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LAND USE THROUGH ECOLOGY (LUTE)

A systematic and ecologically based approach to harmonizing land subdivision and development with the protection and preservation of the natural environment.

Pound Ridge, Westchester County, New York State

Jerzy E. Glowczewski SARP, AIA Assoc.

sponsored by
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LAND USE THROUGH ECOLOGY

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We dedicate the study, "Land Use Through Ecology", to the citizens of Pound Ridge.

In all local events, there are those involved in directing or steering the activities of common concern. Behind them is an army of supporters, all of whom should be recognized for their long-term interest and assistance. It is difficult to name each individual and not overlook anyone. Contributions, whether financial or physical, have kept Pound Ridge United for Planning Trust going for the last seven years.

Here, at the end, with this publication, we can all see the 'fruits of our labors'. Each generous gift has made this volume possible. Each trustee, past and present, joins to thank all of you for your support in the successful completion of reaching this goal.

This goal was to provide a total environmental impact study with specific recommendations for zoning and development based on the carrying capacity of the land.

The implementation of the recommendations and the continuance of an effective, up-to-date planning information base is a future responsibility of the town community.

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ACKNOWLEDGEMENTS

The author of this study is Jerzy E. Glowczewski, Professor of Architecture, Macroplanning and Environmental Conservation at Pratt Institute in New York City, and a noted innovator in the field of ecological land use planning. The project on which the study is based was executed by Mr. Glowczewski over seven years on commission from Pound Ridge United for Planning (PRUP).

Mr. Glowczewski was born in Poland and came to the United States in 1962 at the invitation of the School of Design in Raleigh, North Carolina. A fellow of the Polish Institute of Architects and associate member of the American Institute of Architects, he is the recipient of many awards, and his projects have been published in leading U.S. and European journals. Since coming to the U.S., he has taught architecture and environmental planning and has served as environmental consultant for cities here and in Canada. He has also undertaken major consultancies in other countries for the Ford Foundation and the United Nations on urban design and environmental projects.

The Land Use Through Ecology project could only have been completed through the support and commitment of many other people. Among those who shared generously of their time and knowledge:

Dr. F. H. Bormann — Professor of Ecology and Ecosystems, Yale University School of Forestry and Environmental Studies

Armistead Browning - M.A. Columbia University School of Architecture (Architecture, Ecological Planning). Jr. Landscape Architect, Forest Ecology consultant National Wildlife Magazine

Jan Dabrowski — Visiting Associate Professor of Design, Pratt Institute

Dr. Anthony Dominski — Assistant Professor, Pratt Institute School of Architecture. Specialist: bio-chemical land ecology

Thomas Kohlsaat — Engineer-Hydrologist. Specialist: effects of tree preservation and soil drainages during construction on surface and ground water contamination

James E. Murphy — M.F.S. Yale University School of Forestry and Environmental Studies. Background: Forest Pathology, Phytochemistry, drafting and design

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Brent Porter — Adjunct Professor of Architecture, Pratt Institute

Dr. Thomas G. Siccama — Research Associate and Lecturer in Ecology, Yale University School of Forestry and Environmental Studies

Helen Sussman — M.F.S. Yale University School of Forestry and Environmental Studies. Field and teaching experience in botany and biology

Gina Federico — Design Consultant

Trustees' Statement

We believe this document will change many people's minds about the best way to protect a town's environment in the process of development. And we say that knowing how difficult it is to change people's minds.

The Gallup Poll found that the reason people fight change is they assume the practices now in use are sound because they were adopted only after long and careful study. Which, of course, in certain instances is not true since some of the things we do originated by accident or through simple expediency.

The belief that zoning a town into large size lots automatically protects the environment is one of those false assumptions.

In Pound Ridge, our first inkling that there were alternatives to chopping land into 2 and 3 acre lots without regard to the effect on the environment was a proposal made in 1969 for the Bernier subdivision. It was based on Section 281 of the State Town Law which stipulated that building lots could contain less land than required by local zoning if the land saved was converted into parkland.

The original proposal was for 1½ acre lots in a 3 acre zone. But there was pressure from various groups who considered the plan to be "down zoning". So a compromise plan was used calling for 2 acre lots, with open space considerably reduced.

It certainly was no triumph for environmental planning. In fact, ecological factors were never even considered. But it was a beginning. Because out of this controversy emerged a small handful of citizens who had become concerned about the town's lack of proper "tools" for environmental planning.

They called themselves "Citizens for Environmental Planning" and were a forerunner of "Pound Ridge United for Planning" (PRUP) Trust, which was founded late in 1972. And it was PRUP that finally provided the leadership and funds to get the "LUTE" project off the ground.

Phase I, an ecological evaluation of Pound Ridge which provided an environmental catalog of the town, was finished and published by PRUP in 1974. In Phase II, all this information was checked, tabulated and fed into a computer (along with such factors as existing zoning and population distribution) so that the whole town could be literally cross-hatched to indicate environmental vulnerability of each land area. And now, finally, in Phase III, a systematic approach to planning has been developed based on the natural carrying capacity of the land. With it, we can accurately project the likely environmental impact of each new development proposal—not just for the development itself, but for the entire surrounding area.

It has taken us almost seven years to reach this stage. And we still don't know if our findings and recommendations will ever be fully implemented. But there's no doubt in our minds that it's been a tremendous accomplishment—not only in the amount of work done, but also in the establishment of some new and useful concepts in land planning that can be used by communities all over the country. The study's watershed and land sectors concept, for example, for the first time provides a rationalization for environmental zoning that can stand up to the social and political factors which are a reality of life in any community.

Of one thing we can be certain. In the future, no Town Plan will be drawn up in Pound Ridge without taking into account our ecological conditions or having a clear idea what those ecological conditions are.

And that is our legacy to Pound Ridge.

THE TRUSTEES OF POUND RIDGE
UNITED FOR PLANNING.

INTRODUCTION

Planning for Land Use

Without external intervention, land development would simply reflect population growth, economic activity, and the size and permanence of private holdings. Throughout history, however, the needs of society at large have played a role in this process. We can see how this has happened in our own country in the construction of roads, parks, schools, and public buildings, as well as in the restriction of commerce and industry to specified areas. In this century, the system of minimum residential property requirements, or spatial zoning has also emerged as a device for preserving the traditional or aesthetic characteristics of communities. Uncontrolled land development is continuing, however, and with population growth and higher incomes, is even increasing.

Since land supply is finite and land in this country is treated as a marketable commodity, the pressure for development tends to be very strong, particularly in areas near metropolitan centers. More open land has been developed for residential use in the United States over the last twenty years than in any other period of our history.

Many smaller towns were slow to recognize the possible harmful effects of such growth and, as a consequence, have lost their special character and seen their way of life disappear. Others have found to their dismay that traditional protective measures were not effective in stopping the encroachment of urban patterns once they were allowed to start.

Spatial and land-use zoning ordinances are now the chief tools that town governments use to control land. The question facing small towns today, as the pressures of growth combine with increasing awareness of dangers to the natural environment, is whether these tools are sufficient.

At first, zoning ordinances tended to reflect the status quo. Where there were stores, a commercial zone was established. Where there were small lots and intensive settlement, a high-density zone was created and development was allowed to continue with minimum outlay for new public utilities and services. Only inaccessible areas and large landholdings were zoned for low density, usually to shield the wealthy from the impact of growth.

As long as growth was relatively slow, these early zoning regulations were no less than common sense and worked well for most small communities. When changes were required, however, the pattern proved to be inflexible, and usually only changes in the direction of higher-density zoning were feasible. Moreover, to make zoning changes on a lot-by-lot basis disregarded the cumulative effect of development on the community as a whole, particularly with respect to environmental quality.

There are now three important reasons why a reappraisal of town-planning methods is necessary:

1) There is a continued pressure for development, which is now even stronger because of the financial resources and aggressiveness of land-development companies.

2) Court decisions have ruled that zoning based on minimum property requirements is exclusionary or discriminatory, and there have been increasing calls for states to legislate against it.

3) There is a new awareness, scientifically supported, that even requirements for large acreage are no guarantee of a healthy, natural environment.

Environmental planning is based on a new national concern and respect for the land that is our common heritage. This was recognized at the national level in 1969 when the National Environmental Policy Act was passed, requiring impact studies to be made for all federal projects likely to have environmental consequences of a regional nature. This was followed by similar laws in most states, including New York, and the concern is now filtering down to the municipal level. It is of key significance that laws and regulations that curb development in order to protect the environment are being supported by the courts.

