonds, one regulation Little League field, and one baseball field also used for football and soccer.
- A playground area.
- A pool facility including a kiddy pool, recreation pool, competition pool, two 1-meter diving boards, snack bar, and changing rooms with showers and toilets.

Town Pool.

The pool complex is open to all, and admission is fee based. Users include resident season members, resident daily admission members, non-resident members, summer day campers and Town swim team members. Complimentary usage is offered to volunteer firefighters and ambulance corps members. Usage and membership have grown since the renovation of the pool complex in 1992, and has remained constant in recent years. Fees cover operation and maintenance, but not capital expenditures. Pool revenues have increased slightly since the renovation.

Playground. "Friends of the Playground," a voluntary community group formed in 1997, raised money for renovation of the playground in the Town Park. The Town contributed funds, and with the help of some 50 volunteers and the services of paid Town employees, improvements to the playground were made, including new equipment and safety fencing.

Town Pond. In 2001 the Town received a grant from the Westchester County Department of Planning under the Federal Clean Water Act to add landscaping and water quality improvements to the pond at the entrance to the Town Park. It has been used for boating and fishing during summer camp and non-supervised skating in the winter.

Walking/Hiking Trails. Pound Ridge is home to many walking and hiking trails, including those that are owned/maintained by the Town of Pound Ridge, The Pound Ridge Land Conservancy, The Nature Conservancy and The Westchester Land Trust. Walking trails are present at the Town Park, Mianus River Gorge, The Westchester Wilderness Walk, Carolyn's Grove, the Halle Ravine, The Clark Preserve and The Bye Preserve, and Sachs Park. A trail along Trinity Reservoir was opened in 2007 for use by town residents with a resident permit, pursuant to an agreement with the Water Company. Efforts continue by Town and private organizations to expand walking/hiking opportunities, including a trail through the Town Park woodland to The Halle Ravine.

Community Recreation Center

The Recreation Commission has studied and developed a plan for a new community center and pool house to be constructed in the Town Park. The Recreation Department office will be moved to this expanded facility from its current location at the Town House. This facility would meet the passive and active recreational needs of all members of the community, would house toddler, teen and senior programs, and could also accommodate inter-generational programming. Such a facility could also include a gymnasium which would supplement the use of Pound Ridge Elementary School facilities. A referendum held in March 2004 failed to gain community support for the capital costs for this new center. In 2008 a more modest plan was approved by referendum, plans have been developed, and bidding is in process.

Sachs Park

Sachs Park, across from the Town Highway facilities, is the newest 19-acre addition to the Town's park system for passive recreation.

Miscellaneous Town Facilities

Adjacent to the Pound Ridge Elementary School is the "Upper" field, which is used for lacrosse, soccer and other athletic programs, and is owned and maintained by the Town.

Miscellaneous Non-Town Recreation Facilities
The Pound Ridge Elementary School offers outdoor athletic facilities and an indoor gymnasium. Two golf clubs, one tennis club, and a tennis-swim club (presently inactive), also are located in Town.

The Ward Pound Ridge Reservation, consisting of 4,700 acres and located mostly in Pound Ridge, is Westchester County's largest park. Its partially fee-based usage provides residents with extensive hiking, birding, nature study, picnicking, camping, cross country skiing, sledding, seasonal concert opportunities and art shows. Local scout troops use this park to good advantage and a trailside museum offers educational programs.

Recreation Programs

Town Camp Program

Pound Ridge's Day Camp program serves Town resident campers in grades K-8 during a 6-week summer program. Programs at the camp include swimming, tennis, field games, sports clinics, arts and crafts, boating, biking and drama. 'Specialty' camps are provided for a wide array of sports and other activities.

On rainy days the camp uses the gymnasium, cafeteria, art room and other facilities at the Pound Ridge Elementary School, which creates logistical challenges. The proposed Community Center will alleviate those issues. The Recreation Commission balances the cost of the Town Camp programs with its revenues.

Sports Programs

Over the last few years, participation has increased significantly in sports programs offered by the Town, including, flag football, swimming, tennis, adult softball, co-ed volleyball, and basketball. The strong demand for sports activities puts three-season pressure on Town-owned fields and facilities. Use of Town fields has been augmented with field space and facilities in the Bedford Central School District.

The Bedford Pound Ridge Baseball Association, an independent not-for-profit group affiliated with the Little League, offers spring and summer programs for Pound Ridge children. This program serves approximately 1,000 children from Bedford and Pound Ridge. There are similar type programs for soccer, softball and lacrosse.

Community and Cultural Services

Senior Services

In coordination with the Police Department and Recreation Department, the volunteer based Neighbor-to-Neighbor program offers assistance and companionship to the elderly, ill, or who are home-bound. Senior residents can avail themselves of a computerized system that makes daily phone calls to check on their well being. Special contact is made

during times of local emergency. The Town provides daily meals to the home-bound, and the File-of-Life program provides easily accessible medical information in emergency situations. In addition, Neighbor-to-Neighbor, in conjunction with the Recreation Department, organizes well-attended activities throughout the year for the very active senior community in Town. Recently, the Town leased and then purchased a 20-passenger van to take seniors to and from various locations. This program supplements the personal transportation provided by Neighbor-to-Neighbor's many volunteers.

Police Department

The Police Department is comprised of three full-time employees (the Chief, one officer, and an Administrative Assistant), and several part-time officers including three seargents. In response to the needs of the community, the Department has grown in size and service capacity. Improvements and additions to the Department include new patrol vehicles, additional speed enforcement radar units, auto-external defibrillators (for which all members of the Police Department are certified to use), the upgrading of communications capabilities and a new records management system. The members of the Police Department have created a Police Benevolent Association which raises private funds to support community activities.

Pound Ridge Fire Department

The Pound Ridge Fire Department is comprised of approximately 40 active volunteer members. The Department's facilities include the firehouse in Scotts Corners, which has six bays for the housing of trucks and equipment. These trucks include three engines, one tanker, one rescue truck and one brush truck. Technologically sophisticated apparatus has been required in recent years to meet the demands of the larger, more elaborate homes being built in Town.

Annual property tax revenue supports the purchase and maintenance of the Department's building, trucks and equipment. Annual fund drives support the Department's membership activities and community education. Community outreach includes an annual firehouse Open House and fire safety education at the Elementary School. The annual fund drives also support the purchase and refurbishment of two small residences owned by the Department.

The Fire Department answers about 300 calls per year. There are generally 12 to 14 volunteers available to respond to calls during the daytime. Half of these volunteers are employed locally or work from their homes. Night calls are typically responded to by 15 to 20 volunteers. Mutual aid from neighboring fire departments in Bedford, Long Ridge, New Canaan, Vista and South Salem can provide another 50 firefighters. The New Canaan and Stamford departments have paid drivers and firefighters, along with volunteers.

Approximately two-thirds of the volunteers are Town residents; the others live in nearby communities and work in Town. However, significantly increased training requirements, along with personal work schedules and family demands, have left the Department with fewer volunteers than in the past. Town Highway Department personnel volunteering at the Fire Department has decreased. Further, many of the younger volunteers leave Pound Ridge just as their experience and training begins to make them valuable as lieutenants, captains and chiefs. As a result, many of the current volunteers are older and of retirement age. With more elaborate apparatus and fewer volunteers, the demands on existing volunteers have increased significantly and person power is at a premium.

Without continued and increased support for volunteer recruitment efforts, the Town's all-volunteer Department may suffer critical personnel shortages in the future. An evolution to paid firefighters would forever change the character of the Town's Fire Department, and would have a significant impact on property taxes.

Pound Ridge Volunteer Ambulance Corps (PRVAC)

The PRVAC has no paid employees; the 15 volunteers donate their time on an as-needed basis. The PRVAC operates two ambulances from its facility located west of Scotts Corners on Westchester Avenue and responds to between 200 and 260 calls per year. Calls cover a wide variety of emergency health situations. The PRVAC is always seeking volunteers willing to be trained as Emergency Medical Technicians (EMTs) or drivers.

Recognizing the importance of an immediate response during a medical emergency, the Pound Ridge Town Board has taken several steps to support the efforts of the PRVAC. The Town has joined an ALS FLY CAR PROGRAM, where a paramedic from Westchester Emergency Medical Services is dispatched simultaneously with the Town's Police Department and Ambulance Corps. The cost of this program is shared by the eight neighboring towns that use this service, and is funded with Town tax dollars. The Town has also emphasized the importance on hiring police officers who have EMT training. Further, the Town encourages its employees to become trained EMTs and to join the Ambulance Corps. PRVAC is currently undergoing a capital improvement program.

Highway Department

The Town Highway Department is responsible for the maintenance of all Town-owned roads. New York State maintains all State Roads, and the Town contracts with Westchester County to maintain its County roads, for winter deicing only. The Highway Department's role has evolved to not only include maintenance and safety matters, but to include environmental protection as well. The Town has stressed the importance of the utilization of best management practices and training of Highway personnel in the use of roadway de-icers, water quality and storm water management, application of herbicides, pesticides and fertilizers on Town-owned land, and the maintenance of catch basins and other highway infrastructure.

Office of Emergency Management (OEM)

In response to the need for increased expansion and coordination of the Town's emergency preparedness system, the Pound Ridge Storm Management Plan was converted into the Office of Emergency Management (OEM) soon after the terrorist attacks of September 11, 2001. The OEM is responsible for preparing, updating and testing the Emergency Management Plan for the Town of Pound Ridge. A copy of the current Plan is available on the Pound Ridge website at: www.townofpoundridge.com. The Emergency Management Committee, which includes residents and Town officials, was formed to define and coordinate all emergency management activities of the Town. Town responsibilities under the OEM are closely coordinated with those of County and State organizations, to help effectively manage all phases of an emergency. Resident volunteers play a significant part in the operation of OEM, and are trained in traffic control, basic medical practices and radio communications. The volunteers supplement the police, fire, ambulance personnel and take part in the emergency drills.

Schools and Education

Public school services, from grades K through 12 and special education, are offered to Town residents by the Bedford Central and Katonah-Lewisboro School Districts. Approximately 95% of Pound Ridge is in the Bedford Central School District. District facilities consist of five elementary schools, the Fox Lane Middle School and the Fox Lane High School. The expansion and upgrading of School District facilities is ongoing, financed by construction bonds approved by the District's voters. Based on migration studies, birth rates, housing construction, household size data, and other characteristics, the Bedford Central School District has projected that the number of children in Pound Ridge Schools will increase from 3,827 students in 2000, and then stabilizes at 4,371 students in 2010, for a total increase of 14% during this period. (VERIFY)

The only public school in Pound Ridge is the Pound Ridge Elementary School, which is located on 13.7 acres of land on Route 172 in the Hamlet. The School serves grades K through 5 and provides special education. At the Elementary School, bond-financed construction has provided new classrooms and library facilities, a gym floor replacement, a computer room, a new ventilation system, interior renovations and expanded parking. There are also many private school opportunities in the area. Demographic studies have shown that in-migration trends suggest the schools are a significant draw for families moving into the area.

The Pound Ridge Library. Established in 1952, the Pound Ridge Library is open to the general public and is the cultural hub of the community, providing informational, educational, and recreational exposure to all. The Library's basic operations became tax-supported through a public referendum in the fall of 2003. As a Special District Library,

it receives funding through property taxes in order to provide the Library with a constant funding source to supplement its private fund-raising initiatives.

The Library has two boards that do not receive compensation: District Board of Trustees and Foundation Board. The District Board of Trustees, consisting of nine (9) Trustees, manages the affairs of the Library and is elected by registered voters of the Town of Pound Ridge. Trustees serve a term of three years and cannot serve more than two consecutive three-year terms. The Foundation Board serves voluntarily with the sole purpose of raising money for the Capital Campaign dedicated to repairing and expanding the Library's aging building and to underwrite needs not covered in the regular budget. Foundation Board Directors serve three-year terms and cannot serve more than three consecutive three-year terms. There are no limitations on the number of Directors who may serve on the Board.

The Library's collection consists of over 61,000 items, including books, magazines, music CDs, talking-book cassettes and CDs, and VCR and DVD videos. The Library also offers Internet access and electronic database-searching for reference and research. As a member of the Westchester Library System, patrons can also use the computerized inter-library loan system to borrow items from the 37 other Westchester County libraries. The Library also provides wireless access and downloadable audiobooks and ebooks.

As the cultural center of Town, the Library offers activities such as The Adult Learning Center (TALC), art and craft exhibits, "55 Alive" driving courses, films, concerts, senior programs, lectures and book-discussion programs on a consistent basis. The Library also sponsors many children's activities, including winter and spring vacation programs, story hours, holiday events, arts and crafts workshops for all ages, musical performances and the annual Summer Reading Program with a full array of special events. The Library presently offers a variety of teen programs such as teen nights, gaming tournaments, films, book groups, interactive computer networking, student concerts, and a literary magazine. The Library is engaged with the Town of Pound Ridge, building mutually beneficial relationships.

Even with the advent of electronic media (and in some cases because of it), Library physical space is limited, as the demand for books and other services continues to increase. Additional area is needed in order for the Library to adequately serve the growing needs of the community. More space is needed for children and teen programs, books, Internet/research areas, and administration space.

Currently, there is a Capital Improvement Campaign in progress with the goal of raising $2.9 million to meet these needs. The five-year campaign, which is seeking tax-deductible contributions from individuals, foundations, and area businesses, is being conducted by the Pound Ridge Library Foundation. In response to the economic conditions which began at the end of 2008, the capital campaign has been extended. The

core of the campaign will be voluntary contributions which donors can make in a single installment or with formal three or five year pledges. $750,000 has been raised so far. The goal is to construct an additional 4,000 square feet of space as well as to renovate the existing spaces. Revision of the layout and design of the spaces to include:

Children's Area

- More defined area for story hour/other programs
- More space for collections/technology
- New furnishings, storage, display

Teen Area

- Tutoring space
- Study area
- Collections (especially periodicals and graphic novels)
- Communications area/gaming area

Books/Other Media

- Area for expanded non-book collection (CDs, DVDs, audio books, etc) - goal completed
- Create quiet reading area for adults
- Establish a defined reference/information area
- Adult computer center
- Return mystery section to upstairs main area

Other

- Administration space/efficiencies including Director's office and staff work room
- Upgrade lighting, carpeting, furnishings where needed
- Improved or new kitchen for public programs and community activities
- Efficient storage area for cleaning supplies, etc
- More parking

The Library is a much-loved, heavily-used facility. Year after year it ranks in the top 10 in per capita circ among the 38 Westchester libraries, attesting to its vital role in the community. (In 2009, the Library ranked 5th per capita.) The Library has come a long way since its founding in 1952 with a collection of 3,000 books - to the cultural center of activities that it is today. To meet the changing needs of the 21st century, however, more space is essential. The Library's goal remains the same – to provide high quality service to the Pound Ridge community.

Pound Ridge Museum

The Pound Ridge Museum, located in the Hamlet next to Conant Hall, is chartered by the New York State Department of Education and sponsored by the Pound Ridge Historical

Society. The museum functions as an exhibit and Historical Program Center, and serves to promote and preserve the history of Pound Ridge. Events and exhibits are funded by the Historical Society, and the Town maintains the museum building.

UTILITIES

Water Supply

All residences and businesses are served by individual private wells. Wells are generally deep and tap into bedrock fractures and aquifers. Groundwater quality throughout Pound Ridge is generally good and must be carefully protected.

There are over 1,500 acres of public water supply watershed lands and four large water supply lakes in Pound Ridge. The majority of these lands are owned by Aquarion Water Company and provide water for the City of Stamford, Connecticut. Pound Ridge also has significant lands within the New York City watershed and the former New York American system, which is fed by the Mianus River. There are a variety of differing restrictions and regulatory controls on land uses and activities on these watershed lands, but there are no prohibitions that would prevent the conveyance of some water supply lands for purposes other than public water supply.

Wastewater Disposal

All wastewater in the Town of Pound Ridge (both residential and commercial) is handled by private subsurface septic systems. Pound Ridge's rugged topography, soil types, depth to bedrock, and extensive system of streams, wetlands and water bodies limit the lands suitable for septic systems. Nowhere are these limitations more prevalent than in Scotts Corners.

Gas and Electricity

New York State Electric and Gas Company (NYSEG) provides electricity to Pound Ridge homes, businesses, schools and commercial uses. To set an example for its residents, the Town has contracted to obtain 100% of its electricity for town owned properties from alternative sources such as wind and solar.

Home Heating

Most homes are heated by oil delivered by independent dealers, and stored on site in tanks either above or below ground. Natural gas lines do not exist in Town. A small number of homes are heated by electricity, bottled propane and/or wood.

Waste Removal and Recycling

Waste collection is provided by contract between private carters and homeowners. The Town has established a recycling program to augment what private carters take. The recycling of paper, metal, glass, plastic, e-waste and bulk waste is available at the Town

Highway Department. The Town is has built a new recycling center at the Highway Facility and has expanded the recycling program.

POUND RIDGE BOARDS AND COMMISSIONS

Town governance relies heavily on citizen volunteers. Arms of the government that depend on the willingness of people to step forward to do important work include the Town Board, Planning Board and Zoning Board of Appeals, the Water Control Commission, the Conservation Board, the Recreation and Landmark/Historic District Commission, the Boards of Ethics and Assessment Review, the Open Space Acquisition Committee, the Master Plan Committee, the Housing Board, the Drug Abuse Prevention Council, the Deer Management Committee, the Sustainability Task Force, and Airspace Committee.

Town Board members are elected for four-year terms, except for the Supervisor who is elected for a two-year term. All members of other boards, commissions and committees are appointed by the Town Board. The various volunteer boards and commissions, as well as their monthly schedules, are listed on the Town's website.

RECOMMENDATIONS

1. **Town Governance**
   The Town should continue to provide efficient and cost effective government and essential community services, in an equitable and fiscally responsible manner, and should conduct periodic service delivery reviews with board and community input.

2. **Training and Education**
   The Town should increase participation in training and educational seminars for all elected and appointed board members and staff.

3. **Recreational Facilities and Staffing**
   The Town should investigate the need and availability of additional recreational facilities in order to accommodate the growing enrollment in existing and expanding programs. The design of new recreational facilities should ensure flexibility in order to meet changing future needs.

4. **Trail System**
   The Recreation Commission and private land protection organizations should be encouraged to explore expanded and interconnected trails for residents to enjoy the scenic beauty that typifies Pound Ridge.

5. Promoting and Supporting Volunteerism

The efforts of the Town's many volunteers are essential to the daily provision of emergency services to residents. Besides emergency services, volunteerism drives many of the Town's activities and programs.

a. With a greater turnover of residents in the last decade, the Town should be proactive about creating and nurturing volunteer opportunities and community involvement. The Town should promote volunteerism among all age groups, with particular emphasis on those that are new to Town and those who are younger, in order to foster a sense of community involvement and community spirit.

b. The Town should increase awareness of the need and importance of volunteerism through outreach and communication, including the use of newsletters, advertisements, web outreach and special events honoring our volunteers.

c. The Town should specifically facilitate community participation in the Ambulance Corps and Fire Department. Further, it has become increasingly difficult for members of the Fire Department and Ambulance Corps to afford the cost of living in Pound Ridge. The Fire Department has, independent of the Town, financed housing for some of its volunteers. To guarantee adequate participation and ensure the protection of citizens and property, the Town should consider creating mechanisms for supporting those who provide essential services.

d. As the population of Pound Ridge and neighboring towns ages, the Town should assess the future needs of seniors relative to the volunteer support organizations and services currently existing in Town.

e. The Town should continue to recognize the importance of the Scout organizations, youth athletic leagues, hiking groups, community organizations including the New-Comer Club, the Garden Club, the Library, the Historical Society, the business association, Neighbor to Neighbor, the Stone Wall Rebuilding Club, the political organizations, and the Pound Ridge Land Conservancy and other land preservation groups and provide opportunities to organize initiatives and provide services.

f. The Town should provide support to the volunteer organizations, including their use of Town facilities and resources to the extent practical and appropriate.

6. Emergency Management

The Town, through the Office of Emergency Management, should continue to plan for emergencies, train emergency service responders, and coordinate between local and regional emergency organizations, in order to ensure appropriate and well-coordinated responses to a wide variety of emergency situations. The Town should encourage and facilitate resident volunteerism in Emergency Management. The Town should ensure that communications among the service agencies, other communities, and the volunteers are in place.

7. Communication and Data Sharing

The Town should continue to improve communication between its government and residents, including:

a. Use of the Town website to host the Town Comprehensive Plan, the Town Code, meeting agendas and minutes, reports and studies, and similar items.

b. Making the Town's Geographic Information System (GIS) available to Town staff, departments and boards, as well as to public and private non-commercial organizations working for the benefit of the Town.

c. Developing a GIS data-sharing agreement with the Westchester County, as well as any other agreements with agencies or organizations which may facilitate this objective.

d. Continuing to improve intra-agency communication and cooperation through the sharing of agendas and the attendance of intra-board liaisons at meetings.

8. Recycling

The Town should continue to improve the use and accessibility of its recycling facilities in an effort to increase the amount of waste that is recycled from homes and businesses. The Town should support waste reduction programs, should use recycled products to the extent possible, should avoid and discourage the use of products with excessive packaging, and should educate its property owners and businesses to encourage maximum citizen participation.

9. Fire Prevention

The Town should review the enforcement of existing regulations for fire prevention and safety, such as penalties for false alarms, and any other means of lessening demands on the Fire Department.

Conclusion

The Town should continue to provide community services and facilities which meet the needs of its residents in a cost effective and appropriate manner, in keeping with the Town's semi-rural character and historic nature. The Town should also provide active and passive parks, and recreational facilities and programs to meet the needs and interests of Pound Ridge residents.