Thus this Pound Ridge United for Planning study "LUTE" is in keeping with a national move-

ment. Although it is being introduced in this town for the first time and with a number of innovative features, it is not something completely new or untried. It is based on the idea that environmental impact should be gauged in anticipation of growth rather than as a reaction to it. Environmental planning reinforces rather than replaces the objectives of existing spatial and land-use zoning.

The study offers a simple and effective way to know the land's potential and its limits. It is designed to be useful to town administrators who are responsible for development or conservation. It is a tool for official town planners who are concerned about the quality of their town's environment and need more than zoning ordinances and vague general statements about ecology to go by.

It is hoped that this example of land analysis will serve an educational function for concerned citizens who want to know more about the carrying capacity of the land on which they live. The case studies of the individual sectors of land in Chapter Three provide informal instruction in how to describe land conditions. In easy-to-read form they give complete analyses and suggest environmentally sound options.

Pound Ridge, the subject of the study, has much in common with towns all over the United States. It is a residential community of about 4,000 inhabitants in Westchester County in the state of New York. Its 14,130 acres are characterized by rolling hills dotted by a great number of small lakes, ponds, and wetlands and traversed by two small rivers, the Old Mill and the Stone Hill. Extensive areas are wooded, often with virginal hardwood forest, and the town as a whole is of an exceptional natural beauty once common in this part of the country.

More than one-fifth of the town's land is taken up by the Ward Pound Ridge Reservation, which is a county park. Other large tracts in town are held by the Stamford Water Company, which has three reservoirs serving Stamford in Connecticut. They are: Trinity Lake, Mill River Reservoir and Siscowit Reservoir. In addition Cross River Reservoir touches the town's northwestern border and is part of the water system of New York City. On the south-western border, the Samuel Bargh Reservoir on the Mianus River serves Greenwich, Connecticut and Port Chester, New York.

Owing to a scheme of one-, two-, and three-acre zoning, population distribution is fairly even. Only a few properties have more than a hundred acres, and the great majority have fewer than five. There is one small commercial center, called Scotts Corners, and this has no structure higher than three stories. There are no industries, no corporate headquarters, and no businesses with more than a dozen full-time employees. Several roads have moderately heavy through traffic, but most are local and tend to be narrow and winding. Air quality is excellent, largely because of a higher elevation than surrounding communities. In some places surface water quality is "stressed"* in varying degrees, from both natural and man-made causes. There is no communal water or sewer system, individual properties being served by wells and septic fields.

This part of Westchester County lies between two urban growth belts stretching out from New York City, which is just forty-five miles away. The larger of these belts, to the east, extends along the north shore of Long Island Sound into Connecticut. Its main transportation arteries are the New England Turnpike (Interstate 95), the Merritt Parkway, and the New Haven line of the Conrail railroad system. Greenwich, Stamford, and Norwalk are the main population centers on this line, and all are within easy driving distance from Pound Ridge.

The second belt forms a central spine running through Westchester and Putnam counties. Its main transportation arteries are Interstate 684, the Saw Mill River Parkway, and Conrail's Harlem division. The city of White Plains and the growing towns of Katonah and Mount Kisco are all within twenty-five minutes' driving time from Pound Ridge, and all have railroad commuter parking facilities.

Proximity to these urban growth belts makes Pound Ridge less isolated than its rural atmosphere would indicate. Along with other nearby communities, such as Bedford and Lewisboro, in New York, and New Canaan, in Connecticut, it has grown at a relatively rapid

*See Chapter Two: Hydrology

rate over the past three decades. Population has tripled since 1950, and land prices have increased by as much as ten times.

These facts suggest that Pound Ridge is in transition from a rural, even sylvan, environment to something more like that of a suburban town. Full development of the land under existing zoning ordinances would permit a population of more than 12,000, and this would require a much more elaborate infrastructure of roads, schools, police and fire protection and, eventually, communal water and sewer systems. Such a change is not wanted by the town's residents, however, and would not be in the best interests of the surrounding region. Nor is it inevitable.

The changes that have occurred in Pound Ridge were so gradual that for a long time townspeople were only mildly concerned about the future. There seemed to be no immediate threat to their way of life. Now, however, they have become aware of the accelerating pressures to develop whatever land is left in the metropolitan area.

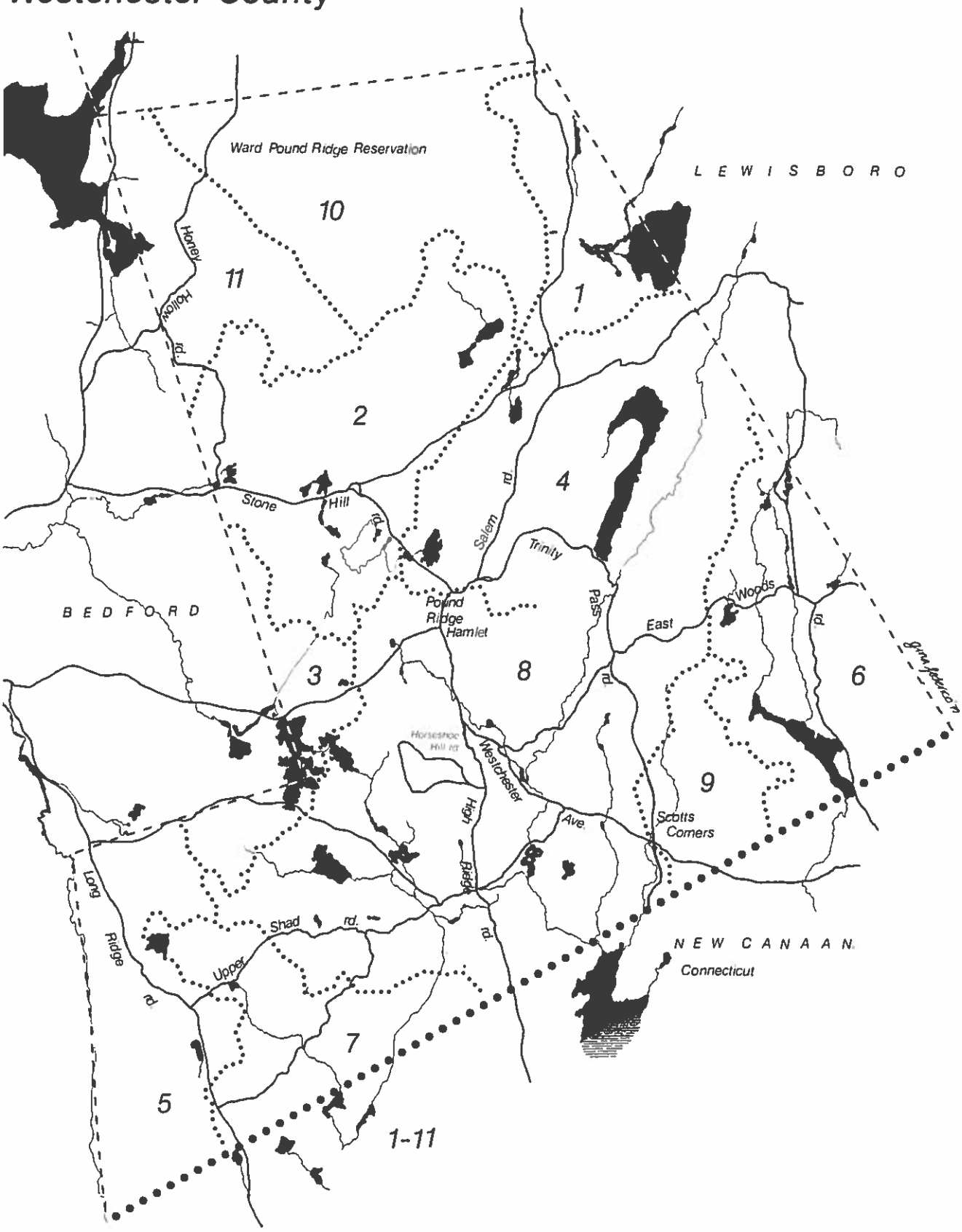
The government of Pound Ridge apparently assumes that there will be rapid development of the larger parcels of land. There is a belief that the only limitations on growth in the near future are the availability of water from individual wells and the disposability of domestic sewage by septic tanks and leach fields.

Undesirable growth can be avoided by a combination of state action and citizen action on the local-government level. Ideally, there should be provision for minimal ecological destruction along with a revised view of the rights of individual land ownership.

In 1973, PRUP asked Community Design Associates (CODA) to do an environmental planning study of the town. Community Design Associates is a group of professionals, educators, and research scientists under the direction of Jerzy Glowczewski, architect and community planner. For the ecological survey, a field team of three forest ecologists spent five months working out of the Ed Marschner barn on Long Ridge Road. Their work was supervised and interpreted by F.H. Bormann and Thomas G. Siccama, both on the faculty of Yale University's School of Forestry and Environmental Studies. Thomas Kohlsaat was in charge of the hydrological aspects of the survey.

The immediate result of their findings was a volume of about 100 pages entitled "An Ecological Evaluation of Pound Ridge, New York", which PRUP published in 1974. This was the first phase of the plan for land use that is set forth in the present volume. Most of the material in the earlier publication is included here in somewhat revised form.

Town of Pound Ridge
Westchester County



CHAPTER ONE

Constructing a Plan for Land Use

The Role of Nature in the Urbanized Landscape

In an environmentally conscious society, decisions about land development in suburban and rural areas should follow guidelines based on ecology. The principles underlying ecological surveys are well known to professionals and are described in a wealth of literature. The best example is a classic in the field, *Design with Nature*, by Ian McHarg. There have also been attempts to apply these principles to specific projects but seldom to an entire town area.

Ecological assessment starts with an examination of the basic elements of our natural environment — air, water, bedrock, soils, vegetation and land configurations — as well as of the man-made environment. Structures, roads and various types of physical development interact with the natural elements, usually in a way that is detrimental to air, water and soils. Natural and man-made elements together form a discernible pattern on the surface of the earth which, when understood, can serve as a basis for decisions about land development.

The separate elements that go into ecologically conscious planning are not hard to understand, but they appear in an almost limitless number of possible combinations. It is the relationship among the elements that must be understood before a responsible decision can be made whether or not to build on a given piece of land.

In this study the complex interaction of natural and man-made environmental conditions is revealed by describing individual sectors of land having similar environmental or developmental characteristics. The sectors are the basic units, but each sector is part of a larger land unit called a watershed, and conditions in each sector have a specific and usually permanent relationship to conditions in all the other sectors of the watershed. No piece of land has been analyzed in isolation, as is the case with traditional town-planning decisions based upon zoning regulations alone. On the contrary, a number of ecological interactions come into play, those on each site as well as those that extend far beyond the site.

In making a decision about future development, the area to be taken into consideration should vary with the size of the project. For instance, if one house is to be built on a steep slope, it is enough to consider the analysis of the sector on which the building site is located. On the other hand, a development of twenty-five homes requires the analysis of several sectors or possibly of an entire watershed, and a supermarket or a new road involves the analysis of several watersheds.

Pound Ridge became the subject of a survey that could be used in this way because the citizens who asked for the study specifically wanted a complete survey of the entire town and not just of certain plots of land. The study reveals how an area, seemingly uniform in character, is really a complex environmental system. Not to mention the equally complex social, political and economic systems in the area.

When one reads the case studies of the 74 land sectors in Chapter Three and studies the maps and photographs, one cannot help but become aware of the ecological vulnerability of some places and to wonder that so many people are willing to accept development without asking about environmental consequences.

Arguments for the preservation of natural land in regions undergoing urbanization are often based on aesthetic and emotional considerations and on the need for recreation areas, wildlife preserves and parks. These are legitimate and powerful reasons, but more fundamental arguments for the preservation of nature stem from an understanding of nature's dynamic processes.

Forests and other wildlands play an important role in providing a quality environment in populated regions. This is the basic premise in ecological planning for a developing suburban area like Pound Ridge.

The first step in understanding the function of forests is to realize that they are among the most complex units in nature. To the un-

trained eye they appear relatively static, but in reality they are sites of intense activity. Each year millions of gallons of precipitation, trillions of calories of energy, and tons of gases flow into each square mile of forest to be used, altered and dispersed. Thousands of species of plants, animals and microbes use part of this material to live and reproduce. They regulate the flow of energy, nutrients, and water through the forest. Each forest may thus be considered an ecosystem, interacting with surrounding ecosystems and requiring a regular input of solar energy.

The remarkable thing about nutrient cycles in a mature forest ecosystem is that they are very tight. Although large quantities of nutrients move around freely within the system, very little is lost in drainage water. Each year there are small net losses of nutrients like calcium, sodium and magnesium, but losses are made up by weathering, the chemical breakdown of rock particles, which frees nutrients from the rock and makes them available to the vegetation and soil.

Even though the chemistry of rainfall is very variable, the ecosystem regulates the chemistry of water percolating through it, and this determines, in large measure, the chemical quality of water moving to streams or to the groundwater. The capacity of ecosystems to regulate the chemistry of stream water is related in part to the nutrient-holding capacity of the soil. Soil organisms, such as earthworms, contribute to this relationship by making burrows and churning the soil, both of which facilitate the movement of water through the soil.

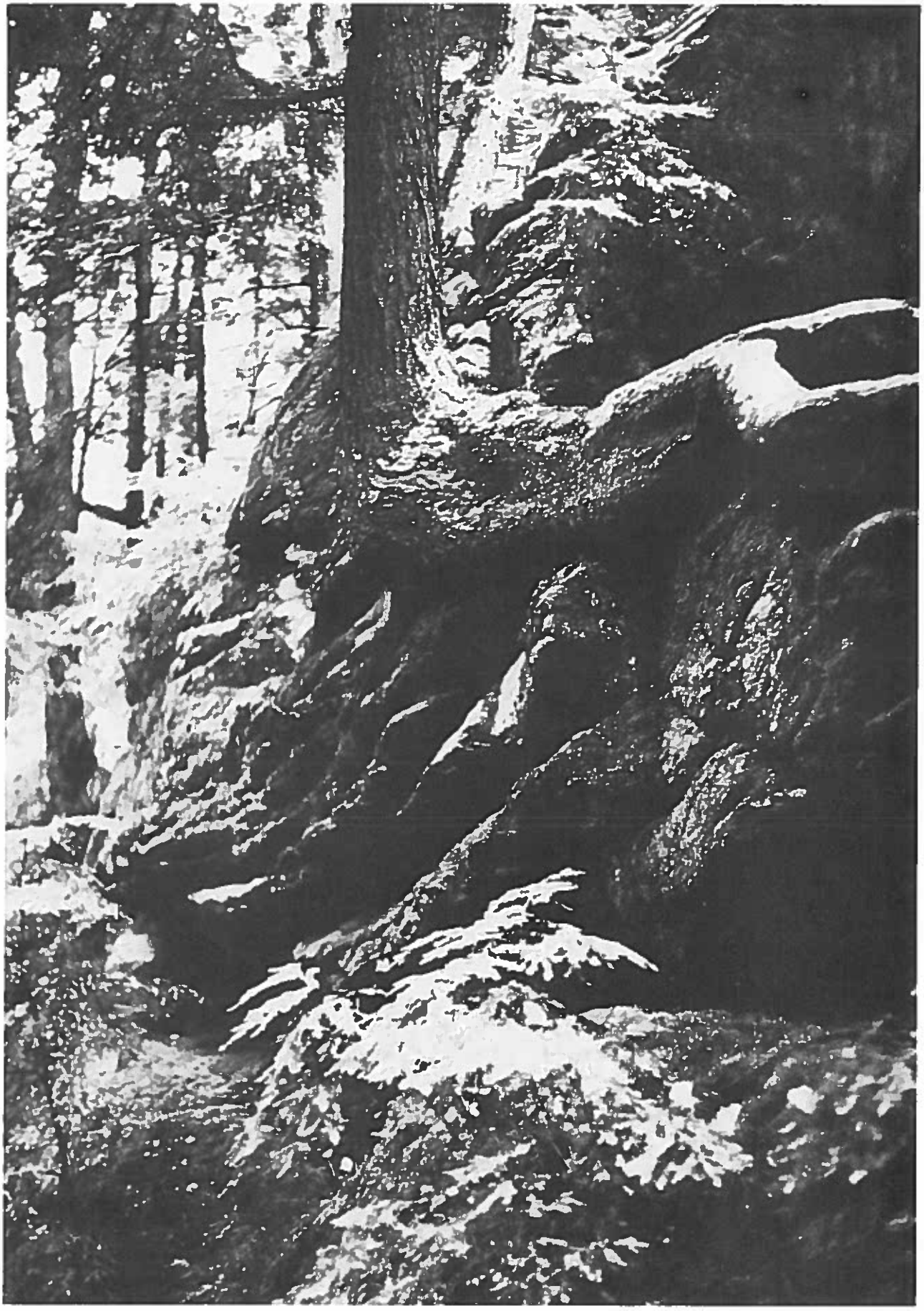
The exchange capacity, texture and nutrient content of forest soil are the result of processes that have gone on for hundreds or even thousands of years. These processes slowly build up organic matter, silt and clay, which contain electronegative exchange sites and accumulate stores of nutrients. These are concentrated in the upper foot or two of most soils. When people bulldoze or compact soils or blacktop surfaces, they are destroying or disrupting ecosystem conditions that have taken centuries to develop. Nutrient stocks are lost and the filtration capacity of the land is diminished.