APPENDIX A

June 2010

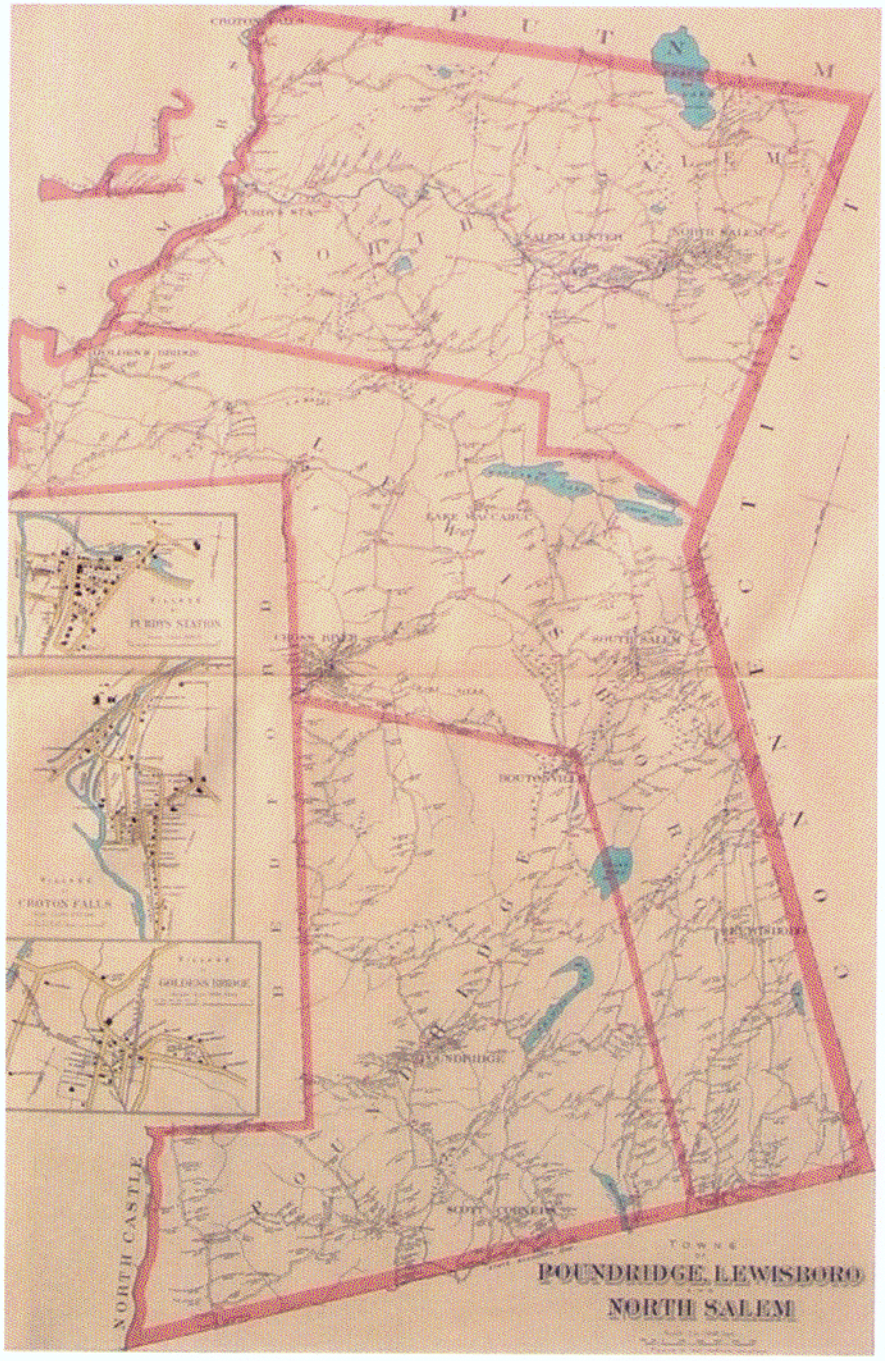
PROPERTIES RATED BY THE OPEN SPACE ACQUISITIONS COMMITTEE

Property	Rating*
Hsu (Lower Trinity Pass)	35
Wang (now the Eastwoods Preserve)	34
Straus/Mydland (Eastwoods Road south)	33
Whitehead (now the Whitehead Preserve)	30
Straus/Mydland (Eastwoods Road north)	27
29 Acres (Rolling Meadow Lane)	25
Mianus River Gorge (now part of MRGP)	22
Fancher Meadow (Fancher Road)	22
Sand (Old Stone Hill Road)	16
Hottelet-O'Brian (Lower Shad Road)	12

*Based on a point system developed by OSAC and reviewed by the Planning Board.

APPENDIX B

Eastern Westchester Biotic Corridor



METROPOLITAN CONSERVATION ALLIANCE

A PROGRAM OF

WCS
WILDLIFE CONSERVATION SOCIETY

TECHNICAL PAPER SERIES: NO. 4

Eastern Westchester Biotic Corridor

Prepared by

Nicholas A. Miller, M.S.

and

Michael W. Klemens, Ph.D.

Metropolitan Conservation Alliance
Wildlife Conservation Society
Bronx, NY

Literature citations should read as follows:

Miller, N. A. and M. W. Klemens. 2002. Eastern Westchester Biotic Corridor. MCA Technical Paper No. 4, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Additional copies of this document can be obtained from:

Metropolitan Conservation Alliance
Wildlife Conservation Society
68 Purchase Street, 3rd Floor
Rye, New York 10580
(914) 925-9175

printed on partially recycled paper

Acknowledgements

The Eastern Westchester Biotic Corridor Project was initiated in 1998 as a partnership between the towns of North Salem, Lewisboro, and Pound Ridge. The Metropolitan Conservation Alliance (MCA) acknowledges the encouragement that we received from elected and appointed municipal officials within these towns. We especially thank our project steering committee for their efforts. Committee members include: Brian Bartsch, Stephen Bobolia and Cynthia Curtis (North Salem); Jim Nordgren and Debra Sourby (Lewisboro); and John R. W. Bria (Pound Ridge).

Initial financial support for this project was received from the Westchester Community Foundation. Subsequent support was provided by the Doris Duke Charitable Trust, the Surdna Foundation, and the Wildlife Conservation Society.

MCA full time and seasonal staff collected much of the field data used in the analysis and design of the corridor. Field biologists included Andrew Block, Henry Burke, Michael Klemens, Kristi MacDonald, Jim McDougal, Diane Murphy, and Damon Oscarson. Scott Sharlow provided extensive GIS support.

Tom Andersen of the Westchester Land Trust provided assistance and advice on various phases of the project.

Table of Contents

List of Figures

Introduction

Located less than 45 miles from Times Square, the towns of North Salem, Lewisboro, and Pound Ridge form an oasis of rolling forested hills and meadows, rocky ravines, and wooded swampland, at the northeastern edge of the ever-expanding New York Metropolitan region. Bounded by the Interstate 684 corridor to the west and the Connecticut state line to the east, these three towns have retained much of their rural flavor. Dirt roads bordered by ancient sugar maples wind through shaded forest, lichen-covered stone walls border grassy pastures, and small hamlets still retain much of the ambiance and vitality of a slower, gentler time. A rich diversity of wildlife remains in these towns because, despite recent and increased development, large tracts of unfragmented open space still remain. These are a legacy of relatively compact settlement patterns, rural land use practices, and protected areas, including county parkland as well as watershed buffer lands surrounding the numerous public water supply reservoirs located within these towns.

In 2000, the New York State Department of Environmental Conservation released its draft Wildlife and Habitat Diversity Conservation Plan for the Hudson River Estuary. This plan identified twenty-five Significant Biodiversity Areas (SBA's) located from the Rensselaer Plateau east of Albany, southward to the Arthur Kill on Staten Island. The Ward Pound Ridge Reservation (WPRR), a 4,700-acre county park located in the towns of Lewisboro and Pound Ridge, was included in this list of SBA's. The plan also recognized that core protected areas, alone, are insufficient to protect the rich biodiversity of the Hudson Valley region.

The Eastern Westchester Biotic Corridor (EWBC) builds upon the 4,700-acre core protected area of the WPRR. The EWBC adds value to that resource by outlining strategies to protect biodiversity in ecologically contiguous lands to the north and south of the WPRR. Unlike traditional conservation strategies that rely on land acquisition solely through purchase or easement, the EWBC draws upon a rich array of tools available through the local planning and land use decision-making process to achieve conservation objectives. These include overlay zones that provide incentives for conservation planning while achieving economic equity, strategies to develop intermunicipal compacts to achieve mutually beneficial land use objectives while strengthening home rule, as well as standards and guidelines to achieve a deeper and broader review of the biological issues that are presented by individual development applications.

In summary, the EWBC not only provides a framework for conservation planning within the towns of North Salem, Lewisboro, and Pound Ridge, but also creates a model that has far broader applications. This model, as described in the EWBC, links traditional land protection efforts with the rich and often untapped conservation potential presented by strategic engagement of the local land use decision making process.

Project Initiation

The Eastern Westchester Biotic Corridor (EWBC) project is a partnership between the Metropolitan Conservation Alliance (a program of the Wildlife Conservation Society) and the three contiguous towns of North Salem, Lewisboro, and Pound Ridge in northeastern Westchester County, New York. The goal of the project is to establish a regional, multi-town approach to the conservation of wildlife and habitats. These towns were selected because they contain an impressive diversity of wildlife and habitats, because they are under development pressures which threaten those natural resources, and because there is a growing awareness within the towns of a need to address these issues. The project commenced in late 1998 when formal agreements were entered into with the towns of Lewisboro and Pound Ridge. Those towns committed to the project after MCA staff gave presentations to officials at town board meetings. Due to strong local interest, North Salem was included in the project, although without a formal agreement. Project activities began in the winter of 1999.

Project Premises and Goals

All too often, land use decisions are made at the municipal level without the benefit of baseline biological information, or without any mechanisms to integrate such information into planning processes. This occurs despite significant efforts of concerned citizens and municipal officials. The gap between information providers (scientists) and information users (local decision-makers) creates a major obstacle. MCA has identified three fundamental challenges that lead to this situation:

Baseline data are generally not available: Without those data, it is impossible to plan for economic growth while simultaneously ensuring environmental integrity. Baseline ecological data can be used to identify areas of biological significance worthy of protection, and to identify areas of lesser significance. Development could be channeled toward the latter areas, thus reducing the level of impact on ecologically more sensitive areas. For these reasons, one of the project goals was to collect new biological data. These data have been used to generate a map, indicating areas of importance for wildlife within the three towns (see Results & Discussion).

Even where data are already available, mechanisms rarely exist to translate the data into policy: To address this problem, MCA has been developing a set of tools—a "conservation toolbox"—that will aid planners and other decision-makers in the application of biological data. These tools are targeted at a broad constituency, to address land use issues within the tri-state region. A list of available tools and tools we are developing is provided in Appendix A.

Biological data and conservation tools are ineffective unless they are accepted as part of a community's goals and integrated into land use practices: MCA strives to raise awareness and understanding of biodiversity concerns among municipal officials, land trust personnel, and others who influence the patterns of development upon our landscapes. This is accomplished by serving in an advisory capacity to planning boards and other entities; raising awareness of

biodiversity by conducting informative "survey walks;" and promoting inter-municipal, cooperative efforts to plan for biodiversity.

To summarize the above statements, a primary goal of this project was to address the impacts of sprawl on natural ecosystems by: (1) providing baseline scientific information, (2) developing innovative tools, and (3) integrating those elements into the land use decision-making process. As indicated above, MCA's original intent was to address both sides of the economic growth/biodiversity issue; that is, to identify areas worthy of protection or better management *and* to identify those areas more suitable for development. *Responding to the requests of our partner towns, this report is limited to only the conservation aspects of these data.*

Land Use Changes and Biodiversity

Transitions

The tri-state region surrounding New York City has undergone substantial and widespread land use changes over the past several hundred years. Before settlement by European immigrants the landscape was primarily composed of extensive, unfragmented forests, interspersed with open habitats (such as coastal plains, beaver-created wet meadows, and forest gaps created by wildfires). By the 18th and 19th centuries, most of the forested habitat had been converted to agricultural lands. During this agricultural period, areas unsuitable for farming (e.g., wetlands and very steep slopes) served as "refugia" for much of the region's wildlife communities. Although current development pressures impinge on such areas, they remain some of our most biologically rich and unique habitats. More recently, farms have been abandoned as agricultural land uses shifted to states further west. Through natural successional processes, most former farm fields have reverted back to forests; some are still in a transitional state, consisting of old field/shrubland habitat.

The key elements in the above transitions are resiliency and connectivity. As land uses changed over time, many wildlife species and other components of the natural environment were able to adapt and even thrive. For instance, with the onset of agriculture bog turtles began to make use of wet meadows maintained as open habitat through the light grazing of domestic cattle, rather than their traditional wildfire-created or beaver-maintained habitats. Certain grassland-associated birds, such as the bobolink and the eastern meadowlark, make use of hayfields as a surrogate for their native grassland breeding habitats.

Today's land use patterns are entirely different from those of historic times. Resiliency is not an option for most species. In the current wave of sprawl, permanent structures are erected. Highways, parking lots, and subdivisions fence in remaining tracts, fragment them into smaller pieces, and isolate them from other tracts. The impervious surfaces created through such development degrade the last parcels of habitat by drastically altering hydrologic conditions and impacting water quality. Although careful planning can mitigate some of the adverse impacts of such development, most planning occurs on a site-specific scale, and does not consider the much larger landscape-scale picture. Ironically, the land review process as

practiced in the towns of the EWBC may actually foster fragmentation by taking a "hard look" at too small of an area, as required by the NY State Environmental Quality Review Act (SEQRA). The transitions that are occurring within our landscape today are much more permanent than past changes, and they do not accommodate our native biodiversity. The few wildlife species that have adapted to such changes are opportunistic and/or invasive species, which thrive at the expense of a more diverse and balanced biological community.

Landscape configuration: Planning at the landscape level

As sprawl proceeds, large tracts of habitat within our landscape are fragmented into ever smaller components. To maintain biodiversity, we must ensure that remaining habitats are of sufficient acreage to support viable wildlife populations, *and* that they are arranged in such a way that allows dispersal of animals across the landscape. The following paragraphs define those landscape components, and discuss how ecological functionality can be maintained through better planning.

To ensure that development occurs in a manner that is compatible with biodiversity, core wildlife habitat areas and the corridors that connect them must be accommodated. In general, larger core areas (i.e., hubs) are better able to support healthy, viable wildlife populations than smaller areas. Ward Pound Ridge Reservation, the largest and perhaps the most biologically diverse of Westchester County's protected areas, is an excellent example of a hub. The connections between hubs are of paramount importance; they enable dispersal of animals among the hubs, maintaining gene pools and preventing extirpations (i.e., localized extinctions). Such connections have traditionally been referred to as "corridors." Corridor is an appropriate name, because it implies movement from one area to another. However, that name may also be misleading. A wildlife corridor is not a narrow, linear green strip between habitats. It is highly unlikely that such strips, which are often associated with walking paths or bike trails, would be used by most wildlife. Instead, MCA's definition of a corridor is a broad swath of habitat that connects habitat hubs. Although these swaths may not be as pristine as the parks or the hubs that they connect, they do provide secondary habitat (in addition to their role as dispersal corridors).

Because we are making permanent changes to our landscape, it is imperative to carefully identify where the matrix of wildlife habitats and corridors occurs. It is not sufficient to randomly protect small parcels of habitat across the region in the hope that they will provide viable wildlife habitat. Instead, we must discover where species already occur (i.e., which habitats are best), and use the results of those inquiries as a template for making future land use decisions. If we apply this conceptual template to guide development patterns, it may be possible to maintain biodiversity and ecological health. Without this template to guide us, loss of biodiversity is a certainty.

Focal Species Analysis (FoSA)

MCA concentrates survey efforts on those species, or species assemblages, that respond specifically to development, habitat loss, and habitat fragmentation. Such species are termed

"focal taxa," and can be further divided into two broad categories. Many focal taxa experience population declines as a result of urbanization. These focal taxa, henceforth referred to as Category I focal species, are usually habitat specialists, with very specific habitat requirements that are compromised by development. Examples include many of the Neotropical migrant bird species and many of the vernal pool-breeding amphibians. Such taxa tend to disappear from the landscape as their habitats are altered. Populations of other focal taxa increase in response to urbanization. These species, henceforth referred to as Category II focal species, are usually habitat generalists, with much less specific habitat requirements. They tend to occur in areas that have already been degraded; often, human alterations to landscapes favor, or subsidize, these generalists. Avian examples of such species include Corvids (crows and jays); an amphibian example is the bullfrog. As urbanization proceeds, such taxa tend to increase and replace the habitat specialists, resulting in an overall loss of biodiversity (i.e., species richness).

Both of these focal taxa categories provide valuable information about ecosystem health. It is the relative proportion, or "mix," of these two categories that reveals the most about the ecological integrity of any given site. MCA refers to the process of evaluating this mix, and its implications for ecosystem health and land use, as a "Focal Species Analysis," or "FoSA." The results of a FoSA can enhance planning efforts and assess the importance of individual sites for conservation. For example, development should be discouraged within areas that support healthy populations of Category I focal species, and redirected toward sites that are already degraded (as evidenced by the presence of mostly Category II focal species).

The FoSA approach represents an innovative departure from traditional conservation efforts. By expanding the scope of investigation beyond State or Federally listed threatened and endangered species, we are able to take a more proactive view toward species and habitat conservation. There are many species, currently unlisted and unprotected, whose populations are declining in response to urban sprawl. At the current pace of urbanization, these species are highly likely to be candidates for official listing in the near future. Rather than waiting until they are on the brink of extinction (when recovery efforts are not only dangerously uncertain, but also very expensive), it makes better sense to attempt to address their habitat requirements and to stabilize their populations now. In addition, ecosystems contain complex interactions among many species. The FoSA approach evaluates systems more reliably by considering a broad range of species and their relative abundances, as opposed to basing land use recommendations on a single threatened or endangered species. The FoSA approach should not replace existing efforts to conserve threatened and endangered species; instead, it adds value to other ongoing conservation efforts.

Project Activities and Methods

Use of existing datasets

Certain pre-existing data were already available at the inception of this project. For example, extensive wildlife surveys had already been conducted at the Ward Pound Ridge Reservation. These data were incorporated into our analyses. The NYS Natural Heritage Program has

assembled an extensive database; however, access to the details of those data is restricted. It is MCA's policy to make the results of field investigations available to all parties interested in reducing the impacts of development on the environment; those parties may include concerned citizens, the business community, municipal officials, land trusts, and developers, among others. It is only through transparent, cooperative processes such as this that conservation efforts can be effectively conducted. See Appendix B for MCA's official policy in this regard. Besides limited availability, Heritage data are limited in scope to only the most imperiled species and communities (e.g., species officially listed as threatened or endangered). As discussed above, in the section describing the focal species analysis process, it is imperative to consider a broader range of species as we continue to re-shape our landscapes. Therefore, a primary focus of this project was to generate original field data that can serve as the basis for making better land use decisions.

Site selection

MCA selects sites for field surveys based on a number of criteria. Existing landscape configuration (see previous section entitled "Landscape Configuration") is of utmost importance in the site selection process. Sites are selected based on their potential to function as habitat hubs, and based on their ability to serve as ecological connectors between those hubs. Many of the major hubs in the project area are already well-protected (e.g., Ward Pound Ridge Reservation); however, the future of other major hubs—such as the reservoir lands currently owned by Bridgeport Hydraulic Company (BHC) in Pound Ridge—remain uncertain. Regardless of their protection status, hubs are surveyed to determine their effectiveness as source areas for maintaining viable wildlife populations. Another primary criterion is the probability that a given site will be developed; that is, the "at-risk" status of a site. Obviously, baseline biological information is needed at the at-risk sites, more so than at any other sites. One obstacle is that it is often difficult to obtain permission to access at-risk areas and other privately owned lands. The towns were contacted to gain assistance in accessing such properties. However, we were unable to survey many privately owned sites due to a lack of permission. Those general areas have been designated as "areas that merit further investigation" (see blue crosshatched areas on Figure C).

Sites are also selected on the basis of the habitat types they contain. Areas rich in wetlands (whether they contain numerous small wetlands or fewer larger wetlands) receive priority for surveying. These areas are usually structurally and hydrologically diverse, which translates into a diverse wildlife community. In addition, wetlands serve other functions beneficial to the region's communities; they abate flooding, purify our waters, and provide recreational opportunities. Areas of extensive, contiguous forests are selected because they provide habitat for forest-interior, area-sensitive species, including many Neotropical migrant warblers. Many grassland habitats have succeeded to forest with the decline of agriculture. The remaining grasslands in the region are abandoned agricultural fields or active hay fields and pastures; those areas are targeted for surveys.

The site selection process is greatly enhanced in Westchester County by the availability of spatial datasets that can be displayed and analyzed using a Geographic Information System (GIS). Datasets that aided us in selecting sites contained information about soil types,

distribution of wetlands and waterbodies, existing open space coverage, density of development, bedrock geology, and elevation. Digital aerial photography was also crucial for selecting sites and for later analysis of data. See Figure A for a few examples of these datasets.

Field data collection

Bird data were collected during the breeding seasons (late spring and early summer) of 1999 and 2000. Surveys conducted during 1999 were point-counts of all birds seen or heard at predetermined stations. Stations were located along roads throughout the tri-town area. Although road-based surveys did not adequately sample forest interiors or other remote habitats, they supplied the only method for conducting surveys uniformly throughout the tri-town region, and were not constrained by land ownership or access issues. Bird surveys conducted during 2000 consisted of transect surveys and general site visits. Because these surveys were targeted at specific tracts of habitat, we were able to sample habitats further from roads, and thereby determine the distribution of fragmentation-sensitive species (which tend to avoid roads). During both years, locations of all species seen or heard were recorded on a USGS 7.5-minute topographic map. Bird surveys were scheduled for early morning hours, during peak activity times, but incidental observations of birds were also recorded during field visits at other times of day (e.g., during herpetological surveys). All species were recorded, but data analyses were limited to fragmentation- and development-sensitive focal species.

Herpetological data were also collected over a two-year period, from 1999 through 2000. Surveys occurred from mid-March through early autumn in each year, corresponding to peak amphibian and reptile activity periods. Site visits were conducted to determine the distribution of all reptile and amphibian species. Survey techniques include night searches, minnow/turtle traps, turning of cover objects, and larval dip-netting and identification. A significant number of herpetological observations had been made in recent years as part of other research initiatives by Michael W. Klemens; these data were included in the analyses.

Systematic surveys for mammal species requires methodologies that were beyond the scope of this project. However, incidental observations of area-sensitive mesocarnivores were included in the analyses.

Data management and analysis

Much information is gained from site-specific, on-the-ground surveys. However, the purpose of this project was to plan for biodiversity at a scale that transcends individual sites—by evaluating conditions at a landscape scale. To accomplish this we developed a Geographic Information System (GIS). All observations of sensitive (Category I) focal species were located on USGS 7.5-minute topographic maps. This information was then entered into our GIS and stored as an ArcView point shapefile. Species distribution patterns were then compared to various pre-existing spatial data layers. Special attention was paid to community composition within significant habitat hubs, the landscape-scale requirements of species

within those communities, the condition of the landscape between the hubs, and the overall juxtaposition of habitats and species.

Outreach and municipal/intermunicipal implementation

Throughout the course of this project, "municipal walks" occurred within each of the three towns. These outreach activities, also known as "survey walks" were targeted at local land use decision-makers (e.g., municipal staff and elected officials, land trust personnel, non-governmental conservation organizations, and concerned citizens). Attendees accompanied MCA staff to local sites and participated in field surveys. Species observed during these surveys were added to the overall project database. Those observations also served as a springboard for discussions about species' habitat and landscape requirements, and how various human land uses affect wildlife populations. The positive impact of better planning was discussed, in particular. The intent of these walks was to introduce biodiversity concepts to people whose decisions have a direct influence on that biodiversity. Because these survey walks were met with enthusiasm, it has become evident that this targeted, hands-on approach to outreach is successful. This model has already been replicated in other project areas of MCA.