Soils under forests and other wildlands are an extremely important filtration system between polluted rainfall and the water supply (streams and groundwater). The amount of nitrate has recently been increasing in the rainfall, and nitrate in streams and lakes can contribute to the accelerated growth of unwanted organisms, with a consequent loss of water quality. The forest ecosystem can keep nitrate from reaching surface and groundwater supplies. Rainfall in the northeastern United States is now a mixture of weak sulfuric and nitric acid, the result of an increase in air pollution that has occurred within the last twenty years and is likely to continue. The forest ecosystem can remove much of the acid from infiltrating rainwater.

As the soil serves to remove pollutants from water, so the vegetation within the ecosystem removes pollutants from the air. Studies have shown that vegetation has the ability to remove some of the pollutants from the wind stream passing through it. These include dust and particulate matter and a number of gaseous pollutants, such as ammonia, sulfur dioxide, ozone, chlorine and hydrogen fluoride.

Forests also have a phenomenal ability to maintain stable soil surfaces, to control erosion, and to produce sediment-free water. Approximately a million gallons of water fall each year on each acre along the Atlantic seaboard. This water has a huge potential to wear away the land, to destroy ecosystems, and to pollute surface water supplies with sediments. Yet the rate of erosion for completely forested watersheds is often less than twenty tons per square mile per year. As a result of this regulation of erosion, water flowing to streams and groundwater from forested or other well-vegetated lands is virtually sediment-free and needs little treatment for human use.

Natural ecosystems do not have an unlimited capacity to absorb pollutants. Eventually they lose their storage function, or else the ecosystem changes drastically because of pollution-induced damage. The existence of natural ecosystems should therefore not be made a license for additional pollution, but they should rather be seen as a temporary natural sponge, while efforts are made to achieve the lowest possible pollution of air and water.

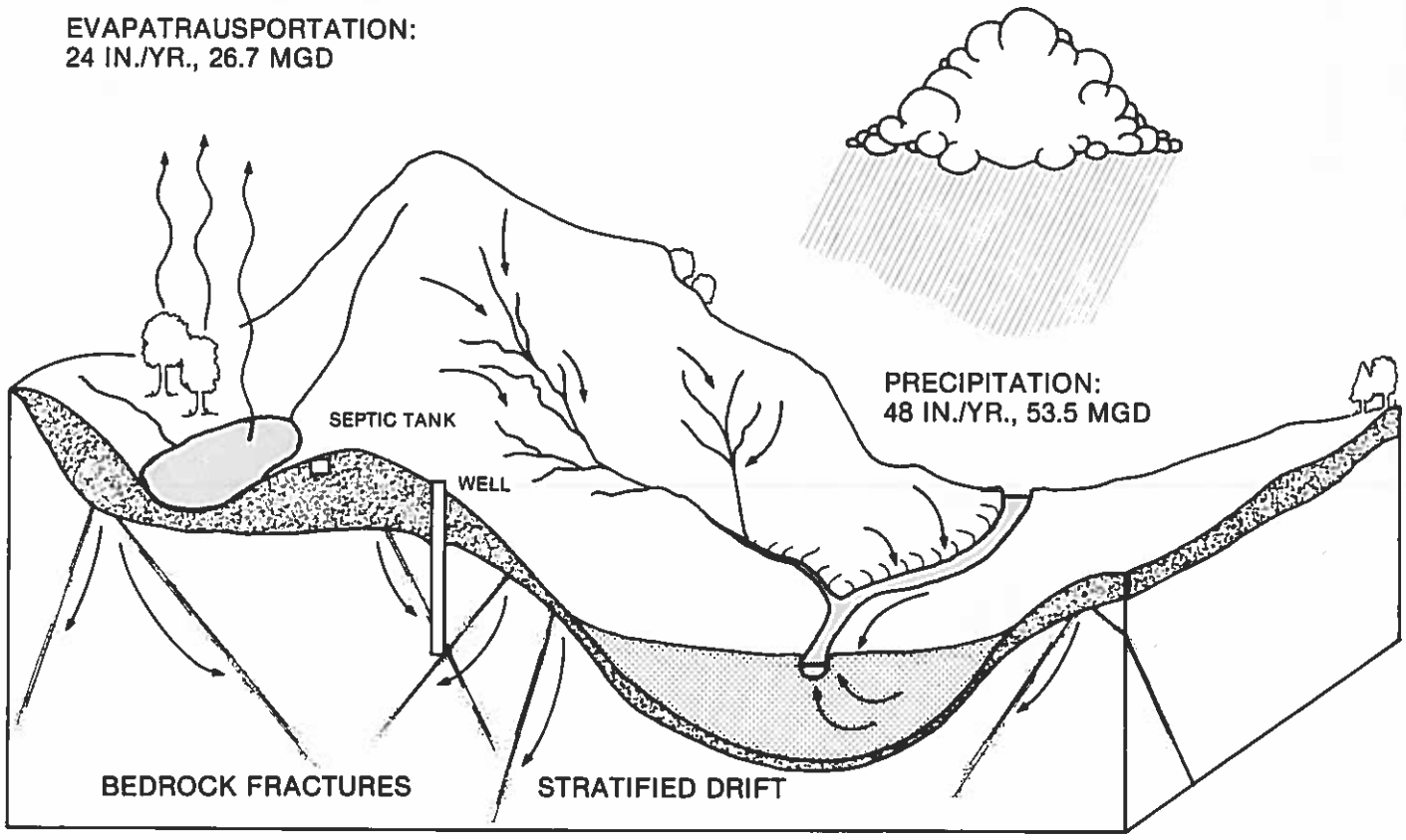


Halle Ravine — J. Glowczewski

The Hydrologic Cycle

Figure 1

The hydrologic data on Pound Ridge was obtained from the library at the Yale University.



RUNOFF: 26.7 MGD, 1780 GPD/ACRE

NET CONSUMPTION:
0.6 MGD, 40 GPD/ACRE

LEGEND:

IN./YR. inches per year
MGD million gallons per day
GPD/ACRE gallons per day per acre

Most of Pound Ridge's water comes from rainfall - an average of 53.5 million gallons daily. Half is absorbed by vegetation or evaporates from surface waters. Almost another half drains into soils and eventually finds its way to rivers and underground rock formations. Only 0.6 million gallons per day are consumed. Natural water resources depend on maintaining soild constituents which nourish and in turn are nourished by vegetation, wildlife and the ever-regenerating cycle of nature. Of special importance are soil beds of wetlands and aquifers which store and purify large quantities of Pound Ridge's regionally vital water resources.

The enormous stabilizing force of natural ecosystems is best seen by contrast. In areas undergoing urbanization where destruction of natural ecosystems is usually combined with careless construction techniques that accelerate the process of erosion, it is not uncommon for erosion to occur at rates several thousand times greater than those expected in a mature forest.

All ecosystems are interconnected, and massive erosion of upland construction sites results in serious degradation of aquatic ecosystems like streams, lakes and reservoirs.

The Hydrologic Cycle in Pound Ridge

The landscape of Pound Ridge is a natural product of four closely intertwined life-supporting elements: soils, vegetation, water and climate. Of these, climate is the prime mover. Rock weathers into soil and soil spawns forests, all in concert with the rhythms of climate, which brings rain and snow in various quantities according to the season. In turn soil and forest act on rain and snow by retaining some moisture and allowing some to pass on to streams. Of the water retained, most is taken up by the roots of trees and smaller plants and evaporated from the surfaces of leaves.

All water not lost by evaporation flows downhill on or near the surface of the ground or infiltrates directly downward to the water table; both paths lead ultimately to a stream at some point lower in the watershed.

Thus all precipitation not evaporated shows up as surface streamflow, and all streamflow originates from precipitation within the watershed. Underground rivers, except for man-made aqueducts, do not exist in this region.

Each of these processes of water movement has its own rhythm, strongly determined by the properties of vegetation and soil.

Evaporation is confined largely to the growing season. During this time water held by capillary action in small pores within the soil is drawn on heavily by plant root systems. As a result most rainfall replaces this soil water and very little is free to percolate downward to the water table.

Direct runoff, that portion of rainfall which flows near the surface of the ground, is limited to water in excess of that which the soil can absorb and allow to pass on to greater depths. It occurs only during a storm and for about a day after, and during periods of rapid snowmelt. Direct runoff is responsible for the rise in streams in the spring and after a storm, and for floods after a particularly heavy rainfall or thaw.

Although forests cause much water to be lost by evaporation, the loosely packed layer of decaying leaves and other organic matter in forest soils absorbs moisture at a higher rate than in other soils, and thereby reduces direct runoff and consequent flooding.

Water which the soil absorbs beyond what it can permanently retain is passed downward by gravity to the water table, that is, the upper surface of soil or bedrock that is saturated with water. This process is known as recharge. The situation is rather like a bathtub full of sand — the capacity of the tub to hold water is diminished by the volume of sand, with water limited to the pores between the grains of sand. If the water level is below the top of the sand layer it is not apparent that the tub holds water, but nonetheless it does, since water is confined by the bottom of the tub. Sand above the water level also holds some water against the force of gravity, as is indicated by its wetness to the touch.

The situation in nature differs from that of a bathtub principally in two ways. Bedrock, the confining layer, contains cracks and fractures to a depth of several hundred feet and can therefore store water, although usually in much smaller quantities than the soil. Secondly, the confining layer slopes downward. Hence the water table slopes in the same direction, and the groundwater travels in the direction of the slope. Where the water table intercepts the surface of the land in a depresson, a lake, stream or swamp is found, depending on the shape and size of the depression. Where the water table is at or near the surface of the land for all or part of the year, the land is called a wetlands.

These flow processes result in watersheds, with the following characteristics of interest to man:

1) Because of the slow advance of water downhill, the upland water table drops very lit-

tle in relation to elevation above the valley floor during the summer, when evaporation is high and recharge is low. Put another way, the storage of groundwater is remarkably well regulated.

2) Wells drilled into bedrock intercept the cracks and fractures (with varying degrees of success), so that groundwater stores over a wide area can be delivered to a well.

3) Septic waste-disposal systems laid in well-aerated soil over glacial till expose the effluent to powerful purifying microorganisms. Flow away from a system is impeded by the till, so that the water takes enough time moving to a well intake or stream to be essentially pure when it arrives. The soil also purifies by filtering out microscopic particles, such as bacteria, not destroyed by soil microorganisms.

4) During periods of low rainfall, streamflow consists entirely of groundwater flow. Since groundwater is discharged slowly, most streams flow year round. The flora and fauna of stream and bank owe their existence to this fact.

Man has thus been provided with the elements of a biologic-hydrologic life support system, which his wells and waste disposal systems take good advantage of.

When the limits of nature's watershed are reached, services such as public-water, sewerage, and flood-control projects must take over. Only careful planning can assure that the limits will not be exceeded.

The Watershed Concept

This study is based on two separate surveys and analyses of the physical conditions of Pound Ridge's watersheds:

1) A survey of the natural environment, including ecosystems and their interrelationships and

2) A survey of the human environment, including population, existing development and supporting systems.

Both surveys were made within a framework of units of land that correspond to watersheds.

A watershed is an area of natural drainage from high points and ridges into a common basin at its lowest level.

The environmental conditions, both natural and man-made, within a watershed are reflected in the condition of the water at the lowest point. The watersheds were, however, not only considered for their hydrological significance but also used as convenient units for purposes of land planning and management.

CODA divided Pound Ridge into eleven environmentally self-contained watershed units, averaging 1,200 acres each. Standard topographical maps prepared by the U.S. Geological Survey were updated by CODA's field observations to define the watersheds.

This watershed-unit approach is scientifically rational and economical, and makes it easy to perceive the fact that ecological impact goes beyond property lines. It also demonstrates the necessity for regional cooperation in land-use planning. Some watersheds originate in neighboring towns or supply water to neighboring towns. The entire Pound Ridge hydrological system is in turn related to and affects the Hudson River and Long Island Sound drainage systems.

The information that resulted from research and analysis was superimposed on the maps, which were enlarged to a scale of one inch to 400 feet in order to coincide with the Pound Ridge Tax Map and the aerial photographic maps prepared by the Tri-State Planning Commission in New York City and by the Westchester County Department of Planning.

Method

The study was undertaken in three steps. Step One was a survey of the natural environment. Step Two was a survey of population and land under development. Step Three was an analysis of the data collected in the first two steps, with recommendations for future action.

Step One: Environmental Evaluation. The following outline indicates the categories of information that should be gathered for each watershed.

I. Topography

1. Preparation of suitable topographical

map to serve as a base map.

2. Comparison of the base map with the zoning-map.

The physical configuration of the terrain is the result of geological strata and the surface distribution of soils. It is this part of the natural environment that bears most directly on patterns of development and, except for such localized action as the blasting of rock outcroppings, not easily altered by technical means. Topographical information is extremely important in hydrology studies and in the interpretation of soil characteristics. Steep slopes determine the pattern of surface water drainage, the rate of runoff and water-caused erosion. Different development recommendations depending on the degree of slope would be made for similar soil conditions. The importance of the vegetation cover also varies with the topography.

The maps prepared for this study are on a scale of one inch to 400 feet. They were based on the U.S. Geological Survey map of Pound Ridge, which is on a scale of one inch to 2,000 feet. There are thirteen quadrants in all that cover the area of Pound Ridge and its neighboring communities. The eleven watershed maps in Chapter Three are updated versions of the enlarged USGS map.

II. Bedrock Geology

1. Location of water-bearing formations (aquifers).

2. Location of possible water-polluting areas adjacent to aquifers.

3. Well yields of aquifers (this information was not available for Pound Ridge).

4. Bedrock fracture-plane systems (to determine patterns of underground seepage).

5. Quality of well water in areas subject to possible pollution (this information was not available for Pound Ridge).

Basic surveys of bedrock geology are usually available from state or county authorities or in some cases from local colleges. The solid rock underlying the soil at various depths is studied for characteristics that may have a bearing on land development. Such information should be used in the selection of well sites for the town or for individual homes and also to discover areas of possible well contamination by effluents from septic fields installed in unsuitable locations.

III. Soils

1. Analysis of soils and division into categories with respect to septic-field construction (suitable, difficult, unsuitable).

2. Comparison of map of soil characteristics with zoning ordinances and present development.

The importance of using soil-analysis surveys in community planning is slowly gaining recognition. Municipal authorities have resisted it because strict adherence to recommendations based on soil classification would tremendously complicate land-use decisions and could significantly alter existing development trends. Land developers have been reluctant to bother with the technical devices and construction techniques that can overcome soil problems on individual sites, such as special foundations to compensate for lack of ground firmness and waterproof construction of basements or sewer systems to prevent water contamination.

A special map of Pound Ridge was prepared, on which the location of the various types of soil was indicated (see: Soils on page 27). It was based on published information available from the U.S. Department of Agriculture, Westchester and Putnam counties, and the town of Pound Ridge.

IV. Hydrology

A. Precipitation

1. Annual rainfall
2. Available water supply per inhabitant
3. Location of aquifer recharge areas

B. Surface water and wetlands

1. Location of bodies of open water (lakes, ponds, reservoirs, streams and rivers)
2. Location of wetlands
3. Definition of the watershed's boundaries
4. Quality of surface water

All water, surface or underground, comes from rain or snow. Some is drained off immediately into open bodies of water, some is caught

and stored in wooded areas, and some is lost in evaporation. What is left goes underground and is distributed through the bedrock formations by fractures and zones of crushed stone; a small part of this is what is available to wells.