MCA staff has also had the opportunity to provide advice and biological data for various land use issues within the tri-town area (e.g., to conservation boards and to land trust personnel). As mentioned previously, baseline biological data are crucial for making better, more informed land use decisions. We hope to continue to serve in this capacity as land use issues unfold in the project area. We also strongly encourage the towns to incorporate the results of our investigations into updates of their Master Plans. Finally, the tools that we have developed (see Appendix A) will assist in integrating biological information into municipal processes and practices.

Results and Discussion

The regional, intermunicipal perspective

The Eastern Westchester Biotic Corridor (EWBC) was delineated based on the results of our data and map analyses (see the dark blue stippled area in Figure C). This corridor constitutes a broad swath of habitat that trends, primarily, from south to north within the three towns. The light blue crosshatched areas in Figure C indicate portions of the tri-town region that were, for the most part, privately owned and inaccessible for surveys; these areas should be evaluated. Town-by-town details of the corridor's configuration are provided in the following sections.

At the heart of this corridor lies the Ward Pound Ridge Reservation (WPRR), which has the potential to act as source habitat for wildlife over the entire corridor. In the overall effort to maintain regional biodiversity, the preservation of this significant tract constitutes a critical first step. But it is not the only step that must be taken. The potential for WPRR to function as source habitat can be met only if ecological connections are maintained between it and other habitat hubs—that is, if land between the hubs remains relatively unfragmented by

development and heavily-trafficked roads. In addition, other habitat hubs must be protected or actively managed for wildlife; in other words, good habitats must be available for wildlife dispersing from WPRR. Areas critical for the dispersal of wildlife between hubs are discussed in greater detail below, in the town-specific discussions. In those discussions, particular attention is paid to constrictions in the EWBC.

Perhaps the most significant aspect of the EWBC, as delineated in Figure C, is that it forms a continuous band across all three of the region's towns. The patterns that occur within the natural environment do not coincide with political boundaries. Since it is neither possible nor desirable to redistribute wildlife and habitats to match those boundaries, we (that is, town governments, land trusts, conservation organizations, and other concerned parties) must re-shape how we view the landscape. To ensure that wildlife corridors carefully maintained by individual towns do not abruptly end at town borders, a dialog must be established among neighboring towns. This is best achieved through the establishment of an intermunicipal council (via a formalized Intermunicipal Agreement), which can address overall planning efforts on a regional basis. However, towns can, individually, make significant contributions to the greater landscape through careful planning within their own borders. Examples are provided below.

Pound Ridge

The Town of Pound Ridge, which lies at the southwestern end of the tri-town region, has one of the lowest development densities of any town in Westchester County. This is reflected in the diversity of wildlife the town contains. Although portions of Pound Ridge are developed and roads have fragmented much of the land, a large percentage of the town remains heavily forested. Much of this can be attributed to the presence of Ward Pound Ridge Reservation (WPRR), the bulk of which is located within this town. The Honey Hollow section of WPRR contains the only extant populations of dusky salamanders and ribbon snakes in Westchester County.

However, there are other large expanses of quality habitat within the town. The most significant of these are the lands surrounding Trinity Lake and Mill River Reservoir, currently owned by Bridgeport Hydraulic Company (BHC). There are currently no blanket prohibitions that, over the long term, would prevent development of this site. Based on MCA surveys on this property, it is one of the most biologically diverse areas for birds in the tri-town region. In addition, approximately 1,000 acres of mostly undeveloped land connect BHC properties with the land surrounding the Siscowit Reservoir. Although MCA did not conduct extensive surveys in this area, the habitats appear to be of high quality. In addition to their potential as wildlife habitat, they buffer and connect the important habitats of the BHC properties and the land surrounding the Siscowit Reservoir.

A number of significant focal species occur on the BHC properties and associated habitats within the town. Neotropical migrant warblers are abundant in this large expanse of contiguous forest. Examples include the Canada warbler, which occurs in forested swamps surrounded by relatively unfragmented upland forests. The worm-eating warbler, another forest-interior species, selects steep forested slopes of the area for its breeding habitat. The

cerulean warbler, a species that has some of the most demanding area requirements (in terms of contiguous forest) of northeastern songbirds, was also observed on BHC property. There is no doubt that this species is on the property because its large tracts of forest have remained relatively unaltered for such a long period of time. There is also no doubt that, if the BHC property is subdivided and developed, the cerulean warbler and other forest-interior, area-sensitive species will disappear from the this property, and perhaps from the entire corridor.

Table 1. Species of conservation concern observed in Pound Ridge*

Mammals	Reptiles and Amphibians	Birds
River Otter	Black Rat Snake	American Redstart
Bobcat	Bog Turtle	American Woodcock
	Eastern Box Turtle	Baltimore Oriole
	Eastern Hognose Snake	Barred Owl
	Eastern Ribbon Snake	Black-and-white Warbler
	Eastern Worm Snake	Black-throated Blue Warbler
	Four-toed Salamander	Black-throated Green Warbler
	Fowlers Toad	Blue-gray Gnatcatcher
	Gray Treefrog	Bobolink
	Marbled Salamander	Brown Thrasher
	Northern Black Racer	Canada Warbler
	Northern Copperhead	Cerulean Warbler
	Northern Dusky Salamander	Eastern Bluebird
	Spotted Salamander	Eastern Kingbird
	Spotted Turtle	Eastern Towhee
	Wood Frog	Eastern Wood-pewee
	Wood Turtle	Indigo Bunting
		Ovenbird
		Pileated Woodpecker
		Rose-breasted Grosbeak
		Scarlet Tanager
		Veery
		Warbling Vireo
		Wood Thrush
		Worm-eating Warbler
		Yellow-billed Cuckoo
		Yellow-throated Vireo

*Data derived from two sources: (1) MCA field surveys and (2) other fieldwork conducted by Michael W. Klemens.

The BHC properties contain significant populations of amphibians and reptiles. These species flourish because this is a large expanse of interconnected, unfragmented wetland and upland habitat. The most fragmentation-sensitive reptile reported from this site is the wood turtle, a species that is functionally extinct in most of Westchester County and listed as "endangered" by the County. Box turtles also occur at this site and, although they are less-sensitive to habitat fragmentation than the wood turtle, this species has declined precipitously in Westchester County. Box turtles are listed as "threatened" by the County.

Significant amphibians reported from the BHC property include the gray treefrog, a species that relies on shrub swamps, and vernal pool-dependent species including the spotted

salamander and wood frog. These amphibians require not only specialized wetland breeding habitats, but also extensive tracts of upland forest surrounding these wetlands, where they spend the non-breeding portions of their life cycle.

Mesocarnivores, such as the river otter and the bobcat, also rely on clean waters and extensive forests such those found on the BHC property. Although surveys were not specifically conducted for mammals in this project, both river otters and bobcats have been observed in the general vicinity (T. Andersen, pers. comm.). Due to their large home ranges and other habitat requirements, it can be safely assumed that mesocarnivore populations would be negatively impacted if the BHC property were to be subdivided.

As stated previously, it is crucial that habitat hubs remain connected by relatively viable habitats. Although some degree of development can potentially be tolerated by dispersing wildlife, and some degree of development in such areas is to be expected, it is important that such areas do not become impermeable to animal movements. The land between BHC properties and WPRR serves as a conduit for animal movement, but with further development it could become a barrier. This land is bounded, approximately, by Kitchawan Road and Stone Hill Road (Route 137); it spans Route 124 and Old Stone Hill Road. Innovative tools should be sought to protect this constriction in the Eastern Westchester Biotic Corridor. The same considerations should be made for the lands between BHC properties and the Siscowit Reservoir.

Lewisboro

Of the three towns in the project area, Lewisboro has been developed to the greatest extent. Despite this, the town contains critical habitats that contribute to the biological diversity of the EWBC. The Lewisboro Conservation Advisory Council has assembled a comprehensive open space inventory of their town, which delineates greenways based, in part, on wildlife data. This carefully prepared and very useful inventory draws valid conclusions that can guide future land use decisions. Many of the conclusions in the inventory corroborate MCA findings. The inventory also identifies greenways outside of the EWBC delineated in this report; those greenways comprise additional wildlife corridors and hubs, and should be viewed as complementary to our results.

Perhaps the most significant habitat hub that the town contains is the northern portion of Ward Pound Ridge Reservation (WPRR). Connectivity of the EWBC is threatened at several constriction points north of WPRR. The first, and perhaps the most formidable, barrier is the development associated with Route 35/Old Post Road. Developments along this road could functionally sever WPRR habitats from heavily forested parcels to the north. MCA recommends that careful planning occur in this area, to avoid exacerbating the problem. The area is a prime candidate for designation as a Conservation Area Overlay Zone (see Appendix B for a model ordinance that addresses this issue).

There are many parcels to the north and east of WPRR (between WPRR and Lake Waccabuc) that could serve as habitat for grassland bird species (e.g., eastern meadowlarks and bobolinks). Since the succession of abandoned agricultural fields to forests in this region,

grassland bird populations have been rapidly declining. Their persistence can be ensured only by actively managing their habitats. Although no eastern meadowlarks or bobolinks were detected within Lewisboro during MCA surveys, both species were observed in North Salem and bobolinks were observed in Pound Ridge. The species may occur within Lewisboro, but went undetected due to an inability to access private properties. Restoration and management of suitable grassland habitat in portions of Waccabuc Country Club and surrounding parcels (some of which have undergone low-density residential development) would likely result in attracting both of these species. To make grasslands attractive to these species, they should be kept relatively free of woody vegetation via a mowing regime. However, the timing of mowing is critical; mowing during the breeding season will destroy nesting attempts. MCA recommends mowing in November, which would not only avoid the breeding bird season, but also would avoid the activity periods of many other taxa, such as reptiles and small mammals. Of course, there is extreme difficulty in establishing such mowing regimes on private properties. These activities would have to be performed on a strictly voluntary basis; thus, they could only be enacted through careful outreach to area residents.

This area contains an impressive concentration of amphibians and reptiles. The only site for the Jefferson salamander in the tri-town area was documented here, on what is now the Frederick P. Rose Preserve. A rich variety of amphibians and reptiles that have extensive wetland and upland habitat requirements occur here. These include vernal pool breeding amphibians (spotted and marbled salamanders, wood frogs) as well as spotted turtles. The latter use a mosaic of small wetlands within a landscape, often moving extensive distances overland between these wet pockets. Slimy salamanders were also found, indicating stable "old growth" mature second-generation forest.

Table 2. Species of conservation concern observed in Lewisboro

Reptiles and Amphibians	Birds
Black Rat Snake	American Redstart
Bog Turtle	Baltimore Oriole
Eastern Box Turtle	Black-throated Green Warbler
Eastern Hognose Snake	Blue-gray Gnatcatcher
Eastern Worm Snake	Eastern Bluebird
Four-toed Salamander	Eastern Kingbird
Gray Treefrog	Eastern Towhee
Jefferson Salamander	Eastern Wood-pewee
Marbled Salamander	Ovenbird
Musk Turtle	Pileated Woodpecker
Northern Black Racer	Rose-breasted Grosbeak
Northern Slimy Salamander	Scarlet Tanager
Spotted Salamander	Veery
Spotted Turtle	Wood Thrush
Wood Frog	Worm-eating Warbler
Wood Turtle	

*Data derived from two sources: (1) MCA field surveys and (2) other fieldwork conducted by Michael W. Klemens.

An opportunity also exists for Lewisboro to contribute to regional biodiversity in the southern portion of the town. BHC, Inc., lands surrounding Trinity Lake (see Results and Discussion: Pound Ridge) provide significant habitat for a number of area-sensitive forest species. The heavily forested lands to the east and northeast of BHC property are located in Lewisboro (indicated in light blue crosshatch in Figure C). Although MCA biologists were unable to survey these forests, they are contiguous with the BHC properties and thus, undoubtedly, increase the value of that block of habitat. It is entirely possible that extremely area-sensitive species, such as the cerulean warbler, may disappear from BHC land in Pound Ridge if the contiguous forests of Lewisboro were developed. MCA recommends that this area be targeted for further surveys, and that these forests be considered for preservation—whether through easement or outright purchase. This area provides a prime example of how necessary it is for neighboring towns to work together. Such collaboration would have a measurable impact on regional wildlife populations.

North Salem

The Town of North Salem makes a unique contribution to the biodiversity of the tri-town area, in the form of grassland habitat associated with agricultural lands. During MCA's surveys, all of the eastern meadowlarks and most of the bobolinks were detected within North Salem's borders. As mentioned in the Lewisboro discussion, some very simple steps can be taken to ensure that grassland bird species can persist. Grasslands should be kept relatively free of woody vegetation through annual mowing regimes. However, mowing should be limited to the non-breeding season. Mowing in November would avoid disturbance to nesting grassland birds, and would also avoid peak activity times of many other species, such as small mammals and reptiles. As stated previously, most of the grasslands occur on privately owned property; therefore, proper management of grassland habitat can only be achieved through careful and extensive outreach to local landowners. By actively managing for grassland species, North Salem's populations will be bolstered. Healthy grassland bird populations in North Salem could serve as source populations that could disperse into grassland habitats of Lewisboro. This is another example of how conservation initiatives within one town can contribute to regional biodiversity.

Two clusters of amphibian and reptile biodiversity were identified within North Salem. The Crook Brook wetlands and Turkey Hill contain a rich diversity of turtles, including many species considered threatened or endangered within Westchester County, as well as historic records of the Federally-listed bog turtle. The majority of bog turtle records from the County were from North Salem, and undoubtedly reflect the abundance of wet meadows and grasslands that occur here. Many of these meadows have groundwater fed hillside seeps, which are used extensively by wood turtles; our single observation of a bobcat in North Salem occurred in such habitat. This complex of fields, rocky slopes, and forest edges serves as prime habitat for black racers. This large, terrestrial, fast moving snake has become quite scarce in the County due to the succession of its preferred grassland habitat into forest. A secondary area of herpetological diversity lies to the south of Peach Lake, and includes large landscape species such as the wood turtle, as well as a diversity of amphibian species.

The EWBC, as delineated, encompasses most of the eastern portion of the Town of North Salem. Potentially viable habitats also exist in many other portions of the town, particularly north and south of Titicus Reservoir (indicated in light blue crosshatch on Figure C). The majority of those habitats were unexplored during MCA surveys, because they are under private ownership. We strongly recommend that further wildlife investigations occur in those areas to assist in local land use planning. It should be noted that the lands south of the Titicus reservoir are contiguous with the "Titicus Greenway" of Lewisboro, identified and described in that town's open space inventory. This represents an opportunity for intermunicipal conservation efforts.

Table 3. Species of conservation concern observed in North Salem

Mammals	Reptiles and Amphibians	Birds
Bobcat	Black Rat Snake	American Redstart
	Bog Turtle	Baltimore Oriole
	Eastern Box Turtle	Black-and-white Warbler
	Four-toed Salamander	Bobolink
	Gray Treefrog	Brown Thrasher
	Musk Turtle	Canada Warbler
	Northern Black Racer	Chimney Swift
	Northern Slimy Salamander	Eastern Bluebird
	Spotted Salamander	Eastern Kingbird
	Spotted Turtle	Eastern Meadowlark
	Wood Frog	Eastern Towhee
	Wood Turtle	Eastern Wood-pewee
		Field Sparrow
		Hooded Warbler
		Least Flycatcher
		Ovenbird
		Rose-breasted Grosbeak
		Scarlet Tanager
		Veery
		Warbling Vireo
		Wood Thrush
		Worm-eating Warbler
		Yellow-billed Cuckoo

*Data derived from two sources: (1) MCA field surveys and (2) other fieldwork conducted by Michael W. Klemens.

Recommendations

General recommendations

- *Attempt to add area—through fee simple purchase or easement—to existing protected areas.*

  This buffers the existing habitat hubs from externally caused degradations. It also reduces "edge effects," which negatively impact forest-interior and area-sensitive species. In addition, the buffers will often serve as additional habitat.

- *Consider passing a conservation area overlay ordinance (see Tech Paper #3).*

  Although this is not as effective as purchasing land (or obtaining easements to land) it does minimize and mitigate the impacts of development within designated zones. It is valuable, in particular, for maintaining wildlife habitat connectivity in developable parcels located between habitat hubs. It is a useful tool that allows towns, through home rule authority, to influence patterns of development within their borders in a way that minimizes impacts to wildlife and habitats.

- *Integrate the recommendations in this report into your town's Master Plan.*

  MCA staff would welcome the opportunity to work with individual towns in this regard.

- *Consider formalizing intermunicipal relationships with other towns in the Eastern Westchester Biotic Corridor (and beyond) by:*

  a. establishing an intermunicipal council, and

  b. adopting an intermunicipal agreement.

- *Consider extending the EWBC into Connecticut, joining with conservation initiatives in adjacent towns (Ridgefield, Wilton, New Canaan, and Stamford) and shared watersheds (e.g., Titicus and Norwalk rivers).*

- *Encourage better SEQRA reviews by:*

  a. Taking a hard look at impacts beyond individual project sites (that is, considering cumulative impacts on town- and region-wide scales).

  b. Encouraging use of the GEIS process. This is a planning process where the town creates an environmental impact statement for a large block of land. Then, as individual development projects are proposed, they are evaluated against the findings of the GEIS. The town recovers the costs of the GEIS through a pro-rated fee assigned to each development project.

  c. Requiring standards for wildlife surveys to ensure that adequate effort is being expended, at appropriate times of year, to assess on site wildlife resources. Appendix C contains an example of these standards prepared by MCA for our Croton to Highlands Corridor project. Appendix D also contains the standards for surveying bog turtle habitats, excerpted from the Federal Recovery Plan. These standards should be employed for development projects in those wetlands of the EWBC that have been identified as bog turtle habitat.

Town-specific recommendations

Recommendations specific to individual towns within the EWBC can be found in the Results and Discussion section.

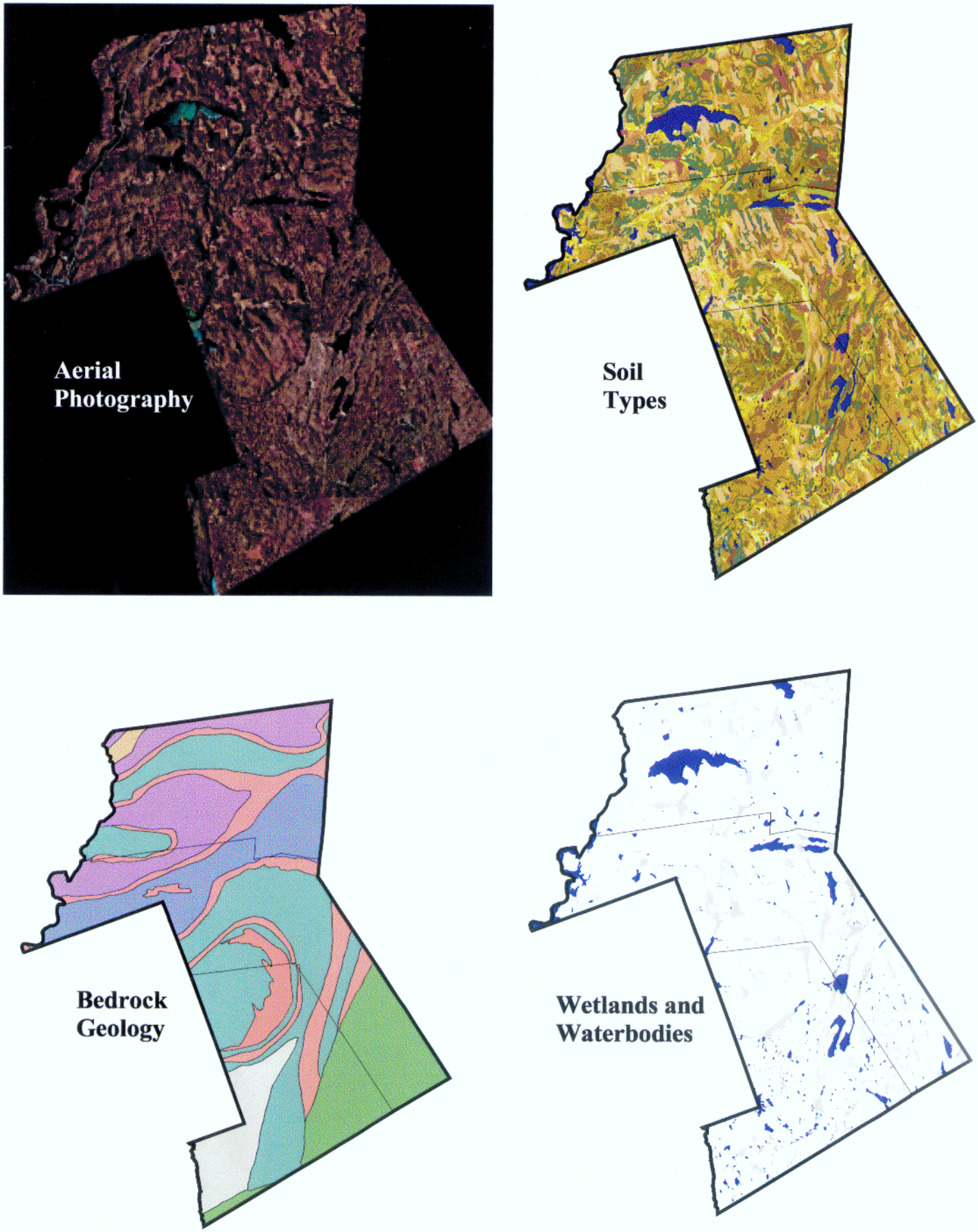


Figure A. Data layers used in the site selection process and during data analysis.