A special map of Pound Ridge was prepared with indications of its hydrological conditions (see: Hydrology map on page 29). It was based on field observations as well as material in a study done by Environmental Assessment Associates (1976).

V. Vegetation

1. Location of forested areas, identifying common types of trees and other plants
2. Location of wetlands and old-field vegetation
3. Location of areas of special interest and value

The importance of forests is explained earlier in this chapter.

The information gathered in Step One is shown in graphic form on the maps in Chapter Three and appears in summary form in the "Inventory of Ecological Land Sectors" charts that accompany the maps. Where percentages are given (in referring to the distribution of types of development, types of soil, and types of vegetation), these were arrived at by superimposing a grid of quarter-inch squares each indicating 10,000 square feet on the map of a watershed and determining the proportion of squares covering a particular area to the total number of squares.

Step Two: Population and Land Under Development. An overview of the region was needed to get an idea of the direction and tempo of development pressure. The key factors are the proximity of major transportation arteries, the growth of economic activity in the area, and the pattern of development in nearby communities. Then a rough projection of population growth was made, based on three factors: the development trends indicated by this regional overview, the rate of change over the past decade, and the existing zoning ordinances.

Development and population growth in the recent past are well documented in town and county records. Zoning regulations indicate the number of people the town can accommodate both theoretically and legally. This maximum population can be computed by multiplying the total number of lots permitted by 3.5, a figure representing the size of the average American family in 1976. This maximum assumes that zoning ordinances will not change during the period of growth, but experience has shown that they sometimes do change, usually by allowing higher-density development. This comes about either on a site-by-site basis or as the result of comprehensive policy decisions.

A survey was made of all land in the town already developed up to the limit of the existing ordinances, that is, land that cannot be further subdivided and on which every parcel is occupied. Such land was shown as "developed land", indicated in gray, on the maps. All other land was considered subject to environmental planning.

Step Three: Analysis and Recommendations. When the background studies were completed, it was possible to analyze in detail the conditions in each watershed and in the area as a whole.

The map of each watershed was divided for analytic purposes into sectors. From the information gathered in steps one and two, the material appropriate to each sector was sorted out. It is given on the watershed charts in Chapter Three and is discussed at greater length in the descriptions of the sectors in that chapter.

Explanation of Terms

A. Land Status

Developed Land

Any private property that has a residential building and cannot be further subdivided under present zoning ordinances to accommodate another residential building.

R1A (one-acre zoning): Developed sites up to 1.999 acres cannot be subdivided.

R2A (two-acre zoning): Developed sites up to 3.999 acres cannot be subdivided.

R3A (three-acre zoning): Developed sites up to 5.999 acres cannot be subdivided.

There is also developed land that has been zoned for business use (PB-A and PB-B).

On the maps, developed land is indicated in gray.

Undeveloped Land

Any private property that has no residential structure or any property that has a residential structure but is large enough to be further subdivided under present zoning regulations. In the latter case, the undeveloped land is what is left after the developed land (as defined above) is subtracted from the total property.

On the maps, undeveloped land is uncolored.

Tax-Exempt Land

Land indicated as tax-exempt on the Town Tax Map. This includes the Ward Pound Ridge Reservation and such town property as the park, the school and library grounds, and the highway-maintenance facilities. Also included are cemeteries and land presently under conservation protection.

On the maps, tax-exempt land is indicated in dark green.

Residential Environmental Protection Zone (REP)

Undeveloped land that could be developed under present zoning ordinances but in which development should be in accordance with the following guidelines for environmental protection:

Construction on slopes greater than 20 degrees should be discouraged. Exceptions would require full technical documentation describing the construction process and precautionary measures to be taken to prevent soil erosion, direct siltation of surface water, and undue harm to existing vegetation.

Construction should be undertaken only on soils suitable for development, as defined in the directives of the Westchester County Soil and Water Conservation District. Exceptions would require full technical documentation describing the construction process and precautionary measures to be taken in relation to the depth of the water table, permeability of the soil, erosion control, and prevention of flooding. Special documentation would also be required to show proper location and construction of septic tanks and leaching fields.

No development should be allowed to alter the shores of ponds or lakes, divert existing streams, or come within 100 feet of the edge of open water. All development activity, including road construction, should include provisions for maintaining the normal flow of surface water.

Existing forests should be protected. Special attention should be paid to forest land of exceptional quality, and no clearing should be permitted in a natural area of special interest as indicated in this study.

On the maps, REP zones are indicated by light green.

Special Allowance Residential Development Zone (SARD)

Undeveloped land that could be developed in a manner different from what is customary and legally permitted under existing zoning ordinances. Modifications might include different types of buildings appropriate to the emerging social needs of the town, new construction methods, or any other innovation that is in harmony with the character of the town.

SARD zones can be a useful planning device for parts of a community located next to main highways or near the town borders. They should have the following characteristics: extensive acreage, gently rolling topography suitable for various forms of development, types of soil suitable for development, absence of surface water, and old-field vegetation allowing for easy development. In developing SARD zones, internal roads should be designed so as to avoid increasing traffic hazards on existing roads, and a minimum of 200 feet of undeveloped buffer zone should be established between existing roads and new construction.

On the maps, SARD zones are indicated by orange.

Conservation Zone (C)

Undeveloped land that should not be developed but remain in its present natural state. Conservation zones should include all areas of special interest for their natural environment and the edges of all major wetlands.

On the maps, C zones are indicated by medium green.

R4-5A Zone

Undeveloped or sparsely developed land which should be re-zoned from 2 acres to 4 acres and from 3 acres to 5 acres as a minimum parcel size.

R4A and R5A zones are recommended in areas containing large properties which may be considered for future development and where environmental conditions do not favor present density allowance.

On the maps, R4-5A zones are indicated by light orange.

Historic District

Area of town in which the Hamlet of Pound Ridge is located. Also any other areas such as old cemeteries, historic residences, barns, indian sites which may be designated as historic districts or sites.

On the maps, Historic District is indicated by letters HD.

B. Soil Types

Soils in any area can be divided into those that are, from the point of view of septic-field installation, suitable for development, difficult to develop and unsuitable. In this study, six categories were used to conform to the soils map interpretation prepared by Clark Associates and so to facilitate reference to data the Town Planning Board already had. The categories are:

Unsuitable

Type 1. Alluvial and subject to flooding
Type 2. Organic and extremely wet

Difficult

Type 3. Subject to ponding and with poor drainage
Type 4. With shallow bedrock

Suitable

Type 5. With some limitations for septic fields
Type 6. Without inherent problems

C. Water Quality

The Environmental Assessment Associates study (1976) established four categories of water quality, which have been adopted for the present study. These are:

Not Stressed

No discernible environmental problem sites exist, and there is no conflict in environmental relationships.

Slightly Stressed

There are negligible environmental problem sites, and there is negligible conflict in environmental relationships.

Moderately Stressed

Environmental problem sites are discernible, or negative environmental relationships are possible.

Severely Stressed

Environmental problem sites are discernible, and negative environmental relationships are possible.

D. Vegetation Types

In Chapters Two and Three, nine plant communities are referred to, defined on the basis of species composition, age and status, and substratum (upland, aquatic, or wetlands).

Old Field

This was once primarily upland pasture but has not been actively grazed or mowed in the

last ten to forty years. It still has an open-field aspect, characterized by a predominance of grasses, sedges and herbs with a few scattered shrubs and trees.

Successional Forest

The transition phase to mature forest, in which tree seedlings from seeds disseminated by wind and animals, begin to invade the fields. Includes fast-growing tree species that require direct sunlight.

Oak Forest

Where oak reproduction has increased since the destruction of the American chestnut, so that oak species constitute more than 70% of all tree species.

Mixed Hardwood Forest

Includes oak-dominant and mixed-mesophytic types. The oak-dominant type is 50% to 70% oak. The mixed-mesophytic type is less than 50% oak.

Hemlock and Mixed Hardwood Forest

Hemlock dominating a mixture of beech, red oak, and tulip poplar.

Hemlock Forest

More than 90% hemlock.

Conifer Plantation

A planting by man of a single species of conifers.

Open Water

Plants growing in lakes, ponds, streams, and rivers (not surveyed for this study).

Wetlands

Where soils are nearly saturated with water and little oxygen is available for root respiration.