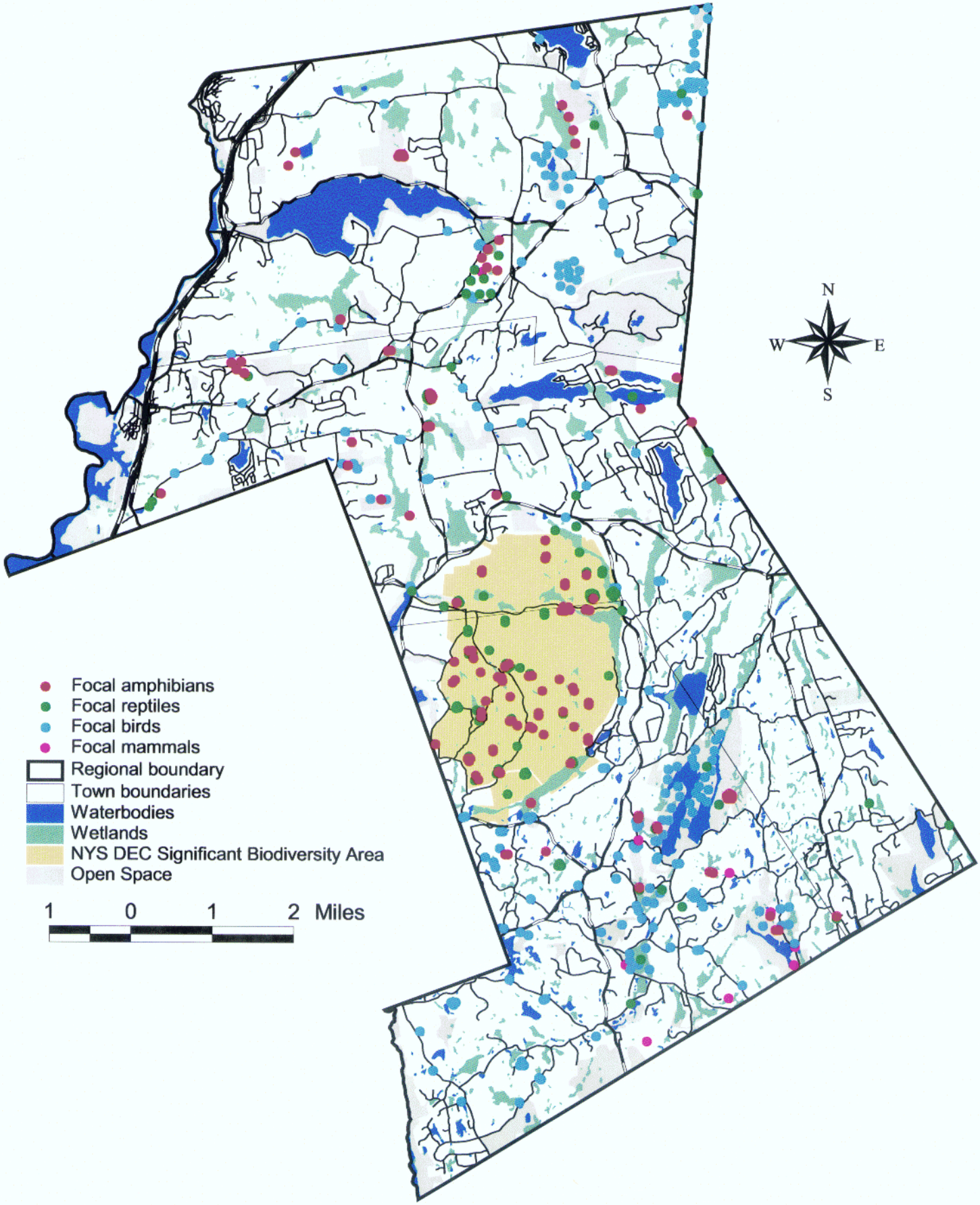


Figure B. Distribution of focal species in the three towns of the Eastern Westchester Biotic Corridor.

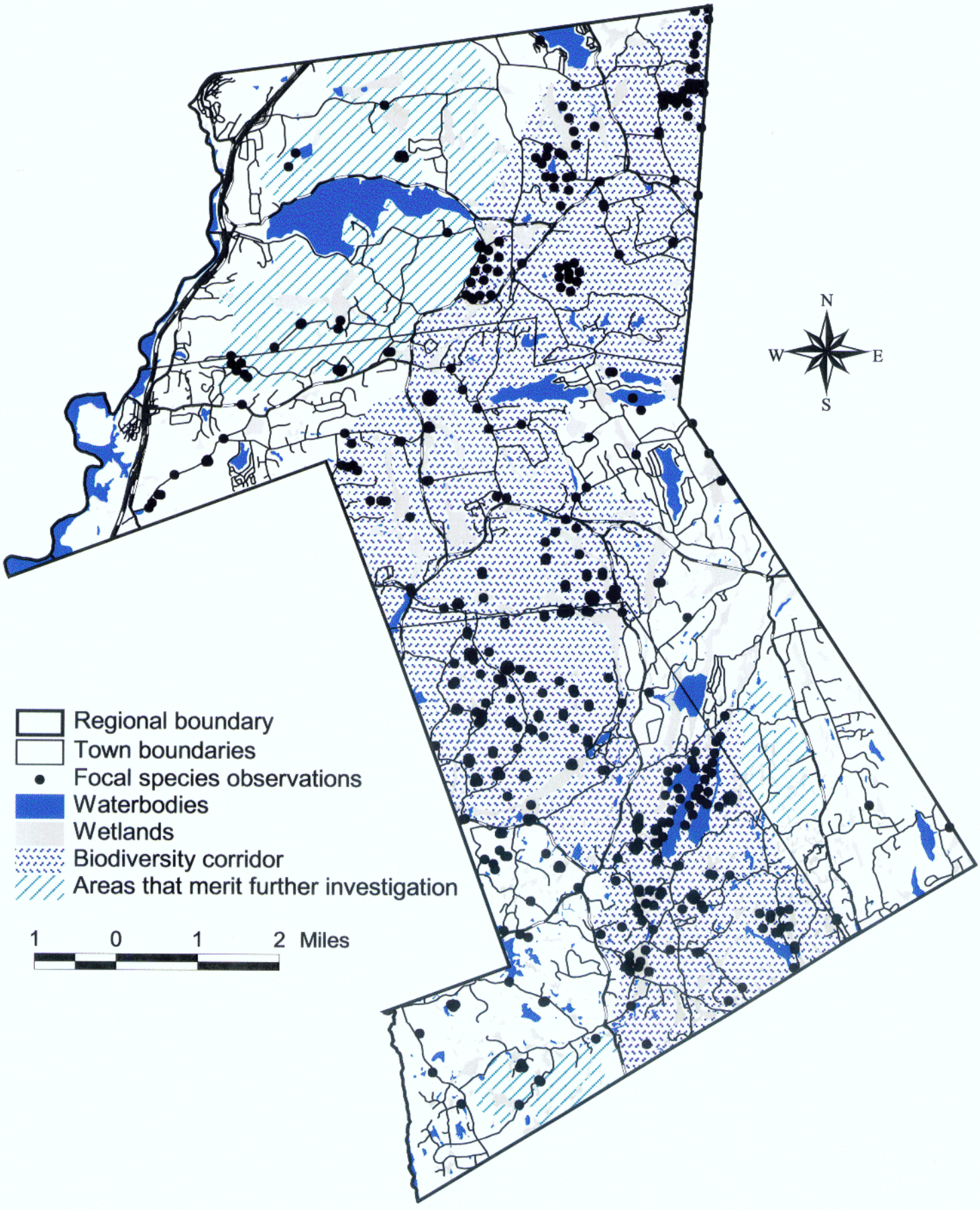


Figure C. Biodiversity corridor and areas that merit further investigation.

Appendix A

Technical Publications and Land Use Planning Tools produced by the Metropolitan Conservation Alliance

MCA Technical Paper #1: **A Tri-State Comparative Analysis of Local Land Use Authority: NY, NJ, & CT.** This paper investigates the local land use authority that towns within the tri-state region have to protect natural landscapes while making land use decisions, and to collaborate with one another on an inter-municipal basis. For example, it lists and describes statutes and cases that empower municipalities to plan and regulate across municipal lines; to adopt floating zones, overlay districts, and natural resource protection ordinances; and to provide incentives to encourage cost-effective and environmentally sound development patterns. Prepared for MCA by Pace University, 1999. $12.50

MCA Technical Paper #2: **Open Land Acquisition: Local Financing Techniques Under New York State Law.** This paper describes the authority that local governments have to raise revenues to purchase or otherwise protect open space. It explores the types of programs that have been established using these techniques. It is intended to assist communities interested in PDR (purchase of development rights), to help them decide which of several potential funding mechanisms would be most appropriate. Prepared for MCA by Pace University, 2000. $5.50

MCA Technical Paper #3: **Conservation Area Overlay District: A Model Local Law**
This document is a creative tool for improved land use planning—a model ordinance that can be adopted by municipalities to delineate conservation area overlay districts. The ordinance is based upon New York State law, but can be adapted for use in other states that have strong home rule authority. Within ecologically sensitive areas, it seeks to reduce habitat fragmentation, maintain biodiversity, and protect significant natural features. This model law enables towns to develop a template not only for ecological protection, but also for the siting of future development. Prepared for MCA by Pace University, 2002. $7.50

Coming soon...

MCA Technical Paper #5: **Best Development Practices (BDPs) for Conserving Pool-Breeding Amphibians in Residential and Commercial Developments.** Aram J. K. Calhoun, Michael W. Klemens. This paper contains techniques to guide local and state planners, officials, and other land use decision makers as they attempt to conserve vernal pool habitats and wildlife. It provides a pragmatic approach to conservation that encourages communities to attain a more complete understanding of their vernal pool resources, gather information that enables them to designate pools that are exemplary or worthy of protection efforts, and then develop strategies to fulfill that protection.

Appendix B

Metropolitan Conservation Alliance
(a program of the Wildlife Conservation Society)

Equal Access to Information Policy Statement

The development of innovative and effective conservation strategies by the Metropolitan Conservation Alliance is based upon up-to-date information on the ecology of the New York Metropolitan region, on the presence, absence, and long-term population trends of focal species, and is integrated with regional patterns and projections of development.

To make better, and more ecologically informed land use planning decisions, scientific information is essential. That information must be clearly interpreted by conservation professionals to ensure that it is both accessible to the user community, as well as credible.

To further our mission of encouraging and enabling effective conservation efforts (at all levels) in the New York Metropolitan region, it is the stated policy of the Metropolitan Conservation Alliance to provide scientific information we collect*, and any analyses of this information that we complete, to interested parties. These parties may include, but are not limited to, municipal planners, developers, federal, state, and local governments, and conservation and other non-governmental organizations, who show an interest in incorporating ecological sustainability into planning and other aspects of development design.

Equal access to information should lead to more ecologically-informed planning that will in turn, foster increasingly effective, long-term conservation of biological diversity and ecosystem function, and reduce the confrontation and controversy that so often accompanies the review of land-use proposals.

* *An exception to this statement is: Specific site locations of endangered and threatened species, or species we consider vulnerable to exploitation if site locations are easily available, will not be reported except to the federal and state agencies that are responsible for the protection of such species, or conservation organizations working in cooperation with such agencies.*

Appendix C

DRAFT

Wildlife Biodiversity Assessment Guidelines
Town of _____

PURPOSE

The Town of _____ exhibits a remarkable diversity of animal and plant species. Yet today we are facing the bleak prospect of losing much of our rich biological heritage to suburban sprawl, fostered by a lack of informed land-use decisions. In Westchester County as a whole, nearly 40 percent of native wetland vertebrate species have been lost over the past 30 years. Biodiversity assessments will provide the Town with baseline, site-specific biological information, and will enhance the Town's ability to make better planning decisions, fulfill our legal obligations under SEQRA, and maintain biodiversity as economic growth proceeds.

Development (including residential, commercial, industrial, and infrastructure development) impacts wildlife species in many ways. For example, direct loss of natural habitats eliminates some species and reduces population sizes of others. Fragmentation of remaining habitats leads to isolation of remnant populations, reduced dispersal capabilities, and increased edge effects (such as increased predation and parasitism, and decreased breeding success). Site-specific designs, such as curbing and catch-basins, can have dramatic effects on the survival and movement patterns of amphibians and reptiles.

TARGET AREAS

Surveys are required for development applications located along river and stream corridors; in the vicinity of lakes, ponds, and wetlands; adjacent to areas of existing open space; and within areas that, due to their acreage or proximity to other habitats, could serve as habitat hubs or corridors. General biodiversity surveys, described below, must occur in these areas. Some sites may require additional investigations. For example, where bog turtles (*Clemmys muhlenbergii,* State-listed as endangered and Federally-listed as threatened) have the potential to occur, a Phase 1 survey (habitat identification by a State-licensed biologist) should be required on all development applications in the surrounding area (see the USFWS's 2001 document, *Bog Turtle (Clemmys muhlenbergii) Northern Population Recovery Plan,* by M.W. Klemens). A Phase 2 survey should also be required when indicated by Phase I results.

SPECIES TO BE ASSESSED

Surveys must be conducted for the entire range of species that are known to respond to development. At a minimum, surveys should be conducted for amphibians, reptiles, and birds. These taxa contain species that respond measurably to development-related impacts at varying landscape scales. As time and resources allow, surveys should also be conducted for additional taxa (e.g., benthic macroinvertebrates, area-sensitive mammals, plant species). Although this includes State- and Federally-listed threatened and endangered species, it also

includes a wide array of currently unlisted, "focal" species that indicate habitat quality. The presence of habitat specialists (e.g., wood frogs, spotted salamanders, box turtles, wood turtles, ovenbirds, Canada warblers) may indicate high-quality habitats where development-related impacts should be avoided, minimized, or mitigated. The presence of certain "subsidized" species (i.e., those that are often affiliated with landscape disturbances), coupled with the absence of more specialized taxa, indicates previously disturbed habitats that may be more suitable for development.

METHODS

Biodiversity assessments must be conducted and interpreted by biologists trained in the concepts of conservation biology and landscape ecology, and who have a demonstrated competence in surveying target species within Westchester County. They will be paid for by the applicant and contracted as consultants to the Town of _____ Planning Department, in the same manner that the department contracts with other consultants (e.g., wetland consultants).

Surveys must be conducted during appropriate seasons, according to the life cycles of the surveyed taxa. Surveys must also follow standardized protocols, to ensure that detectability is maximized and results are reliable. For example, bird surveys must occur during the spring breeding season (mid-May through early July) in the early morning hours (within 1/2 hour of dawn through 9:30am) under relatively fair weather conditions. Results of such breeding bird surveys reveal the suitability of on-site habitat: surveys conducted at other times or in poor weather conditions are much less informative. Reptile and amphibian surveys must be conducted between March and October, with concentrations in March-April, May-June, mid-summer, and September. Survey techniques include night searches, minnow/turtle traps, turning of cover objects, and larval dip-netting and identification. For all taxa in question, surveys must be conducted within all habitats on site (e.g., grasslands, vernal pools, forested uplands, forested wetlands), regardless of where proposed construction activities would take place. Many species utilize a complex of habitats within the course of their life cycles; therefore, developments may attempt to avoid disturbance of breeding habitat, but destroy foraging, roosting, or wintering habitat.

REPORTS

A final report must be submitted containing a description of current on-site habitats, the value and condition of those habitats for wildlife, and a discussion of the potential impacts of the proposed development on wildlife resources. Data collection and documentation methods (e.g., photos or voucher specimens) should be detailed in the report. Wildlife occurrence data must be location-specific; lists of probable species occurrence, alone, are not acceptable. Alternatives should be recommended where proposed alterations to habitats place wildlife resources in jeopardy. The report should also discuss site context (e.g., proximity and connectivity to other habitats), and should relate the importance of on-site habitat relative to other habitats within the Town. The report should contain detailed maps compatible with the Town's GIS system so that the survey information may be quickly incorporated into a Town-wide wildlife habitat database.

[This page intentionally left blank.]

Appendix D

[excerpted from the USFWS 2001 document, "Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan," by M.W. Klemens]

GUIDELINES FOR BOG TURTLE SURVEYS[1]

(revised May 2001)

RATIONALE

A bog turtle survey (when conducted according to these guidelines) is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize survey procedures. It will help maximize the potential for detection of bog turtles at previously undocumented sites at a minimum acceptable level of effort. Although the detection of bog turtles confirms their presence, failure to detect them does not absolutely confirm their absence (likewise, bog turtles do not occur in all appropriate habitats and many seemingly suitable sites are devoid of the species). Surveys as extensive as outlined below usually suffice to detect bog turtles; however, there have been instances in which additional effort was necessary to detect bog turtles, especially when habitat was less than optimum, survey conditions were less than ideal, or turtle densities were low.

PRIOR TO CONDUCTING ANY SURVEYS

If a project is proposed to occur in a county of known bog turtle occurrence (see attachment 1), contact the U.S. Fish and Wildlife Service (Service) and/or the appropriate State wildlife agency (see attachment 2). They will determine whether or not any known bog turtle sites occur in or near the project area, and will determine the need for surveys.

- If a wetland in or near the project area is *known* to support bog turtles, measures must be taken to avoid impacts to the species. The Service and State wildlife agency will work with federal, state and local regulatory agencies, permit applicants, and project proponents to ensure that adverse effects to bog turtles are avoided or minimized.

- If wetlands in or adjacent to the project area are *not* known bog turtle habitat, conduct a bog turtle habitat survey (Phase I survey) if

  1. The wetland(s) have an emergent and/or scrub-shrub wetland component, and

  2. Direct and indirect adverse effects to the wetland(s) cannot be avoided.

  See *Bog Turtle Conservation Zones* for guidance regarding activities likely to affect bog turtles and their habitat. In addition, consult with the Fish and Wildlife Service and/or appropriate State wildlife agency to definitively determine whether or not a Phase I survey will be necessary.

BOG TURTLE HABITAT SURVEY (= Phase 1 survey)

The purpose of this survey is to determine whether or not the wetland(s) are *potential* bog turtle habitat. These surveys are usually performed by someone who is either: (1) qualified to conduct bog turtle surveys (i.e., Phase II surveys) or (2) qualified to identify and delineate wetlands. The following conditions and information apply to habitat surveys.

- Surveys can be performed any month of the year (except when significant snow cover is present). This flexibility in conducting Phase I surveys allows efforts during the Phase 2 survey window to be spent on wetlands most likely to support bog turtles (i.e., those that meet the criteria below).

- Potential bog turtle habitat is recognized by three criteria (not all of which may occur in the same portion of a particular wetland):

    1. **Suitable hydrology**. Bog turtle wetlands are typically spring-fed with shallow surface water or saturated soils present year-round, although in summer the wet area(s) may be restricted to near spring head(s). Typically these wetlands are interspersed with dry and wet pockets. There is often subsurface flow. In addition, shallow rivulets (less than 10 cm deep) or pseudo-rivulets are often present.

    2. **Suitable soils.** Usually - a bottom substrate of soft muck or mucky-like soils (this does not refer to a technical soil type); you will usually sink to your ankles or deeper in muck, although in summers of dry years this may be limited to areas near spring heads. In some portions of the species' range, the soft substrate consists of scattered pockets of peat (6+ inches deep) instead of muck. Suitable soils are the critical criterion.

    3. **Suitable vegetation.** Dominant vegetation of low grasses and sedges (emergent wetland), often with a scrub-shrub wetland component. Common emergent vegetation includes: tussock sedge (*Carex stricta*), soft rush (*Juncus effusus*), rice cut grass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), tearthumbs (*Polygonum* spp.), jewelweed (*Impatiens* spp.), arrowheads (*Saggittaria* spp.), skunk cabbage (*Symplocarpus foetidus*), Panic grasses (*Panicum* spp.), other sedges (*Carex* spp.), spike rushes (*Eleocharis* sp.), grass-of-Parnassus (*Parnassia glauca*), shrubby cinquefoil (*Potentilla fruticosa*), sweet-flag (*Acorus calamus*), and in disturbed sites, reed canary grass (*Phalaris arundinacea*) or purple loosestrife (*Lythrum salicaria*). Common scrub-shrub species include alder (*Alnus* spp.), red maple (*Acer rubrum*), willow (*Salix* spp.), tamarack (*Larix laricina*), and in disturbed sites, multiflora rose (*Rosa multiflora*).

- Suitable hydrology, soils and vegetation are necessary to provide the critical wintering sites (soft muck, peat, burrows, root systems of woody vegetation) and nesting habitats (open areas with tussocky or hummocky vegetation) for this species. It is very important to note, however, that one or more of these criteria may be absent from portions of a wetland or wetland complex supporting bog turtles. Absence of one or more criteria does not preclude bog turtle use of these areas to meet important life functions, including foraging, shelter and dispersal.

- If these criteria (suitable soils, vegetation and hydrology) are present in the wetland, then the wetland is considered to be potential bog turtle habitat, regardless of whether or not that portion of the wetland occurring within the project boundaries contains all three criteria. If the wetland is determined to be potential habitat and the project will directly or indirectly impact any portion of the wetland, then either:

    - Completely avoid all direct and indirect effects to the wetland, in consultation with the Service and appropriate State wildlife agency, *OR*

    - Conduct a Phase 2 survey to determine the presence of bog turtles.

- The Service and appropriate State agency (see list) should be sent a copy of survey results for review and comment including: a USGS topographic map indicating location of site; project design map, including location of wetlands and streams; color photographs of the site; surveyor's name; date of visit, opinion on potential/not potential habitat; a description of the hydrology, soils, and vegetation.

BOG TURTLE SURVEY (= Phase 2 survey)

If the wetland(s) are identified as potential bog turtle habitat (see Phase I survey), and direct and indirect adverse effects cannot be avoided, conduct a bog turtle survey in accordance with the specifications below. Note that this is *not* a survey to estimate population size or structure; a long-term mark/recapture study would be required for that.

Prior to conducting the survey, contact the appropriate State agency (see attached list) to determine whether or not a scientific collector's permit valid for the location and period of the survey will be required.

1. Surveys should only be performed during the period from April 15-June 15. This coincides with the period of greatest annual turtle activity (spring emergence and breeding) and before vegetation gets too dense to accurately survey. While turtles may be found outside of these dates, a result of no turtles would be considered inconclusive. Surveys beyond June also have a higher likelihood of disruption or destruction of nests or newly hatched young.

2. Air and water temperatures should be a minimum of 55° F.

3. Surveys should be conducted during the day, at least one hour after sunrise and no later than one hour before sunset.

4. Cloud cover should be <50 percent, and surveys should not be conducted during or immediately following rain events, unless it clears rapidly and is sunny.

5. One (1) to three (3) people should survey each wetland together. At least one (1) of these must be a recognized qualified bog turtle surveyor[2], and the others should have at least some previous experience conducting bog turtle surveys. To maintain survey effort consistency and increase the probability of encountering turtles, it is recommended that the same surveyors be used for each wetland.

6. A minimum of four (4) surveys per wetland site are needed to adequately assess the site for presence of bog turtles. At least two of these surveys must be performed in May. From mid-April to mid-May, surveys should be separated by six or more days. From mid-May to mid-June, surveys should be separated by three or more days. The shorter period between surveys during late May and June is needed to ensure that surveys are carried out during the optimum window of time (i.e., before wetland vegetation becomes too thick).

   Note that bog turtles are more likely to be encountered by spreading the surveys out over a longer period. For example, erroneous survey results could be obtained if surveys were conducted on four successive days in late April due to possible late spring emergence, or during periods of extreme weather because turtles may be buried in mud and difficult to find.

   If bog turtles are found on the first, second or third visit, the site does not need to be revisited. Because this is solely a presence/absence survey, survey efforts at a particular wetland may cease once a bog turtle has been found.

7. Survey time should be three (3) to six (6) person-hours per acre of wetland per visit. Both random opportunistic searching and transect surveys should be used at each wetland.

8. Walk quietly through the wetland. Bog turtles will bask on sedge tussocks and mossy hummocks, or be half-buried in shallow water or rivulets. Walking noisily through the wetland will often cause the turtles to submerge before they can be observed. Be sure to search areas where turtles may not be visible, including shallow pools, underground springs, open mud areas, vole runways and under tussocks. Do not step on the tops of tussocks or hummocks because turtle nests, eggs and nesting microhabitat may be destroyed.