Abbreviations commonly used throughout this book:

CODA	Community Design Associates
EAA	Environmental Assessment Associates
LUTE	Land Use Through Ecology
PRIZE	Pound Ridge Inventory of Zoning and Ecology
PRUP	Pound Ridge United for Planning, Trust
C Zone	Conservation Zone
REP	Residential Environmental Protection Zone
SARD	Special Allowance Residential District
HD	Historic District
PB-A	Planned Business District - A
PB-B	Planned Business District - B
R1A	Residential One Acre Zone
R2A	Residential Two Acre Zone
R3A	Residential Three Acre Zone
R4-5A	Residential Four Acre Zone and Residential Five Acre Zone

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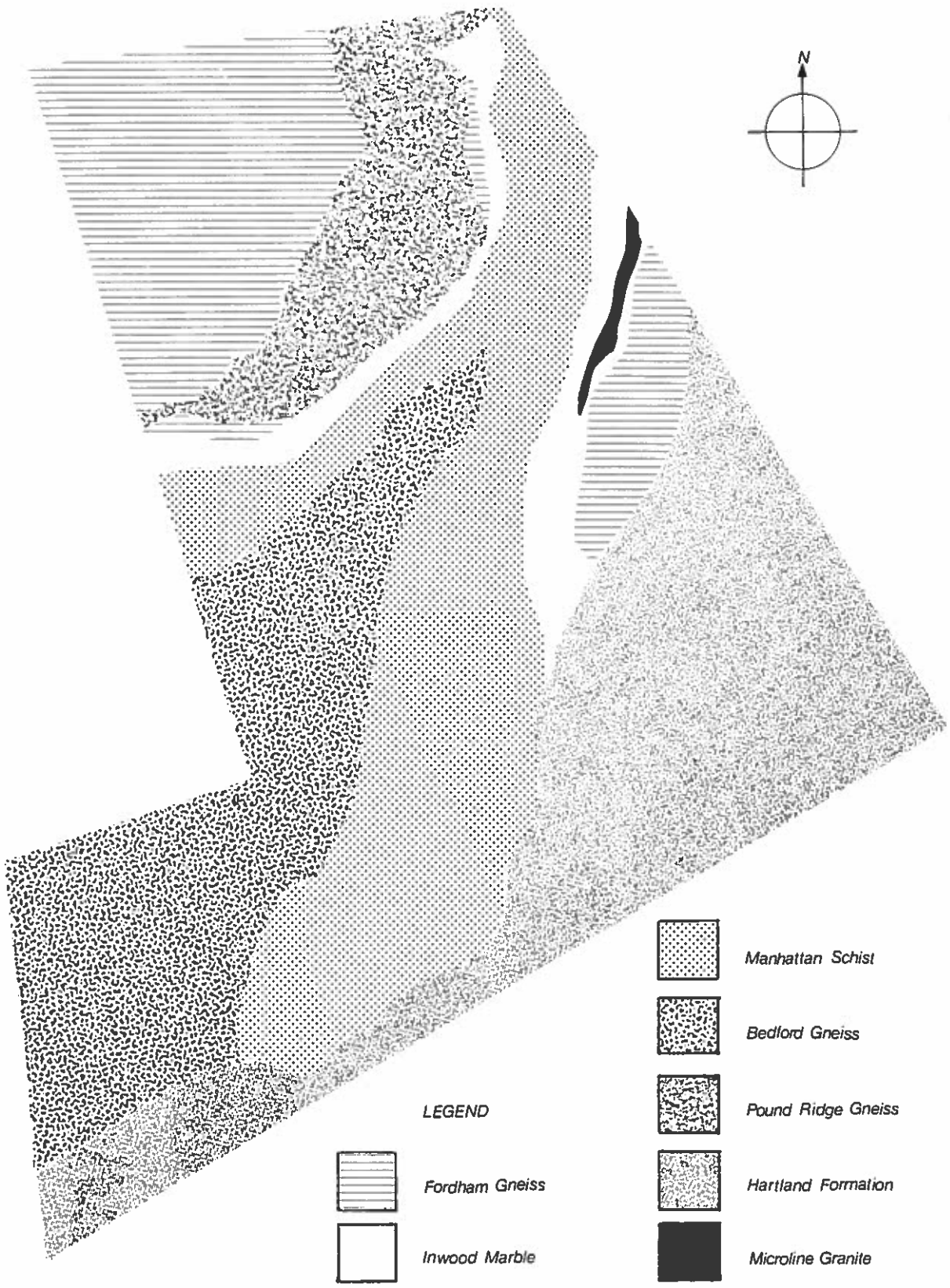
Town of Pound Ridge
Bedrock Geology



Town of Pound Ridge
Bedrock Fracture Planes

SOIL TYPES

26 Key to the Map

Types 1 and 2
Alluvial and organic soils, unsuitable for development, subject to flooding, extremely wet; these various soils include: Aa (1012), Ca (101), ChB (63A, 63B), CtC (74C), CSE (22DE), Cw (311, 32), HRC (70AC, 70BC), HRE (70DE) and SOC (711BC), as well as "Aquifers" as designated.

Type 3
Poor drainage and ponding; these various soils include: CSE (22DE), HRC (70AC, 70BC), HSC (71BC), HRE (70DE) and WdB (77B); limited "Hardpan."

Type 4
Shallow bedrock; these various soils include: CtB(74B), CtC (74C, 74D), CtD (74D), HRE (70DE), HSF (71F); SOE (711DE) and SOC (711BC); PXC(65AC).

Type 5
Suitable for development, limitations for septic fields; these various soils include: "Hardpan," PnB (64A, 64B, 76B), PnC (64C), PnD (64D) and PXC (65AC); CtB (74B) and CtC (74C); HRC (70AC, 70BC), HRE (70DE) and HSE (71DE).

Type 6
Suitable for development; these various soils include: limited "Hardpan;" ChB (63A, 63B), ChC (63C) and ChD (63D); PnB (64B, 76B) and PnC (64C; CtB (74B) and CtC (74C); HRC (70AC, 70BC).

Notes

Note 1: Drawn from a workmap of soils by CODA Summer 1974

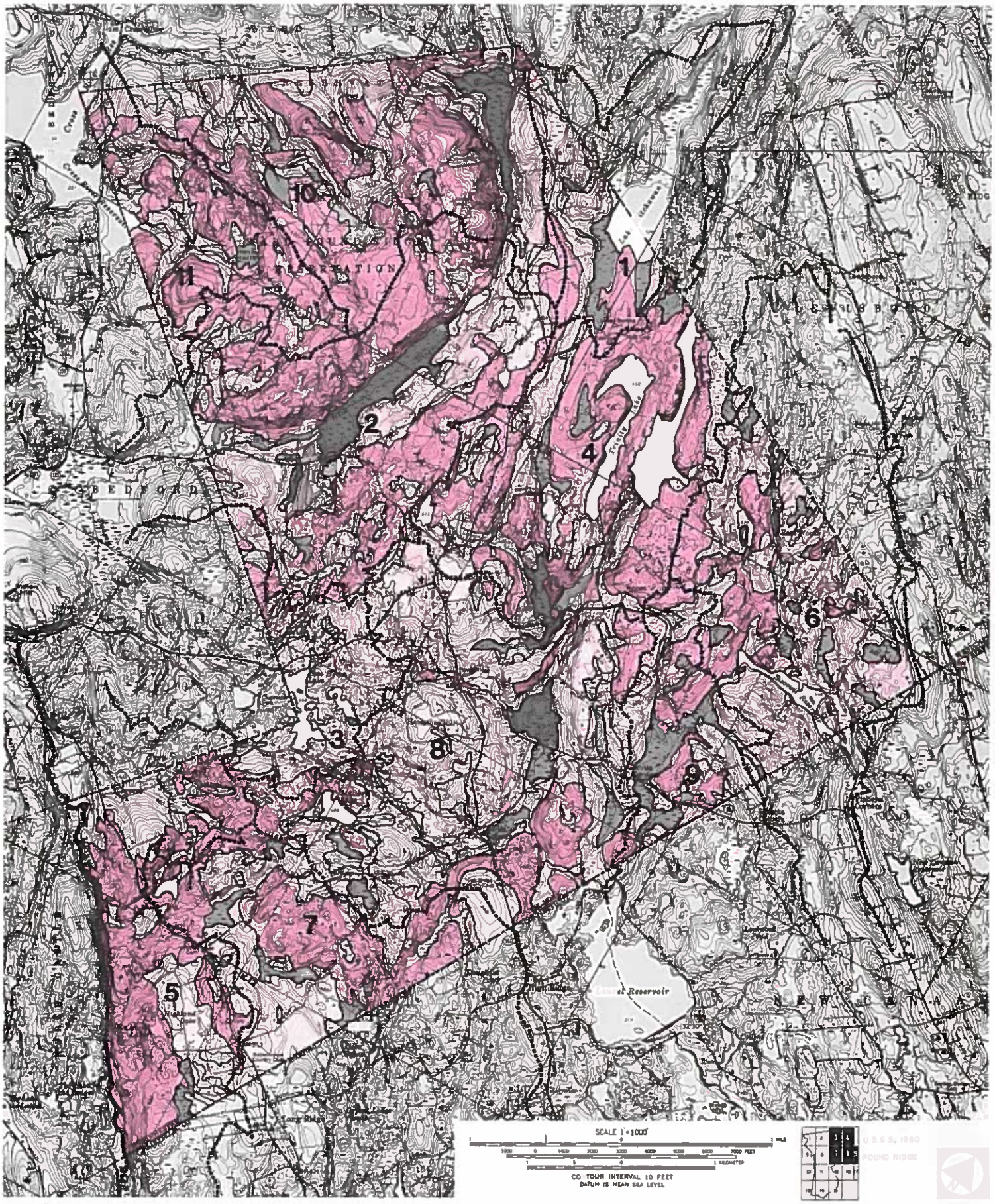
Note 2: Watershed designations Standard U.S.A. topographic maps, prepared in 1960 by the United States Geological Survey (scale: 1 in. equals 2000 ft.) were updated by CODA's field surveys to define each Pound Ridge watershed as shown.