9. Photo-documentation of each bog turtle located will be required; a macro lens is highly recommended. The photos should be in color and of sufficient detail and clarity to identify the bog turtle to species and individual. Therefore, photographs of the carapace, plastron, and face/neck markings should be taken of each individual turtle. Do not harass the turtle in an attempt to get photos of the face/neck markings; if gently placed on the ground, most turtles will slowly extend their necks if not harassed. If shell notching is conducted, do the photo-documentation after the notching is done.

10. The following information should be collected for each bog turtle: sex, carapace length-straight line, carapace width, weight, and details about scars/injuries. Plastron length-straight line information should also be collected to differentiate juveniles from adults (> 70 mm; Ernst 1977) as well as to obtain additional information on recruitment, growth, and demography.

11. Each bog turtle should be marked (e.g., notched, PIT tagged) in a manner consistent with the requirements of the appropriate State agency and/or Service. Contact the appropriate State agency prior to conducting the survey to determine what type of marking system, if any, should be used.

12. All bog turtles must be returned to the point of capture as soon as possible on the same day as capture. They should only be held long enough to identify, measure, weigh, and photograph them, during which time their exposure to high temperatures must be avoided. No bog turtles may be removed from the wetland without permission from the Service and appropriate State agency.

13. The Fish and Wildlife Service and appropriate State agency should be sent a copy of survey results for review and concurrence, including the following: dates of site visits; time spent per wetland per visit-, names of surveyors; a site map; a description of the wetlands within the project area (e.g., acreage, vegetation, soils, hydrology), an explanation of which wetlands or portions of wetlands were or were not surveyed, and why; survey methodology; weather per visit at beginning and end of survey (air temperature, water temperature, percent cloud cover, wind, and precipitation); presence or absence of bog turtles, including number of turtles found and date, and age/sex of turtles found; and other reptile and amphibian species found and date.

ADDITIONAL SURVEYS / STUDIES

Proper implementation of the Phase 2 survey protocol is usually adequate to determine species presence or probable absence. Additional surveys, however, may be necessary to determine whether or not bog turtles are using a particular wetland, especially if the Phase 2 survey results are negative but the quality and quantity of habitat are good and in a watershed of known occurrence. In this case, additional surveys (Phase 2 and/or trapping surveys), possibly extending into the following field season, may be recommended by the Service or appropriate State agency.

If bog turtles are documented to occur at a site, additional surveys/studies may be necessary to characterize the population (e.g., number, density, population structure, recruitment), identify nesting and hibernating areas, and/or identify and assess adverse impacts to the species and its habitat, particularly if project activities are proposed to occur in, or within 300 feet of, wetlands occupied by the species.

---

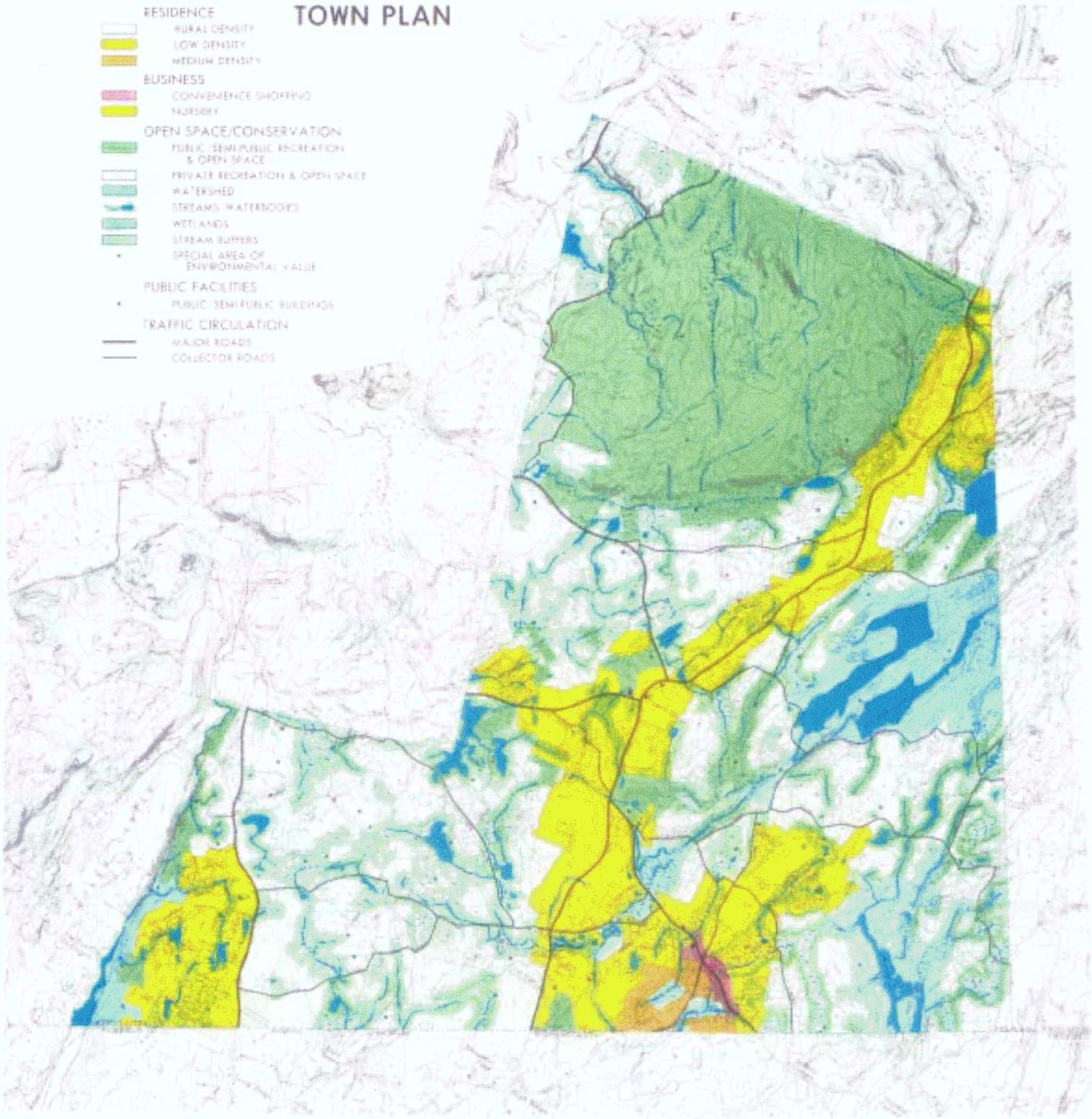
[1] As additional information becomes available regarding survey techniques and effectiveness, these survey guidelines may be updated and revised. Contact the Fish and Wildlife Service or one of the state agencies listed below for the most recent version of these guidelines.

[2] Searching for bog turtles and recognizing their habitat is a skill that can take many months or years of field work to develop. This level of expertise is necessary when conducting searches in order to ensure that surveys are effective and turtles are not harmed during the survey (e.g., by stepping on nests). Many individuals that have been recognized as qualified to conduct bog turtle surveys obtained their experience through graduate degree research or employment by a state wildlife agency.

APPENDIX C

TOWN OF POUND RIDGE, NEW YORK

TOWN PLAN



APPENDIX D

TOWN OF POUND RIDGE

Environmental Synthesis Report

TOWN OF POUND RIDGE

Environmental Synthesis Report

May 22, 1978

Prepared for the Pound Ridge Conservation Board

By: Frederick P. Clark Associates
Planning Consultants
Rye, New York

TABLE OF CONTENTS

LIST OF MAPS AND FIGURES

1. INTRODUCTION

It is the purpose of this report to analyze the environmental data base which has been developed for Pound Ridge during the past several years. It seeks to synthesize into a single document key aspects of the many studies which have been done in order to provide a unified environmental background for the updated and revised comprehensive Town Plan.

While, of necessity, this report repeats many of the concepts which have been exp..ored earlier, it is not merely a summary of conclusions which already have been made. Rather, its findings stem primarily from the overview that can be had only by comparing, contrasting and relating the various components to each other. Therefore, no effort has been made to repeat the details of the earlier work. Instead, emphasis has been placed upon principal conclusions. Abundant referencing has been included in order to direct the interested reader to sources of greater detail.

In addition to discussing the major elements of Pound Ridge's natural environment, this study places strong emphasis upon the relevance of these factors to the community planning considerations which remain the principal long term purpose of the past research. The factors analyzed herein are grouped as follows:

- Pound Ridge's Landform
  - A. Topography and Regional Location
  - B. Bedrock Geology
  - C. Soils
  - D. Summary of Structural Considerations
  - E. Development Limitations Summary
- Vegetation
  - A. Existing Patterns
  - B. Impact of Human Settlement
  - C. Applications
- Hydrology and Water Quality
- Synthesis

Principal background works for this report were the Water and Land Resource Study by Environmental Assessment Associates, An Ecological Evaluation by Community Design Associates, and various reports by Frederick P. Clark Associates.

2. POUND RIDGE'S LANDFORM

A. Topography and Regional Location

As shown on the enclosed map (page 3) Pound Ridge is, in a regional sense, an upland area. It is removed from both of the major water bodies of the area: Long Island Sound and the Hudson River. With only one major exception, the streams which flow through the Town begin within its borders. This exception is the Mill River, which has its source about three miles to the east in Ridgefield.

Elevation differences within the Town are typical of its surrounding area. Topography varies between 250 feet above sea level at the bottom of Mianus Gorge to 850 feet at the lookout tower on the Pound Ridge Reservation. Vertical distance between hilltops and valley bottoms varies between 150 and 400 feet. The 400 foot drop is between the Pound Ridge Reservation escarpment and the Stone Hill River. Elsewhere, hilltop to valley bottom elevation differences generally are in the 150 to 200 foot range.

The most important ridgelines (hence, drainage divides), for Town planning purposes are those which embrace the Mill River Valley. While not visually dramatic, these are very important structural components of the Town's overall drainage pattern. Radiating from these major divides are a number of smaller ones which further define the pattern of drainage. Much of the Town has a jagged relief, although substantial areas with comparatively rolling terrain also are present.

B. Bedrock Geology

The geology of Pound Ridge has been a silent partner in virtually all of the planning discussion which has taken place within the Town. As will be shown throughout this report, geological factors have played a major role in shaping the Town's surface features, have influenced human settlement patterns throughout the Town's history, and are present as an influence on most of the important physical planning issues now under review.

The two most important elements herein are underlying bedrock formations and the later glacial activity which deposited loose earth materials throughout the Town.

The following types of bedrock underly Pound Ridge:

Fordham Gneiss
Bedford Gneiss
Pound Ridge Gneiss
Microcline Granite
Manhattan Schist
Inwood Marble
Hartland Formation

TOWN OF POUND RIDGE, N.Y.

FREDERICK P CLARK ASSOCIATES, PLANNING CONSULTANTS, RYE, N.Y.

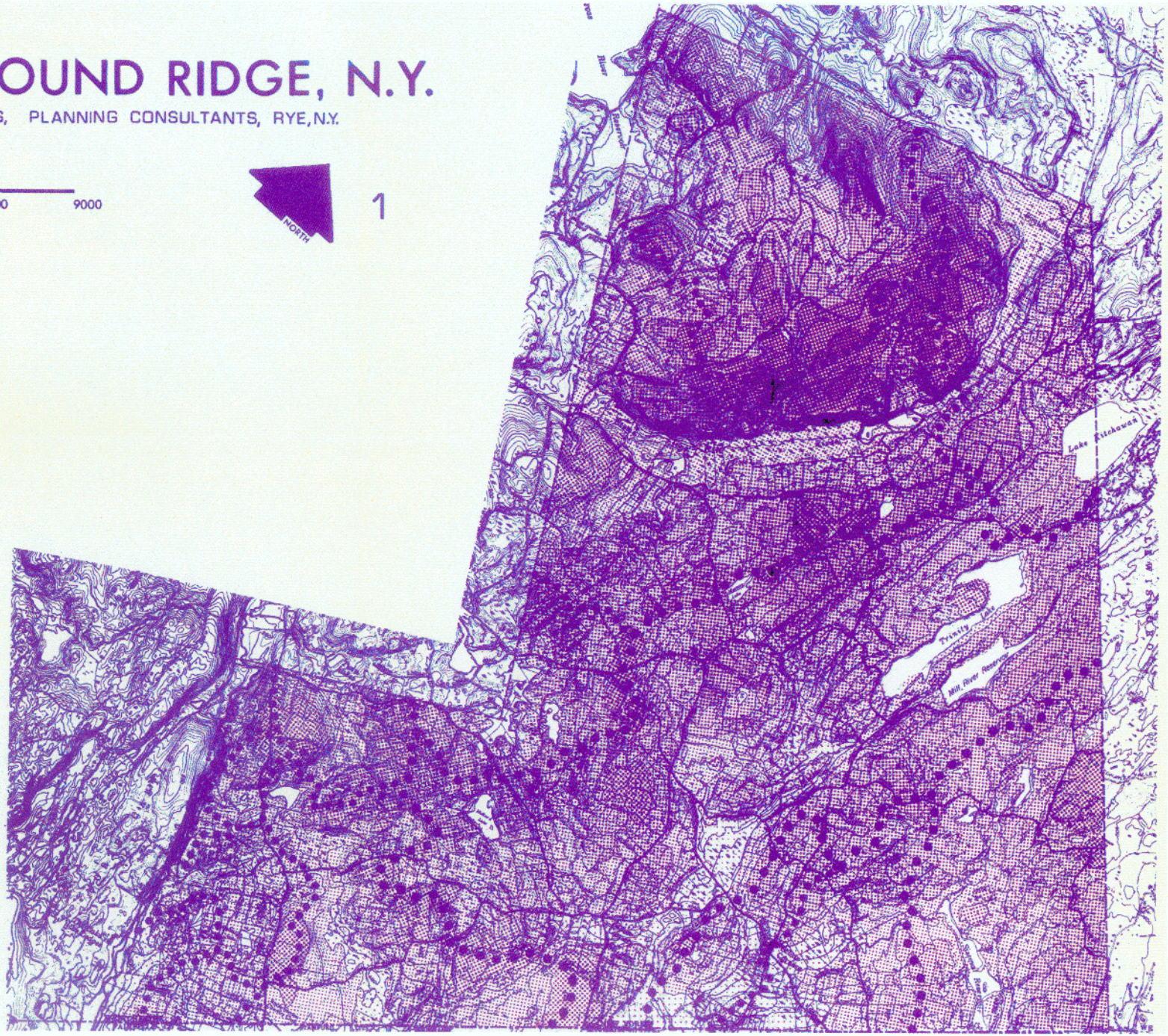
SCALE IN FEET

3000 0 3000 6000 9000

NORTH

1

TOPOGRAPHY



Distance Above Mean Sea Level

800 - 900 Feet
700 - 800 "
600 - 700 "
500 - 600 "
400 - 500 "
300 - 400 "
200 - 300 "

Major Drainage Divides
Minor

Detailed discussion of these rock types has been presented in the Water and Land Resource Study by Environmental Assessment Associates (Volume 1, pp. 40-52). Therefore, discussion herein relates primarily to the relevance of this material to the basic structure of the Town. A simplified bedrock map is presented on page 5.

For the present purpose, Fordham Gneiss, Bedford Gneiss, Pound Ridge Gneiss, and Microcline Granite can be considered to be substantially similar and have been mapped herein as a group. They are extremely resistant to erosion and thus are found beneath most of the Town's higher elevations. The surface characteristics in these areas are generally very rugged in character. Within this rock type, water is available only in fractures and cracks. Such rock is beneath a substantial proportion of the Town and is located roughly as follows:

1) Underlying the upland areas of the Pound Ridge Reservation.

2) Underlying a wedge shaped formation which begins near Stone Hill Road (not far from its intersection with Salem Road). It extends west, to the south of Stone Hill Road, and broadens to the southwest, encompassing most of the Mianus Gorge.

3) A smaller wedge is closely associated with the Mill River Reservoir and Trinity Lake.

These three areas contain the surface topographic features which are perhaps most often associated with Pound Ridge, a rocky jagged landscape which, during the Town's agricultural period, was settled late and abandoned early. These rock formations form spines in the topographic pattern and thus play an important role in dividing the Town into drainage basins.

Manhattan Schist: This rock form also has played an important role in the development of Pound Ridge. It is found in a broad belt passing through the Town from northeast to southwest. Pound Ridge's two principal valleys, the Mill River Valley and the Stone Hill River Valley, are largely underlain by this rock. It includes the Boutonville area, Pound Ridge Hamlet, Sarles Corners and also is found in a band along Stone Hill Road. Because this type of rock erodes relatively easily, it tends to be covered by deep soils and is thus associated with a smoothly undulating topography and with valleys. These valleys comprised the only inviting areas for agriculture in an otherwise difficult landscape.

Manhattan Schist thus formed the corridors which are associated with a large share of the Town's cultural heritage. Early maps of Pound Ridge indicate the relative persistence of agriculture along these two corridors (Source: Joy Harris: God's Country). Both historic and present day transport corridors follow these routes.

In the late 19th and 20th centuries, as the agricultural era gradually passed in Pound Ridge, these areas lasted longest as farmlands, and thus today do not harbor very much mature forest cover. It is for this reason that the vegetation map of the Town shows these lands to be dominated by immature forest, old fields, and lawn areas. In contrast, the granite-gneiss areas mentioned above are largely dominated by mature forest.

TOWN OF POUND RIDGE, N.Y.

FREDERICK P. CLARK ASSOCIATES, PLANNING CONSULTANTS, RYE, N.Y.

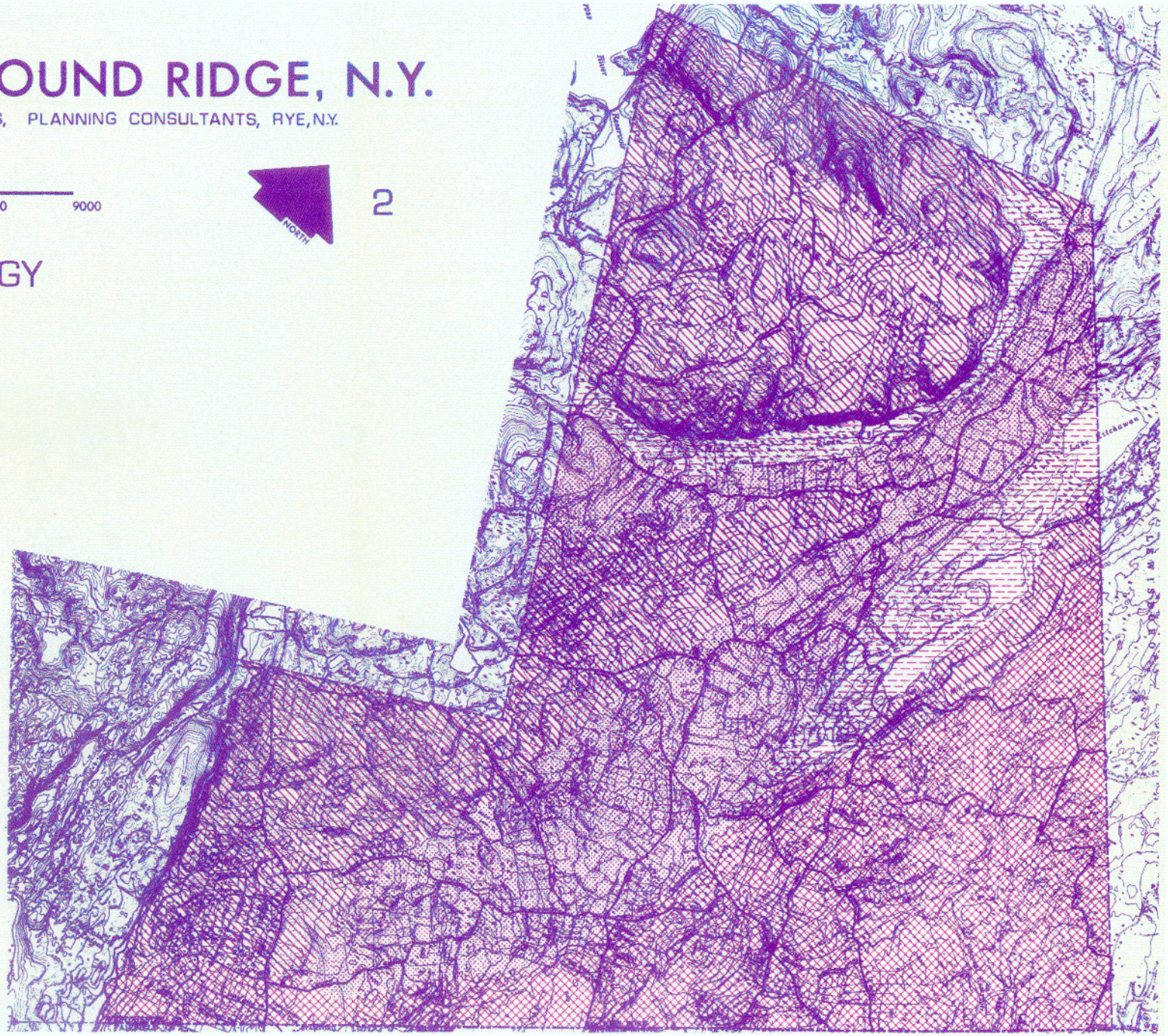
SCALE IN FEET

3000 0 3000 6000 9000

NORTH

2

BEDROCK GEOLOGY



- Granite and Gneiss: associated with rugged uplands
- Hartland Formation: variable, generally associated with rugged uplands
- Manhattan Schist: underlies rolling landscapes and valleys
- Inwood Marble: water bearing, found underlying bottomlands

Inwood Marble: The third important bedrock type in Pound Ridge is Inwood Marble. Because this rock erodes quite easily, it is frequently associated with low points, flat lands, and wet areas. Two bands of this rock are present and show up clearly on the Graphic Environmental Summary, a set of maps which accompanies this report. One such band is located at the base of the Pound Ridge Reservation Escarpment while the other extends southwest from Lake Kitchawan.

This rock is also important in that it is frequently water bearing and provides a major potential water source. It can be considered to be an aquifer. Thus, particular care should be taken in these areas to avoid septic failure or other sources of ground water pollution.

Hartland Formation: The last rock type in Pound Ridge is the Hartland formation. It is located in the Town's southeast corner, and is a complex mixture of both gneiss and schist. Because of the factors described above which are associated with these rocks, the surface features of this area are extremely varied. For the most part, however, the Hartland Formation is highly resistant to erosion and is largely associated with rugged upland terrain. Thus, it forms part of the south wall of the Mill River Valley.

C. Soils

Soils data have many practical applications to town planning and provide valuable background concerning underlying structure. The Town's soils may be grouped into the following structural categories:

- Deep Upland Soils - formed in glacial till;
- Upland Hardpan Soils - formed in glacial till;
- Moderately shallow or extremely stony upland soils-formed in glacial till;
- Upland Soils - shallow in depth to bedrock;
- Glacial Stream Terrace Soils;
- Alluvial Soils;
- Organic Soils;
- Urban land (cut and fill or gravel pits)

These are shown on an enclosed map, (page 7).

Glacial influence: As evidenced by abundant usage of the term "glacial" in the above listing, glaciers have played a very important role in sculpting the land form of Pound Ridge as we know it today. In addition to causing erosive action on and fracturing within the underlying bedrock, the glaciers influenced Pound Ridge by depositing accumulations of sand, gravel, rock and soil. The three soil groups which involve this type of deposition are the upland hardpan soils, the deep upland soils, and the moderately shallow or extremely stony soils.

TOWN OF POUND RIDGE, N.Y.

FREDERICK P. CLARK ASSOCIATES, PLANNING CONSULTANTS, RYE, N.Y.

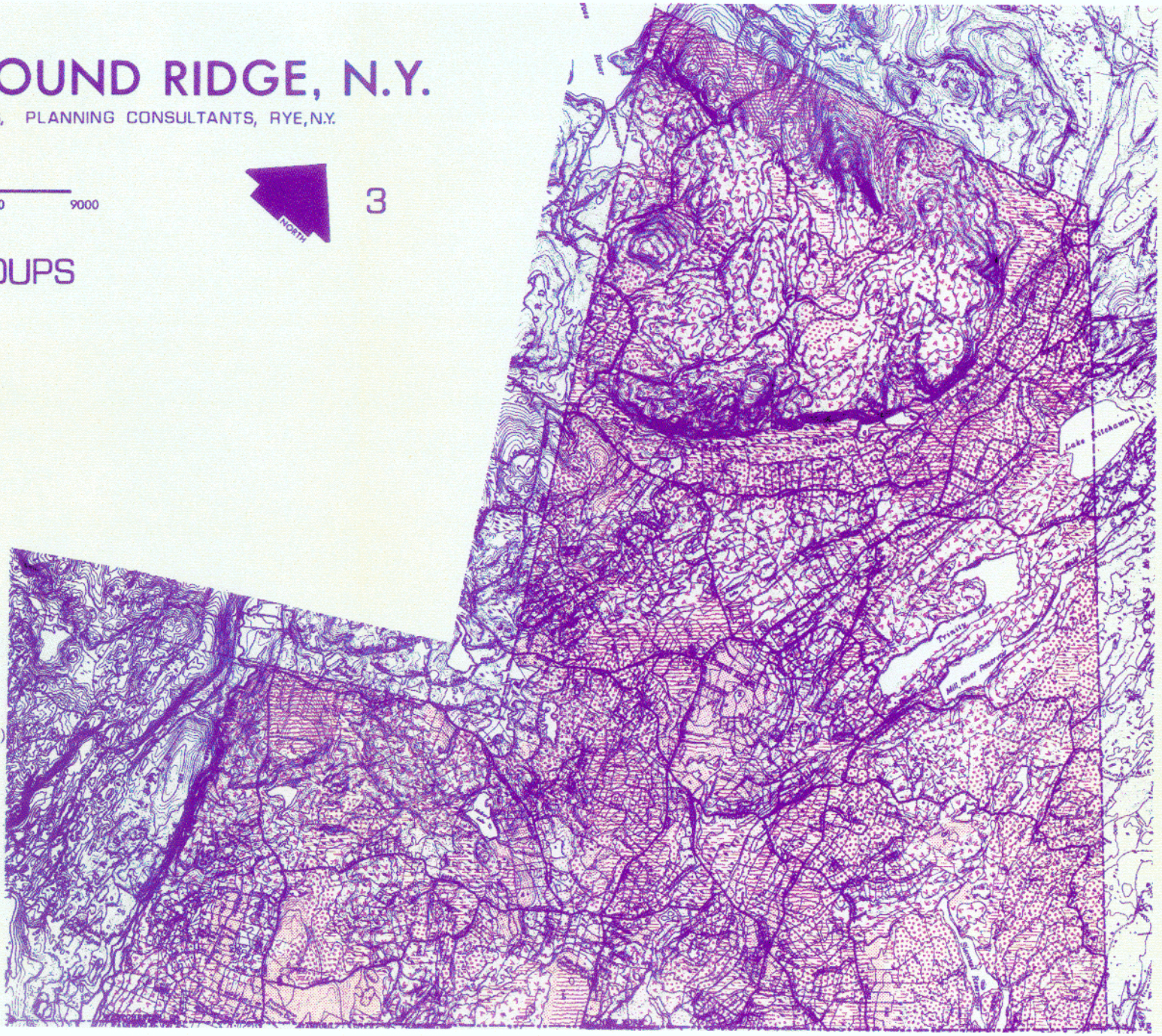
SCALE IN FEET

3000 0 3000 6000 9000

NORTH

3

MAJOR SOIL GROUPS



- Shallow Depth to Bedrock Soils
- Moderately Shallow or Extremely Stony Soils
- Upland Hardpan Soils (Drumlinoid)
- Deep Upland Glacial Till
- Stream Terrace Soils
- Wetlands

The hardpan soils generally are in land forms which are similar to "drumlins" in terms of their shape and how they were formed. Frequently, they are described as "egg-shaped" or "cigar-shaped", but in Pound Ridge typically have been distorted by the jagged underlying rock. These land forms were caused by the existence of a physical impediment in front of the most recent glacier as it advanced. The glacier, unable to move this obstacle, skipped over it, leaving a wake of glacial debris. After the glaciers melted and retreated, the earth deposits remained behind and are apparent today as the hardpan drumlinlike areas. The other upland glacial soils are frequently old drumlins which were overrun and "smashed" by successive glacial advances.

Glacial hardpan soils are found in the following locations:

- the extreme northwest corner of the Town
- the vicinity of the Salem Road-Old Stone Hill Road junction
- Pound Ridge hamlet north of Westchester Avenue
- south of Twin Lakes
- the Horseshoe Hill Road area, and
- underlying the Pinecrest Country Club.

Deep glacial upland soils are located principally in the vicinity of Pheasant Road the Rockrimmon Country Club area, and in Pound Ridge hamlet south of Westchester Avenue. A variation of the upland glacial soils are those which are moderately shallow in depth to bedrock, or extremely stony in character. These are found throughout the Town, but are primarily grouped to the north of Stone Hill Road and overlying the "Hartland Formation" in the Town's southeast corner.

These soil formations have had an extremely important role in shaping the Town's growth. It is noteworthy that the largest single accumulation of glacial till lies in a cluster between Pound Ridge hamlet and Sarles Corners. This grouping is associated with the Manhattan Schist formation previously described in the Bedrock Geology section. It was once an important agricultural area. Today, the hardpan conditions hinder the proper operation of septic field. Partially as a result, this area is, in terms of water quality, one of the Town's most severely stressed locations.

Upland Soils Shallow in Depth to Bedrock: These thin and rocky soils generally are underlain by bedrock within two feet of the surface. Because of the bedrock's jagged profile, however, pockets of comparatively deep soil or wetlands punctuate the steep and rocky topography. These soils, which perhaps most typify Pound Ridge, are generally associated with granite and gneiss bedrock. They are found within the Pound Ridge Reservation, in the Mianus Gorge area, along the ridgeline between the Stone Hill River Valley and Pound Ridge hamlet, and in the vicinity of the Mill River and Siscowit Reservoirs.

North of Trinity Lake and near Lake Kitchawan is a comparatively unusual phenomenon. There, shallow soil is underlain by a limestone-marble (water bearing) formation. For that reason, it provides an extremely fragile setting.

Shallow soils, particularly when associated with wetlands, present the Town's most common severe development limitation. Generally, they occupy rugged, upland areas which were farmed briefly, abandoned, and allowed to revert to woodland cover. Recently, these areas have been subjected to increasing development pressure. Thus, developing planning policies for them will be one of the most important aspects of this planning process.

Stream Terrace Soils: These soils were deposited by glacial streams and may be thought of as prehistoric alluvial soils. They are located in several areas within the Town, generally on gentle slopes overlooking lakes, streams, or wetlands, midway between upland areas and valley bottoms. Major pockets of this soil are found in the Mill River Valley below Pound Ridge hamlet, surrounding Blue Heron Lake and overlooking the Stone Hill River, along Deerfield Road.

Wetlands:* In terms of underlying soil conditions, the Town's wetlands fall into three basic categories. These are organic, alluvial, and upland wetlands. All present very severe development limitations. The first type, organic wetlands, are generally former waterbodies which gradually have eutrophied and filled in. This is the result of a natural succession process. Without intervention by man, all of the existing ponds and lakes in Pound Ridge would gradually become swamps, which in turn, over geologic time, eventually would become dry land. A prominent example is in the area located along the Stone Hill River, at the base of the Pound Ridge Reservation escarpment. Elsewhere, these are found both as large bottomland areas and in upland areas, as small pockets between rock outcrops.

---

* In terms of administering wetlands protection measures, it is important to note that this discussion of wetlands is based upon soils characteristics. Another way of describing wetlands is via vegetation. This latter method has been utilized by the State in its wetlands mapping program.

Alluvial wetlands are essentially flood plain soils located along streams and tend to flood on a fairly regular basis. Upland wetlands are most typically associated with reasonably steep and narrow drainageways in the Town's highland areas. These frequently are stony in character and can be moderately sloping.

D. Summary Overview of Pound Ridge's Topography and Drainage Patterns

Based upon this review of the geologic characteristics of the Town, it is now possible to synthesize these elements in order to gain a perspective on Pound Ridge's underlying structure.

Three chains of rugged uplands, underlain by granite or gneiss, pass through the Town and define its major ridgelines. These also form Pound Ridge's most important drainage divides. The three upland areas are located as follows:

1) The Pound Ridge escarpment, on the Pound Ridge Reservation (a large mass of granite and gneiss).
2) An upland area, one side of which helps define the south wall of the Stone Hill River Valley. The other side passes to the north of Pound Ridge hamlet and extends to the southwest. Just to the south of Blue Heron Lake, it broadens to embrace the Mianus River and form the Mianus Gorge. The ridgeline associated with this upland separates Hudson River drainage from drainage into Long Island Sound. To the south, the upland area drops off into the schist underlain, rolling Mill River Valley.

3) The third upland area, a gneiss and granite formation, surrounds Trinity Lake and the Cross River Reservoir, continuing on to form the (southeast) wall of the Mill River Valley.

Between these rugged upland areas are the gentler valleys, as follows:

1) In the northwestern corner of the Town, lowlands associated with the Cross River Reservoir.
2) The Stone Hill River - Cross River Valley.
3) The Mill River Valley - flowing into Laurel Reservoir.

The southeast corner of the Town, including the Scotts Corners area, is extremely varied.

The basic structure, on a southwest-northeast axis, has been modified by glacial deposits, oriented in a north-south direction. By far the largest such glacial formations are the twin drumlinoid formations underlying Pound Ridge hamlet and the Horseshoe Hill area. These are associated with other glacial soils, including at the foot of upland areas along water-courses, stream terrace soils and wetlands, Other minor drumlinlike areas underly the Pinecrest Country Club, an area south of Twin Lakes, the

Cross River area, and the intersection of Salem Road and Old Stone Hill Road. Deep glacial soils underly the Rockrimmon Country Club area and other scattered locations. A complex of glacial soils, wetlands, and rock outcrop areas is associated with the Scotts Corners area.

Drainage Patterns: The resultant drainage structure is as follows:

1) Runoff from the north of the Reservation upland flows into Wildcat Hollow, Honey Hollow, and similar streams. These flow into either the Cross River or the Cross River Reservoir.
2) Runoff from the south of the Reservation escarpment flows into the Stone Hill River and the Boutonville Swamp area. The south side of the Stone Hill River Valley is formed by another rugged upland area.
3) This upland area forms a spine which sends drainage into the Lake Kitchawan area, defines the Trinity Lake drainage system, the system in and around Pound Ridge Reservation, and drainage from the Mallard Lake-Horseshoe Hill area. Drainage into the Mill River Reservoir is primarily from Lewisboro.
4) The other, northwest side, of this ridgeline defines drainage patterns into Blue Heron Lake and into the Mianus River tributaries.
5) The last major ridgeline forms the southeast wall of the Mill River Valley and defines both the Siscowit drainage area and the two small streams which flow through the Scotts Corners area. Both of these small streams flow into Laurel Reservoir, as does the Mill River.

E. Development Limitations Based on Soils and Slopes

The factors discussed above, composing the basic topographic structure of the Town, produce not only a hilly, rugged land with attractive scenery; they also pose a great many constraints upon the development process. Constraints to development may involve either on-site difficulties, or off-site problems which would be generated as a result of activity in a given locale. These limitations have been analyzed in different ways by the various groups which have been involved in the background studies. However, the basis of the following discussion is a separately submitted Development Limitation Summary Map prepared by Clark Associates.

The map is based upon slope conditions and soil factors, including: erodibility, depth to bedrock, permeability, drainage, stoniness, and the interrelationships between these characteristics. On this basis, the Town was classified according to four categories: slight, moderate, severe, and very severe development limitations. Areas with severe and very severe limitations are shown on the Graphic Environmental Summary (2 sets of maps enclosed in the back pocket). The factors included in each category and location patterns of each of these are shown in Tables 1 and 2 respectively. It is, of course, important to understand that this compilation is based on soils and slopes, and does not at this point explicitly address considerations such as water supply and water quality.

Lands described as possessing very "severe" limitations are generally unsuited for development. Included within this category are wetlands, steep and rocky hillsides, and areas with several combinations of constraints. These generally occur in narrow bands throughout the Town.

Areas with "severe" limitations present major problems when development is attempted. Therefore, unless development proceeds with extreme caution and at low densities on such sites, serious adverse environmental impacts can result. These may occur either directly on the site or elsewhere; perhaps at a downstream location within a drainage basin. This category includes somewhat poorly drained soils, shallow depth to bedrock areas, steep slopes, and combinations of "moderate" constraints. Severe limitations are most frequently associated with the rocky upland areas.

The "moderate" limitations category delineates lands eith environmental constraints which can be overcome if proper precautions are taken. Factors included in this category are slow permeability, extremely stony conditions and/or moderate depth to bedrock; and similar features. Many areas with these limitations are found in mid-slope areas between the true uplands and the valleys. They are also found on the drumlinoid hills.

The areas which possess "slight" limitations present comparatively few constraints to development. They are found in areas with deep glacial deposits and along stream terraces. However, these lands may contain fairly steep slopes or high erodibility on rolling lands. Therefore, even in these areas, proper precautions should be exercised in the development process.

From the map, it is evident that approximately 70% of Pound Ridge has either "severe" or "very severe" development limitations, approximately 20% has "moderate" development limitations, and only 10% has "slight" development limitations.

In some areas of the Town such as the Mianus Gorge, the Pound Ridge Reservation and elsewhere, nature has imposed obvious and extreme limitations for development. However, the evaluation of development suitability is frequently more important in the less extreme cases, where the limitations are not as immediately apparent. In these siutations, the decision as to whether or not to develop is to a greater degree left up to man, and therefore will require more careful thought during the planning process.

TABLE 1

CLASSIFICATION OF DEVELOPMENT LIMITATIONS

SLIGHT

This category includes:

deep, moderately sloping glacial stream and upland soils with few development limitations, but may include areas with highly erodible, moderately well-drained soils.

MODERATE

This category includes those areas which have either:

1. Slow permeability as their only development limitation; or
2. High erodibility with either:
   a. extreme stoniness and depths to bedrock of 4-6 feet, or
   b. slopes 15-20%, or
   c. moderately well-drained conditions; or
3. Depths to bedrock of 2-4 feet with slopes not exceeding 15%.

SEVERE

This category includes those areas which have either:

1. Somewhat poorly drained soils; or
2. High erodibility with either:
   a. extreme stoniness and slow permeability; or
   b. slopes in excess of 20%; or
3. High subsoil erodibility with either:
   a. extreme stoniness, depths to bedrock of 4-6 feet, and

VERY SEVERE

This category includes those areas which have either:

1. Poorly to very poorly drained soils; or
2. High erodibility with extreme stoniness; or
3. High subsoil erodibility with either:
   a. depths to bedrock of 0-2 feet and slopes in excess of 15%; or
   b. slow permeability and slopes in excess of 20%; or
   c. depths to bedrock of 2-4 feet and

TABLE 2

SUMMARY LOCATION OF CLASSIFIED DEVELOPMENT LIMITATIONS

SLIGHT

These areas are primarily distributed in central and southern Pound Ridge. Major areas having slight development limitations are located:

1. East and southeast of the Hamlet of Pound Ridge;
2. East and west of Pheasant Road near Highland Lake;
3. At the Rockrimmon Country Club;
4. At the intersection of Deerfield and Stone Hill Roads; and
5. Along Bedford and Highcliff Roads near Upper Shad Road.

MODERATE

Areas having moderate development limitations are fairly well distributed through Pound Ridge. Major areas include:

1. The region near Salem Road between Old Stone Hill and Boutonville Roads; and
2. The area south of the Hamlet of Pound Ridge between Pound Ridge and Upper Shad Roads.

SEVERE

1. Southeast of the Cross River Reservoir;
2. East of the Mianus Gorge;
3. West of Trinity Lake; and
4. Throughout the Ward Pound Ridge Reservation.

VERY SEVERE

1. Along Mianus Gorge;
2. South of Trinity Lake and the Mill River Reservoir;
3. Along the Stone Hill River;
4. Northeast of Scotts Corners;
5. South and west of Boutonville; and
6. North of Westchester Avenue across from Bayberry Way.

3. VEGETATION

The vegetative pattern which covers the landform of Pound Ridge is an aspect of the environment of which most residents are highly aware, and which they value for aesthetic reasons. Vegetative cover, however, is also important as a component of the ecologic system. It has been extensively studied by CODA in their report on Pound Ridge entitled An Ecologic Evaluation. Herein, a general background focusing upon planning implecations has been provided.

A. Overall Pattern: The following natural plant communities were identified in the CODA study:

1. Old fields
2. Successional woodland
3. Mature woodland
   a. Oak forest
   b. Mixed hardwood forest
   c. Hemlock - mixed hardwood forest
   d. Hemlock forest
4. Coniferous plantation
5. Pond or streamside vegetation
6. Wetland - sedgeland or swamp forest vegetation

Generalized patterns are depicted on the enclosed map, shown on page16 Mature woodland, as shown above, can be classified into oak forest, mixed hardwood forest, hemlock-mixed hardwood forest, and hemlock forest, as well as swamp forest. Red and white oak are associated with upland landscapes and dry rocky areas. More moist "midslopes" are occupied by mixed hardwoods, including sugar maple, beech, hickory, and others. Cool ravines and north facing hillsides provide habitat for hemlocks. Swamp forest is dominated by red maple, since this species can survive in saturated soil. If the vegetative cover were left undisturbed by man, fire, or other factors, mature forest would eventually cover virtually the entire Town. Even at present, however, mature woodland occupies a significant proportion of Pound Ridge.

However, due to the impact of fire, disease, wind, and most importantly, man, most of the woodlands have been subjected to disturbances. Most of Pound Ridge, at one time, had been cleared for agricultural purposes. Former cropland areas which are beginning to revert to woodland may be described as "old fields." Later, they become immature forest and are characterized by trees such as birch, locust, black cherry, sugar maple, and dogwood. Finally, they become mature woodlands, which are a stable vegetative type until a disturbance occurs.

In addition, many areas of Pound Ridge have a vegetative cover that has been established by man. These include residential areas, golf courses, and coniferous plantations. This last type, while it may appear to be a permanent feature on the landscape, most likely is not. If left untended, these coniferous plantations, frequently made up of spruce or scotch pine, would undergo a variation of the succession process and eventually be replaced by mature forest indigenous to Pound Ridge.

TOWN OF POUND RIDGE, N.Y.

FREDERICK P. CLARK ASSOCIATES, PLANNING CONSULTANTS, RYE, N.Y.

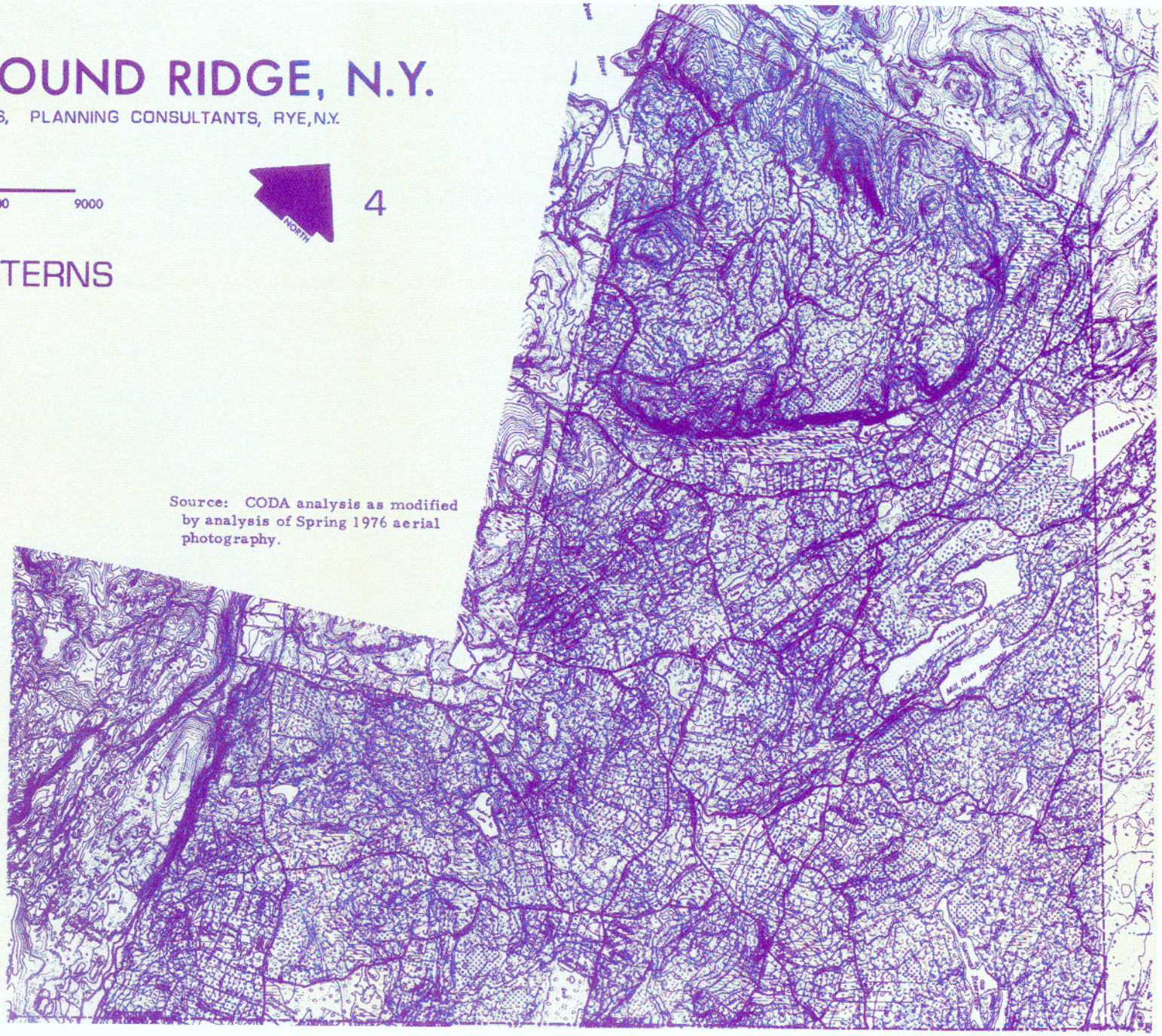
SCALE IN FEET

3000 0 3000 6000 9000

NORTH

4

VEGETATION PATTERNS



Source: CODA analysis as modified by analysis of Spring 1976 aerial photography.

- Mixed Deciduous Forest-Mature
- Oak Forest
- Coniferous Forest
- Deciduous Forest-Immature
- Open Land including Old Fields and Lawns
- Wetlands
- Urban Land

Note: Oak forests not identified in most of Pound Ridge Reservation

B. Impact of Human Settlement: In order to understand the present pattern of vegetative cover, it is necessary to view it in the context of man and his settlement patterns. Settlement began in Pound Ridge as early as the beginning of the 1700's. At that time, farmers and other settlers began clearing the land to build houses and to provide open fields for agricultural purposes. During the 1800's, the population grew to approximately 1,500 people. Important locational criteria were the viability of farmland and strategic locations within the local road network, providing for a simple form of rural commerce. Settlement thus was most intense within the comparatively gentle topography associated with the Mill River and Stone Hill River Valleys, and along Long Ridge Road. Marginal rocky areas in the uplands were also cleared for farming, but were abandoned at an early stage. In time, most of the marginal as well as much of the better farmland was abandoned. By 1920, the population had dropped to one-third its earlier size, or approximately 520.

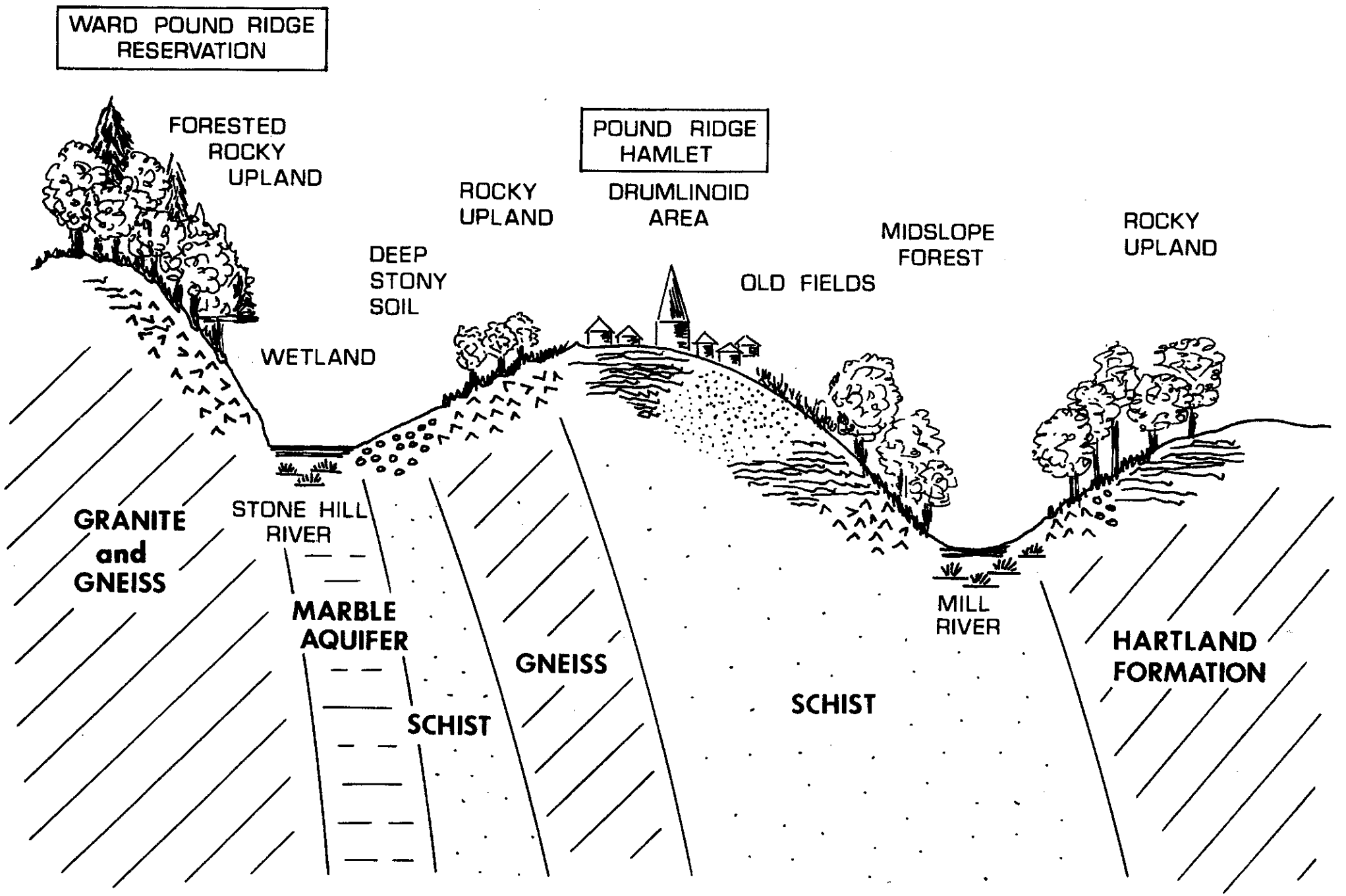
Because of this selective abandoment process, farm fields began their reversion to woodland at different times. The rocky areas first underwent the transition from cropland to old fields, to immature woodland, and finally to mature forest. The result, today, is that the Town's rugged upland areas are substantially covered by second growth woodland. In contrast, other areas, which were better suited to farming, most prominently the Stone Hill and Mill River Valleys, and the Long Ridge Road area, still have substantial acreage in fields or brushlands.

Since the early 1920's, the population has reversed its downward trend, with the 1970 Federal Census figures showing a population of 3,792 and the Town's current population estimated at 4,500. However, latter day settlers, unlike their historic counterparts, have not cleared the land to grow food, but rather are primarily commuters attracted by the rural setting and the abundance of natural beauty. Important locational criteria for this group include regional accessibility, scenery, privacy, and rural ambiance. For this reason, the land use pattern associated with newer housing is much more scattered than the valley oriented pattern associated with the original agricultural group.

The commuting group, which now dominates the Town, tends both to disperse throughout the Town and to encourage the regrowth of mature woodland. Because of its land requirements, and its tendencies to disperse and to favor scenic locations as well as because of land values, and present zoning, this group has not been strongly deterred from settling on difficult, fragile lands, which formerly were left comparatively untouched.

The locational tendencies of each of these groups thus have shaped both the land use pattern in the Town today as well as its vegetation pattern.

POUND RIDGE ILLUSTRATIVE CROSS SECTION



C. Applications: The following objectives concerning vegetative cover merit attention in the planning process:

1) Preserving existing exceptional woodlands, and the general pattern of vegetation.
2) Taking advantage of the ongoing succession process in order to most properly plan future woodlands and wildlife habitat areas.
3) Utilizing woodlands in managing microclimates.
4) Protecting the vital role of vegetation, most particularly woodlands, in the Town's overall hydrologic system.

1. Preserving Existing Vegetation

The woodlands of Pound Ridge, punctuated by occasional open areas, play a major role in shaping the character of the Town as it is known today. Existing areas with exceptional forest as well as special natural features are shown on the Graphic Environmental Summary Map. Many of these designated natural features contain distinctive vegetation, not all of which is mature forest. It is important to recognize, therefore, that those areas which are not now covered by climax vegetation will continue to evolve until they reach that point. Therefore, unless subjected to management, they may eventually lose the basis upon which they were identified for preservation. Therefore, decisions regarding management or preservation of such areas in their present state should be addressed as part of the planning process.

2. Managing Vegetation on the Basis of Suitability

In order to relate the planning process in Pound Ridge to the dynamics of the environmental succession process, it is necessary to understand latent potentials and inherent suitabilities for habitat in the Pound Ridge landscape. Inventories of existing conditions, including vegetation studies and the like, are extremely worthwhile and play an important role in any planning process. However, they are but one aspect of an ecologically oriented portrayal of conditions. Another such aspect is suitability analysis. Suitability analysis makes it possible not only to preserve existing vegetative cover but to plan for future, optimal patterns for woodland and wildlife habitat.

The best way to deal with suitability and potential is through understanding the factors from which they are derived. One important, constant, and measurable factor is soil. For this reason, a series of soil suitability maps have been produced and separately submitted. These maps include the Woodland suitability, Wildlife Habitat Suitability, and Natural Habitat Summary Maps. (The Natural Habitat Summary Map incorporates, in part, existing vegetation data as analyzed by CODA.) Thus, all three maps are suitability maps (as is the Development Limitations Map discussed earlier), in that they measure the degree to which a parcel of land is suited, or for that matter ill-suited, for a particular purpose.

Detailed discussion of these maps is presented in a special report by Frederick P. Clark Associates, dated October 27, 1977. Areas identified as having excellent suitability either for existing or potential habitats

have been shown on the Graphic Environmental Summary Maps. Therefore, within this section, comment is restricted to a summary and to analysis of implications.

Woodland Suitability and Woodland Wildlife Habitat Suitability: Woodland Suitability measures the comparative ultimate expected size (height) of a tree which could be expected in a given location under natural circumstances. It is influenced by soil characteristics, most particularly soil moisture and by slope orientation - southern and eastern orientation being most desirable. The greater the expected ultimate size, the more the area is deemed to be suited for healthy woodland growth.

Associated with woodlands is woodland wildlife habitat. It is interesting and noteworthy that suitability for woodland wildlife habitat is not the same as woodland suitability. Soil characteristics which promote open woodland with abundant shrubs and vines can produce better woodland wildlife habitat than soil conditions which promote rapid tree growth and "canopy closure" (e.g. little sunlight reaching the forest floor).

One of the conclusions from this type of analysis that is surprising for many is that the rocky, shallow depth to bedrock areas, which are frequently viewed as being prime candidates for open space preservation do not rank highly as potential natural habitats. Such areas are generally earmarked for open space preservation because of existing vegetation, fragile conditions, poor suitability for human development and because of rocky and often spectacular terrain. However, these same conditions limit their potential for development of tall, lush forest land or verdant wildlife habitat.

Futhermore, the potential, or suitability of a piece of land for a specific use is many times not what actually exists. For example, parts of the Hamlet of Pound Ridge have very good soil suitability for woodland although no outstanding forest actually exists. This is because soils which were best suited for woodland also happened to be well suited for cropland. Through trial and error, early farmers in Pound Ridge realized this and used the land in and around the Hamlet for farming. This land was among the last to begin the natural reversion to woodland.

Only occasionally does outstanding forest land coincide with excellent woodland suitability. This is probably because those areas with excellent soil have not yet reverted to mature woodland. Thus, in thirty years, the outstanding forest pattern may be very different if woodland continues to grow in the many areas which possess excellent inherent suitability for woodland, but have begun to return to a forested condition comparatively recently.

Obviously, one should not conclude from this analysis that the best course of action would be to concentrate development in Pound Ridge on rocky, difficult land, while leaving the deep soils for the natural habitat to which they may be well-suited. Because of their fragile nature, the steep and rocky upland areas are generally best maintained in a wooded condition. The purpose herein, rather has been to provide information which may be useful in environmental management in general as well as in occasional preservation

of ideal habitats even though they also may be well-suited for human development.

Openland Habitat Suitability: Also of concern is the potential role of openland in Pound Ridge. Frequently, it is desirable to encourage a diversity of habitat types, including openland wildlife habitat in addition to woodland wildlife habitat. One of the most important elements in developing wildlife habitat is promotion of "edges" - zones of transition between habitat types (such as between openland and woodland). Important "edges," clearly, lie between woodlands and openlands. Unless managed in some way, the Town's fields and brushlands will all one day revert to woodland. Whether, where, and how certain open areas should remain in their present condition is an important question which should be considered during the planning process.

Wetland Habitat Suitability: Of particular significance is suitability for wetland wildlife habitat. Among the reasons for carefully regulating or prohibiting development in wetlands is their role as habitat for wildlife. As indicated on the separately submitted maps, some wetlands soils have better inherent suitability in this respect than others. This circumstance is one of the factors which should be considered when making decisions concerning wetland management.

Suitability Analysis Conclusions: The above information is perhaps best used as a complementing factor within the overall planning process. One of the important planning factors mentioned previously with respect to habitats is the "edge" concept. Edges, or transition zones between habitats, are a major consideration in managing wildlife habitats. Creating a continuous open space belt containing many edges and consisting of a combination of fragile upland areas, wetlands, woodlands on deep soils, and occasional deep soil open meadows or brushlands, could be one open space planning strategy worthy of pursuit.

3. The Role of Woodlands in Regulating Microclimates

While broad climate patterns shape basic weather and atmospheric conditions, microclimates can play an important role in modifying winds, temperature extremes, and air quality. Microclimates may involve an entire valley, or a very small zone. Woodlands play a role in the following ways:

- Buffering and breaking up wind patterns.
- Serving as a natural air conditioning system in the summer months via moisture exchange with the air (evapotranspiration).
- As a source of oxygen.

These factors merit recognition for Townwide planning, but are probably most relevant on a site planning basis.

4. The Role of Woodlands within the Hydrologic System

The final, and most important reason for concern about the vegetative pattern in the Town is its role in relation to the hydrologic cycle. This cycle is the most dynamic element of the ecosystem, and is important to Town residents as a water source, a waste disposal system, and as a major

their support system roles. Once a critical point is reached, however, significant environmental degradation occurs within a comparatively short time period.

Recognizing this circumstance, and realizing that the best way of measuring the amount of stress being incurred by a natural ecosystem is via measuring water quality, the Town decided to undertake the very extensive water quality study completed in 1976. This is described in the next section.

4. HYDROLOGY AND WATER QUALITY

A major element in this long term planning program has been recognition of systematic relationships within the natural environment. For Town planning purposes, most of these effects can be related to the hydrologic system and thus to the Town's network of drainage basins. For this reason, an effective way to measure overall environmental condition is to analyze water quality in each of the Town's drainage areas. Recognizing this, Pound Ridge commissioned a water quality assessment which took place between 1974 and 1976, dealing with both surface water and well water. The results of this study are described in detail in the Water and Land Resource Study.

A. Methodology

The results of the water quality study have been reported both as actual test results, and via a "descriptive evaluator", which consolidates findings into "stress" ratings, thus providing a convenient overview of water quality conditions.

This classification system contains the following elements;

Not Stressed (NS)	- No signs of environmental problems.
Slightly Stessed (Sl S)	- Beginning signs of environmental stress. Minimal amelioration probably required.
Moderately Stressed (MS)	- Signs of environmental stress, with some deterioration, fragile, and approaching a deteriorated condition. Caution should be exercised in any undertakings that will further adversely affect the system.
Severely Stressed (SS)	- Obvious signs of environmental deterioration. Any action impacting on the area should be carefully considered with respect to additional negative perturbations that might affect the entire system. Remedial action should be initiated.

These ratings were based on the following tests; carried out at five different times over a fifteen month period:

1) Dissolved Oxygen - % saturation
2) pH
3) Ammonia nitrogen
4) Inorganic nitrogen
5) Phosphate
6) Depth
7) Visibility
8) Total coliform bacteria

B. Findings

General findings include the following:

1) Most of Pound Ridge's ponds and lakes are shallow, and thus have a high potential for over enrichment, sedimentation damage, and eutrophication.
2) A substantial amount of the water quality stress is directly related to the shallowness of the Town's ponds, and thus, to the inevitable process of succession. This involves the gradual, inevitable, process of transition from ponds to swamps.
3) Human induced stress stems at least as much from lawn fertilization as from septic field failure. Septic failure related stress is significantly correlated with hardpan soils in and around Pound Ridge hamlet.
4) The term "phosphorous limiting" should be an important one in the lexicon of planning terminology for Pound Ridge. This means that phosphorous is the critical missing chemical element in many water bodies, which thus prevents severe algae blooms. These, which entail a sudden, temporary proliferation of algae, greatly accelerate the eutrophication process.
5) Quantity of water supply was found to be consistent with the proposed "ultimate" population levels now planned for the Town. Planning for preserving water quality, however, remains an important issue.

In utilizing the results of this study, establishing an appropriate context for it is very important. Its results show what has already happened with water quality, in significant part due to human actions. Areas close to "tipping points" have been identified, where further development, improperly carried out, could lead to significant environmental degradation. All of this has been measured, however, with respect to development which has already taken place. While 70% of the Town's land has severe to very severe development limitations, a large portion of the development which has taken place so far has been in lands with "moderate" development constraints. In contrast, of necessity, most future development will take place on areas with severe development limitations. Thus, unless extreme care is taken, the likelihood of serious erosion and septic failure following development is even higher than with the development which already has occurred.

Principal applications of this work, then, are as follows:

1) As an environmental baseline, which should be kept updated through a regular monitoring program.
2) Identifying areas which should receive remedial attention.
3) Identifying areas which are close to "tipping points", i.e., where serious difficulties are likely to arise unless special precautions are taken.
4) Demonstrating the environmental impacts of development which has occurred already, to be used in predicting impacts of future development.

C. Location of Stressed Areas

The two extensive "severely stressed" areas are both located in the Mill River Basin. One is in and around Pound Ridge Hamlet. It appears to be associated with septic failures resulting from the hardpan soils upon which a large portion of the Hamlet has been built.

The other is associated both with the Mallard Lake drainage system and with drainage from Horseshoe Hill, another hardpan soil area. Direct evidence does not indicate that septic failure in the Horseshoe Hill area is responsible for this severe stress. However, it is possible that this hardpan area is indirectly responsible for the problem, via effluent being trapped by the hardpan layers and travelling some distance from its source. The fluctuating water quality parameters in this area are indicative of local inputs of domestic waste. Downstream from these severely stressed areas is a large moderately stressed area.

In the Mallard Lake area, the problems identified are related to enriched sediments. There, the "phosphorous limiting" factor is of extreme importance. Thus, care should be taken to avoid any further introduction of this chemical into the watershed.

Elsewhere, small areas with severe stress are associated with both malfunctioning septic fields and enriched ponds. Most often, however, the problem involves pond enrichment.

D. Well Data

In addition, well data were studied. Generally, wells were found to be in good condition. The most common problem identified was high levels of iron or manganese (an aesthetic problem). High turbidity, (suspended solids) was encountered

SUMMARY OF SEVERELY STRESSED AREAS

Location	Basin	Comments
Pound Ridge Hamlet	Mill River	Frequent septic failure due in part to hardpan soils (slow permeability). Also due to shallow, "enriched" ponds.
Stream west of Horseshoe Hill (6-D-1)	Mill River	At least partially due to septic failure; perhaps indirectly due to Horseshoe Hill hardpan areas.
Mallard Lake drainage area	Mill River	Potentially serious problems due to very enriched bottom sediments. Great care should be taken to avoid any introduction of phosphates into Mallard Lake.
Highland Lake Area	Mianus River Tributary	Problems due to cumulative enrichment and bottom sediments, not due to sanitary wastes. Special care should be taken with lawn fertilizers.
Lake to the east of Long Ridge Road	Mianus River	Problems due to shallow pond and enriched bottom sediments - conditions are severely deteriorated.
Ponds to west of Long Ridge Road	Mianus River Tributary	Enriched bottom sediments. These are due to the small size of ponds and their deteriorated condition. Any "immediate impact from any construction might be sufficient to create serious environmental problems in the system."
Upper Shad Road - narrow band	East Branch, Mianus River	Eutrophic ponds, phosphorous limiting, evidence, at one point, of septic pollution.
Fancher Road-Trinity Pass	Scotts Corners area, Laurel Reservoir	Combination of enriched bottom sediments and organic wastes - possibly due to septic failure or to wastes from wild fowl.
Stone Hill Road	Stone Hill River	Eutrophied lake, phosphorous limiting, evidence, at one point, of septic pollution.
Hoyt Road-Pound Ridge Road	Blue Heron Lake	Phosphorous limiting, evidence of septic failure.

SUMMARY OF MODERATELY STRESSED AREAS

Location	Basin	Comments
Siscowit Road	Siscowit Reservoir	High fecal coliform counts, should be carefully monitored.
Lake Kitchawan Area	Cross River	High potential for eutrophication.
Scotts Corners Area	Laurel Reservoir	Not due to pollutants.
Sarles Corners Area	Mill River	Downstream from severely stressed area.
Mill River Reservoir	Mill River	Phosphorous limiting, however, little reason for concern.
Pond south of Pound Ridge Hamlet	Mill River	Organic input, phosphorous limiting.
Sarles Corners/ Horseshoe Hill	Mill River	Influenced by upland areas
West Lane	Mill River	Sanitary wastes.
Mystery Lake	Mill River	Sanitary wastes.
Area south of Pine Brook Road	Mianus River/ Twin Lakes	Shallow, enriched ponds phosphorous limiting.
Mianus River Tributaries	Mianus River	Sanitary wastes entering stream.
Pond off Stone Hill Road	Stone Hill River	Phosphorous limiting pond.

in several instances. This also is primarily an aesthetic problem, but has some health implications and was therefore recommended for further study. One well had somewhat high nitrate levels, posing a health problem for infants. This, however, was apparently not related to human pollution. Dr. Tony Dominski, in a PRUP sponsored analysis of the EAA study has noted that high chloride levels (usually associated with sodium) were evidenced in a number of cases. This is of some significance to people with heart related dietary restrictions.

E. Conclusions of Research

The EAA report notes that "Pound Ridge is principally a Town of small streams and shallow ponds that serve as headwaters for much of the region. Generally, the Town does not have any areas showing severe water pollution, although there are some areas that are severely stressed." Analysis of the EAA report indicates the additional presence of very severe, and severe development limitations, as well as septic field limitations, within some areas that are at the present time only moderately stressed. This is of particular significance in terms of preventive planning.

5. SYNTHESIS

The preceding has been a summary analysis of the environmental data base which has been prepared for Pound Ridge. It is necessary, however, to relate the conclusions of this study to town planning, with special emphasis on relationships both within the natural environmental system and to the human activities system.

The principal tool for providing documentation of the interrelationships between these various factors is the Graphic Environmental Summary contained in the back pocket of this report. It consists of two small maps and one large composite. Each map shows the existing pattern of development as well as the Townwide drainage system. The first small map, in which red is the predominant color, shows major environmental development constraints (negative factors) in relation to development and drainage patterns. The second, in which green predominates, shows "positive" environmental features, also as related to development and drainage patterns. The large map is a composite of the information on the first two.

A. Major Environmental Development Constraints

This map shows the results of the analysis of development limitations, as discussed on pages 11 and 12 of this report. It also includes the findings of the EAA water quality study, regarding "stress".

Categories have been grouped as follows:
(Locations are discussed in tabular form in succeeding pages.)

Most Severe Development Limitations -
These are areas with severe or very severe development limitations which also have been found to be severely stressed in terms of water quality. Areas in this category possess characteristics which make development extremely undesirable because of the potential for causing serious on-site or off-site problems.

Very Severe Development Limitations -
These areas, identified on the basis of soil and slope considerations, include wetlands and certain very fragile steep slope areas. Development in these areas is also nearly infeasible, and would be likely to produce adverse environmental effects.

Severely Stressed Areas -

These are areas which have been identified in the Town water quality study as severely stressed. They are also associated with moderate or slight development limitations. Hardpan soils are a frequent cause, especially in the Pound Ridge Hamlet area.

Development in these areas is possible, but only if it proceeds with extreme caution and is carefully considered in terms of the likelihood of adverse environmental effects. Great care needs to be taken to protect streams, wetlands, and water bodies, and to prevent erosion on slopes. In addition, where pertinent, individual cases of septic failure should be identified and corrected.

Severe Development Limitations -

These areas, identified on the basis of soils and slopes, present obstacles for development which can be overcome only with considerable difficulty. Many of these are located in rocky uplands. Stress has been classified as slight or moderate. However, because of their fragile condition, improper development could easily convert them to severely stressed areas. Thus, of particular concern are moderately stressed lands within this category.

Much of the land remaining for development is classified within this category.

Moderately Stressed Areas -

This category, although not truly a severe development limitation, has been shown in order to illustrate a potentially serious condition. Included are areas identified in the water quality study as moderately stressed, which have either slight or moderate development limitations. Frequently, slow permeability or stoniness combined with high erodibility constitute the major development limitations. Special care with regard to stream and wetland setbacks would be advisable in such areas, as well as in the areas identified in the categories above.

LOCATION OF AREAS WITH MAJOR CONSTRAINTS FOR DEVELOPMENT

Most Severe Development Limitations

1. In the region of Sunset Lane;
2. northeast of Long Ridge Road between Upper Shad and Pine Brook Roads;
3. to the west and northeast of Mallard Lake;
4. at the Hamlet of Pound Ridge;
5. northwest of the Hamlet of Pound Ridge;
6. near the junction of Trinity Pass and Fancher Road; and
7. near the junction of Deerfield and Stone Hill Roads.

Very Severe Development Limitations

1. In a narrow band extending southerly from Lake Kitchawan to Trinity Pass;
2. northeast of Scotts Corners;
3. between the Rockrimmon and Pinecrest Country Clubs; and
4. southeast of Mallard Lake.

Other areas are distributed throughout Pound Ridge.

Severely Stressed Areas

1. At Pheasant and Long Ridge Roads between London Road and Lower Shad Road;
2. northeast and southwest of Long Ridge Road between Fox Hill and Brook Roads;
3. northeast and south of Mallard Lake;
4. around the Hamlet of Pound Ridge;
5. west of the Hamlet of Pound Ridge;
6. around the junction of Trinity Pass and Fancher Road; and
7. near the junction of Deerfield and Stone Hill Roads.

Severe Development Limitations

1. Southeast of Trinity Lake and the Mill River Reservoir;
2. north, northwest, and northeast of the Hamlet of Pound Ridge;
3. east of the Mianus Gorge; and
4. north of the Rockrimmon Country Club.

Moderately Stressed Areas

1. In a broad band extending from Pinecrest Country Club to the Hamlet of Pound Ridge;
2. north of Upper Shad Road;
3. in and around Scotts Corners;
4. east of the Siscowit Reservoir; and
5. surrounding Lake Kitchawan.

B. Relationship of Major Development Constraints to Drainage and Land Use Patterns

Having summarized the locations of severely stressed areas and areas with development limitations, it is important to relate these conclusions to their distribution in the various drainage basins as well as to existing land use patterns. To accomplish this purpose, a schematic map has been enclosed, entitled "Environmental Constraints and Land In Use by Drainage Basin." It is found on page 34. It illustrates the following:

1) The relative size of each drainage basin.

2) The extent to which land, under existing zoning controls, is already committed to development.

3) Undeveloped land in terms of its suitability for development, as related to soil/slope considerations and to water quality. This has been organized according to the categories discussed previously.

The information has been shown in map form in order to graphically illustrate the relationships of the individual drainage basins to each other, and to the 'human activity systems', including roads and settlement patterns.

Relative size is an important consideration, as related to development limitations and to existing stress. Because natural systems, to an extent, have a self-stabilizing capacity, the larger the basin area in relation to the disturbance, the greater is the possibility for a natural system to adjust itself to changed circumstances. Conversely, small fragile basins are much more easily thrown out of balance. This is evident in the small basins along the Mianus River.

The extent to which the basin has already been developed is also of considerable significance. In a basin with a high proportion of committed land, changed land use policies would have comparatively little significance whereas remedial policies to correct existing problems might be very important. On the other hand, in basins which are comparatively undeveloped, considerable impact could result from changes in land use policy.

Finally, the extent and character of development limitations on uncommitted lands is of great importance in determining the manner in which these areas should be utilized, managed, or preserved. Specific discussion of this will be presented in a subsequent report on "Alternative Policies".

TOWN OF POUND RIDGE, N.Y.

FREDERICK P. CLARK ASSOCIATES, PLANNING CONSULTANTS, RYE, N.Y.

SCALE IN FEET

3000 0 3000 6000 9000

NORTH

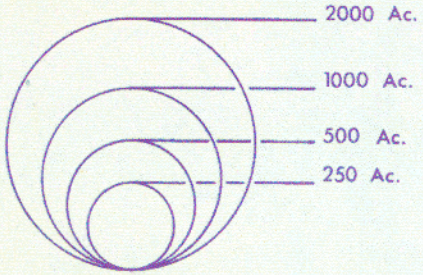
5

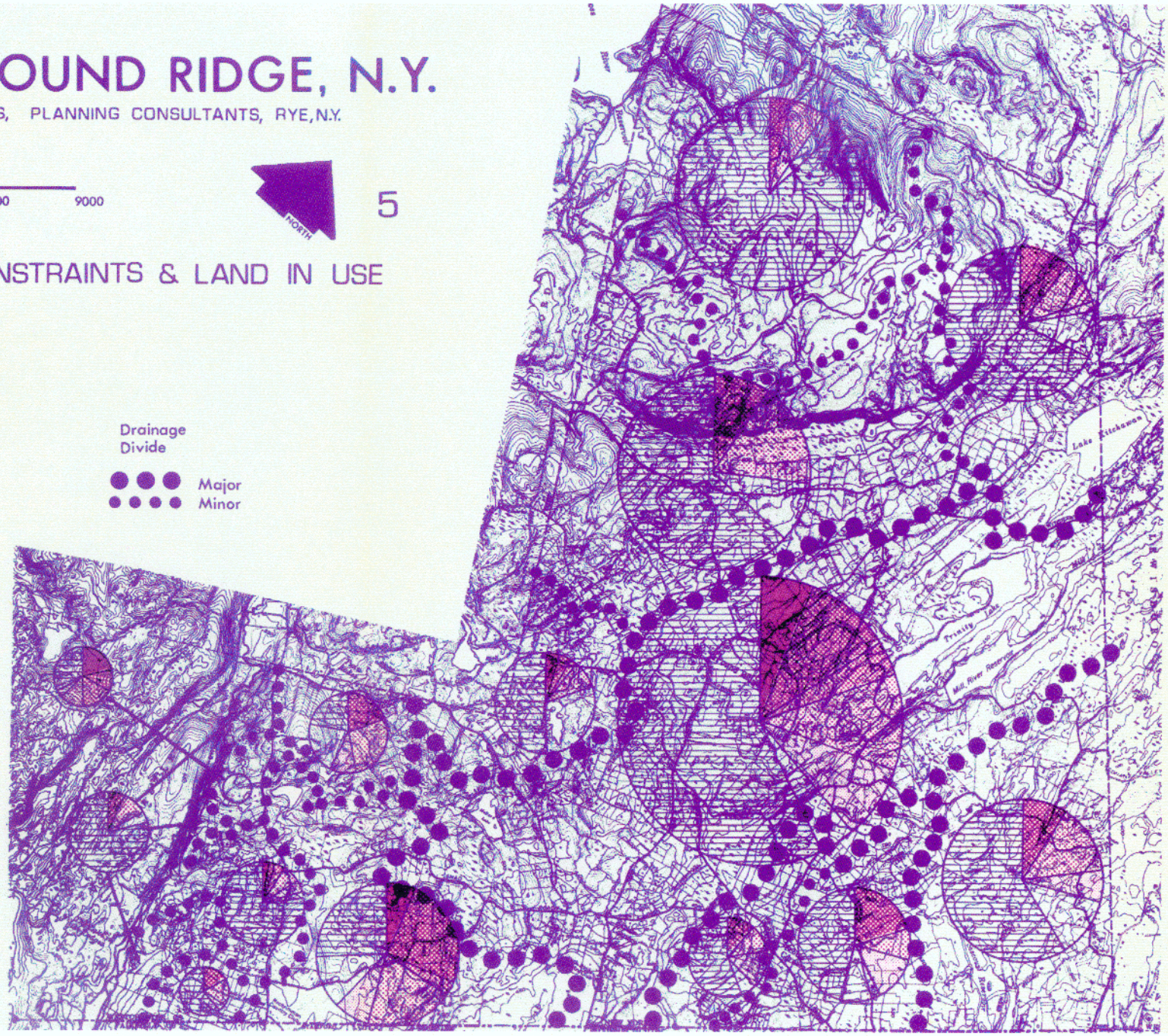
ENVIRONMENTAL CONSTRAINTS & LAND IN USE BY DRAINAGE BASIN

- Most Severe Development Limitations
- Very Severe Development Limitations
- Severely Stressed Areas
- Severe Development Limitations
- Moderately Stressed Areas
- Other Undeveloped Land
- Land in Use: Developed Land and Preserved Open Space

Drainage Divide

- Major
- Minor





ENVIRONMENTAL CONSTRAINTS AND LAND IN USE

UNDEVELOPED LAND (NOT PRESENTLY IN USE OR COMMITTED TO OPEN SPACE)

Basin	Total Area	Land in Use		Undeveloped Area		Most Severe Dev. Limitations			Very Severe Dev. Limitations			Severely Stressed Areas			Severe Dev. Limitations			Moderately Stressed Areas			Other Undeveloped Land		
		Acreage	Percent	Acreage	Percent	Acreage	% of Total	% Undev.	Acreage	% of Total	% Undev.	Acreage	% of Total	% Undev.	Acreage	% of Total	% Undev.	Acreage	% of Total	% Undev.	Acreage	% of Total	% of Undev.
Cross River-Pound Ridge Reservation																							
R-3A																							
Total (All R-3A):	1930.9	1681.3	87%	249.6	13%	--	--	--	83.4	3	25	--	--	--	119.6	6	48	--	--	--	66.8	3	27
Cross River-Lake Kitchawan																							
R-3A	762.3	549.4	72%	212.9	28%	--	--	--	84.5	11	40	--	--	--	68.0	9	32	21.9	3	10	38.5	5	18
R-2A	462.6	277.8	60%	184.8	40%	--	--	--	54.4	12	29	--	--	--	40.6	9	22	--	--	--	89.8	19	49
Total:	1224.9	827.7	68%	397.7	32%	--	--	--	138.9	11	35	--	--	--	108.6	9	27	21.9	2	6	128.3	10	32
Stone Hill River																							
R-3A	2100.9	1324.8	63%	776.1	37%	8.5	X	1	200.8	10	26	7.1	X	1	360.1	17	46	--	--	--	199.6	10	26
R-2A	138.9	76.2	55%	62.7	45%	1.8	1	3	10.3	7	16	--	--	--	19.7	14	31	--	--	--	30.9	22	49
Total:	2239.8	1401.0	63%	838.8	37%	10.3	X	1	211.1	9	25	7.1	X	1	379.8	17	45	--	--	--	230.5	10	27
Mill River																							
R-3A	2772.7	1510.3	54%	1262.4	46%	213.5	8	17	283.2	10	22	142.2	5	11	311.0	11	25	203.7	7	16	108.8	4	9
R-2A	1436.2	903.8	63%	532.4	37%	30.7	2	6	131.7	9	25	24.3	2	5	148.1	10	28	143.0	10	27	54.6	4	10
Total:	4208.9	2414.1	57%	1794.8	43%	244.2	6	14	414.9	10	23	166.5	4	9	459.1	11	26	346.7	8	19	163.4	4	9
Blue Heron Lake																							
R-3A	372.0	169.9	46%	202.1	54%	10.5	3	5	16.0	4	8	7.7	2	4	39.5	11	20	--	--	--	128.4	35	64
R-2A	149.2	95.2	64%	54.0	36%	11.4	8	21	6.0	4	11	2.8	2	5	6.8	5	13	--	--	--	27.0	18	50
Total:	521.2	265.1	51%	256.1	49%	21.9	4	9	22.0	4	9	10.5	2	4	46.3	9	18	--	--	--	155.4	30	61
Twin Lakes																							
R-3A																							
Total (All R-3A):	344.4	68.3	20%	266.1	80%	4.1	1	2	66.1	19	25	4.6	1	2	89.1	26	33	32.1	9	12	70.1	20	26
Mianus River Tributaries																							
Conn. 4-1-F																							
R-3A	51.7	16.6	32%	35.1	68%	10.8	21	31	6.0	12	17	8.7	17	25	6.7	13	19	2.1	4	6	.8	2	2
Conn. 4-1-D																							
R-3A	73.5	28.0	38%	45.5	62%	6.9	9	15	6.9	9	15	8.0	11	18	5.1	7	11	18.6	25	41	--	--	--
R-2A	275.5	235.5	85%	40.0	15%	5.3	2	13	.9	X	2	5.1	2	13	20.0	7	50	--	--	--	8.7	3	22
Conn. 4-1-C																							
R-2A	138.9	84.3	61%	54.6	39%	--	--	--	23.2	17	42	--	--	--	25.3	18	46	--	--	--	6.1	4	11
Total:	539.6	364.4	68%	175.2	32%	23.0	4	13	37.0	7	21	21.8	4	12	57.1	11	33	20.7	4	12	15.6	3	9
Mianus River Gorge																							
R-3A	145.1	70.9	49%	74.2	51%	3.9	3	5	17.9	12	24	--	--	--	40.4	28	54	.2	X	X	11.8	8	16
R-2A	176.8	163.2	92%	13.6	8%	--	--	--	3.7	2	27	--	--	--	9.9	6	73	--	--	--	--	--	--
Total:	321.9	234.1	73%	87.8	27%	3.9	1	4	21.6	7	25	--	--	--	50.3	16	57	.2	X	X	11.8	4	16
East Branch, Mianus River																							
Total (All R-3A):	1081.4	277.9	26%	803.5	74%	68.0	6	8	267.5	25	33	33.3	3	4	216.3	20	27	119.7	11	15	98.7	9	12
Scotts Corners-Laurel Reservoir																							
Conn. 7																							
R-3A	37.9	26.6	70%	11.3	30%	4.7	12	42	.5	1	4	2.9	8	26	--	--	--	--	--	--	3.2	8	28
R-2A	177.9	88.4	50%	89.5	50%	.9	1	1	18.6	10	26	.9	1	1	12.4	7	14	44.3	25	49	12.4	7	14
R-1A	110.2	56.0	51%	54.2	49%	--	--	--	15.8	14	29	--	--	--	26.2	24	48	7.3	7	13	4.9	4	9
PB-A	14.9	10.3	69%	4.6	31%	--	--	--	2.3	15	50	--	--	--	--	--	--	.9	6	20	1.4	9	30
Conn. 8																							
R-3A	254.9	78.5	31%	176.4	69%	--	--	--	65.4	26	37	--	--	--	37.9	15	21	36.5	14	21	36.6	14	21
R-2A	300.8	173.6	58%	127.2	42%	--	--	--	50.5	17	40	--	--	--	20.4	7	16	28.0	9	22	28.3	9	22
R-1A	64.3	32.4	50%	31.9	50%	--	--	--	15.8	25	50	--	--	--	--	--	--	16.1	25	50	--	--	--
PB-B	25.3	9.9	39%	15.4	61%	--	--	--	1.4	6	9	--	--	--	--	--	--	4.4	17	29	9.6	38	62
PB-C	9.2	8.0	87%	1.2	13%	--	--	--	--	--	--	--	--	--	--	--	--	.9	10	75	.3	3	25
Total:	995.4	483.7	49%	511.7	51%	5.6	1	1	170.3	17	33	3.8	X	1	96.9	10	19	138.4	14	27	96.7	10	19
Siscowit Reservoir																							
R-3A	1336.3	786.9	59%	549.4	41%	--	--	--	120.1	9	22	--	--	--	191.7	14	35	83.1	6	15	154.5	12	28
R-2A	29.9	20.9	70%	9.0	30%	--	--	--	2.1	7	23	--	--	--	5.7	19	63	--	--	--	1.2	4	13
Total:	1366.2	807.8	59%	558.4	41%	--	--	--	122.2	9	22	--	--	--	197.4	14	35	83.1	6	15	155.7	11	28
Total:																							
R-3A	11264.0	6589.4	59%	4664.6	41%	330.9	3	7	1198.3	11	26	214.5	2	5	1485.2	13	32	517.9	5	11	917.8	8	20
R-2A	3286.7	2118.9	64%	1167.8	36%	50.1	2	4	301.4	9	26	33.1	1	3	308.9	9	26	215.3	7	18	259.0	8	22
R-1A	174.5	88.4	51%	86.1	49%	0	--	--	31.6	18	37	0	--	--	26.2	15	30	23.4	13	27	4.9	3	6
PB-A	14.9	10.3	69%	4.6	31%	0	--	--	2.3	15	50	0	--	--	0	--	--	.9	6	20	1.4	9	30
PB-B	25.3	9.9	39%	15.4	61%	0	--	--	1.4	6	9	0	--	--	0	--	--	4.4	17	29	9.6	38	62
PB-C	9.2	8.0	87%	1.2	13%	0	--	--	0	--	--	0	--	--	0	--	--	.9	10	75	.3	3	25
POUND RIDGE TOTAL:	14774.6	8824.9	60%	5939.7	40%	381.0	3	6	1535.0	10	26	247.6	2	4	1826.3	12	31	762.8	5	13	1193.0	8	20

X = Less than .5%.

C. Positive Environmental Features

The second component of the Graphic Environmental Summary is the 'Positive Features' Map. These features, shown in relation to the drainage pattern and to committed lands, are factors of positive environmental value which warrant preservation or special management. Included are the following:

Outstanding Natural Features - as identified in An Ecological Evaluation, by Community Design Associates. These include, for example, unique rock formations and unusual or exceptional existing vegetation, such as mature hemlock forests, coniferous plantations or especially attractive old field habitat areas.

Historic Sites and Cemeteries - This category includes such features as historic structures, cemeteries, and archeologic (Indian) sites.

Aquifers - Two Inwood Marble bedrock bands, which bear water and thus function as aquifers, are shown. One band extends in a southerly direction from Lake Kitchawan to Fancher Road. The other is located along the Stone Hill River. These have been discussed on page 6 of this report.

Permanent Open Space - These areas include: the County-owned Pound Ridge Reservation, watershed lands (owned by water companies), the Nature Conservancy properties, Town open space, and some private open space.

Non-Permanent Open Space - These areas include the Rockrimmon and Pinecrest Country Clubs (excluding the clubhouse areas) and private tennis clubs.

Outstanding Suitability for Woodland or Wildlife Habitat - These areas, if left untouched for a long period of time, would probably develop the best natural habitats in the town. This topic has been discussed on pages 19-21 of this report.

These various features have significance in different ways. Aquifers play an important water supply role on a regional basis, especially since they are linked to reservoirs. Existing outstanding vegetation, exceptional natural areas, and historic sites warrant consideration for preservation for aesthetic purposes. In contrast, areas with outstanding suitability for outstanding habitats provide a basis for developing programs for establishing future exceptional natural habitats as well as for prioritizing and managing existing ones.

The Town's extensive areas of presently committed open space land provide a starting point around which to develop an integrated, interconnected open space system for the future.

It is noteworthy that the existing areas identified as "outstanding" tend to be associated with the "rocky crest" portions of the Town whereas locations with excellent potential tend to be found in the rolling valleys and midslopes.

The juxtaposition of these "positive" features is, however, of greatest interest as related to development limitations. Interrelationships between both sets of factors provide a basis for developing an environmental plan and an open space system. This is because areas with severe development constraints must, of necessity, be those upon which preservation is emphasized. These areas can thus provide the backbone of an open space system, to be embellished and connected by "positive" features. Important exceptions to this, however, are aquifers and forests on fragile lands, both of which warrant special handling as sensitive components of the ecosystem.

D. Composite

An analysis of the interrelationships shown on the Composite Map reveals the following factors of major significance:

1. The special character of the Mill River Valley. It combines large size, substantial developed areas, a considerable amount of severe and moderate stress, and an overwhelming share of the land with outstanding potential habitat suitability. It thus combines both significant problems and valuable resources.

2. The Blue Heron Lake area is shown as an area comparatively free from development at the present time. It offers exceptional natural habitat conditions, both existing and potential.

3. The Siscowit Reservoir area combines good water quality conditions, existing exceptional vegetation, and a reasonably fragile environment.

4. The Mianus River Tributaries are constrained by small size, substantial existing development, environmental stress, and limitations upon development.

5. The East Branch of the Mianus River is constrained more by development limitations than present stress. It offers some possible planning flexibility for the future.

6. The Scotts Corners - Laurel Reservoir Basins, both of which flow into Laurel Reservoir, offer a complex set of conditions within a small area: both very severe development limitations (wetlands) and terrace soils with good suitability for development.

7. The Stone Hill River Basin is characterized by an important aquifer, good water quality, substantial land within the Pound Ridge Reservation, and uncommitted lands with severe limitations as well as some which are comparatively unconstrained.

8. Lake Kitchawan is also characterized by an important aquifer, as well as by some moderate stress and a number of significant environmental features.

9. The Cross River - Pound Ridge Reservation Basin is substantially occupied by the County Park.

E. Conclusions

Despite the complexity of the research undertaken, recurrent themes emerge. These are based on the underlying geologic structure of the Town, its modification by glacial deposits, and an ecologic system related to these factors, as well as to climactic conditions. These, while previously unacknowledged, have had a major influence upon human settlement patterns. In turn, because land use policies have been related in major part to pre-existing land use patterns, these same factors have been generally reflected in the existing zoning. Forested, rocky upland areas are largely in the three acre district whereas the expanses of comparatively rolling lands are often found in the two acre category.

The conclusions of this analysis can play an important role in developing alternative planning strategies, and will be discussed in detail in the "Alternative Environmental Goals and Strategies" report.

APPENDIX E