Note 3: Grid referencing for CODA mapping of Pound Ridge:
This grid, shown on the map and given reference numbers e.g. K12, K13, K14, K15 and K16 represents an accurate matching of overlapping aerial photo maps, 26½ in. by 26½ in., prepared by the Tri-State planning Commission and the Westchester County Department of Planning. This aerial grid was superimposed upon the U.S.G.S. topographic mapping index system.

Note 4: This map is intended for general reference. Parcels of property, 10 acres or less for example, should be individually studied or tested on site by a soils scientist, a hydrologist or an engineer.

Note 5: For bedrock geology see New York Museum and Science Service Geological Survey, Map and Chart Series, 1968.

Note 6: A matchline is indicated between Watersheds 4 and 8 for reference only.


SCALE 1"=1000'
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
U.S.G.S. 1960
POUND RIDGE

HYDROLOGY

Key to the Map

Pound Ridge has been divided into eleven environmentally self-contained watershed units, averaging about 1200 acres each. A watershed is an area of land surrounded by high points and ridges which drain into a common basin at the lowest elevation. Some watersheds originate in neighboring towns or export water to neighboring towns. The entire Pound Ridge hydrological system is, in turn, related to and affects the Hudson River and the Long Island Sound drainage systems.

Watershed boundary

Wetlands

Aquifers

Streams and waterflow within each watershed

Suggested water sampling site (designated by CODA, August 1973)

Tested surface water (by E.A.A., testing commenced September, 1974)

Tested wells (by E.A.A., 1974-76)

Notes

Note 1: Watershed designations: Standard U.S.A. topographic maps, prepared in 1960 by the United States Geological Survey (scale: 1 in. equals 2000 ft.) were updated by CODA's field surveys to define each Pound Ridge watershed as shown.

Note 2: Grid reference for CODA mapping of Pound Ridge. This grid, shown on the map and given reference numbers e.g. K12, K13, K14, K15 and K16, represents an accurate matching of overlapping aerial photo maps, 26½ in. by 26½ in., prepared by the Tri-State Planning Commission and the Westchester County Department of Planning. This aerial grid was superimposed upon the U.S.G.S. topographic mapping index system.

Note 3: This map is intended for general reference. parcels of property, 10 acres or less for example, should be individually studied or tested on site by a soils scientist, a hydrologist or an engineer.

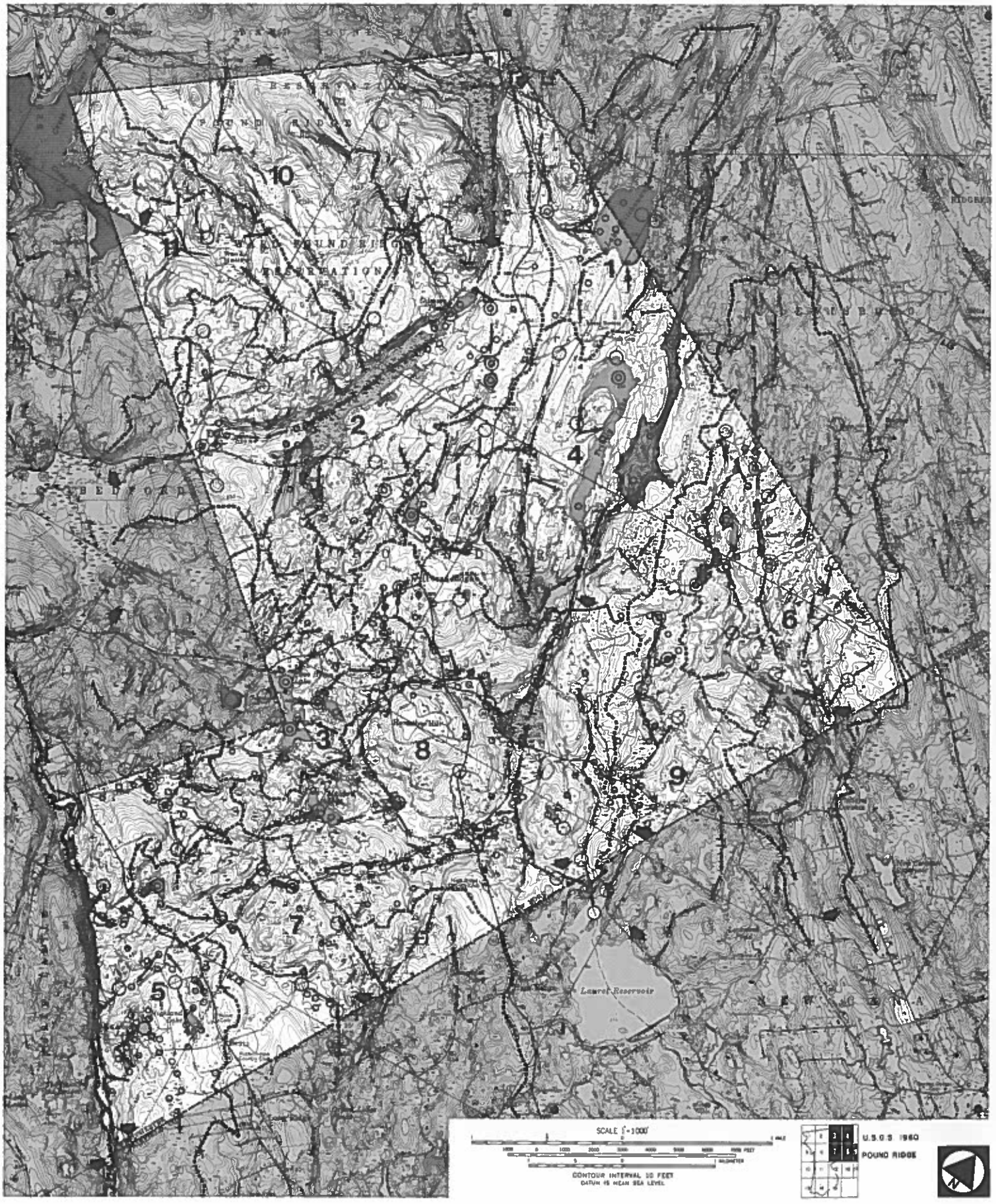
Note 4: For bedrock geology, see New York State Museum and Science Service Geological survey, Map and Chart Series, 1968.

Note 5: A matchline is indicated between Watersheds 4 and 8 for reference only.

Note 6: Data herein was obtained from U.S.G.S. maps and CODA's field surveys, 1973.

Note 7: Aquifers are defined as geologic formations or deposits containing ground water

Note 8: Wetlands are found where the water table is at or near the surface of the land for all or part of the year. They may include peat, muck wetlands; alluvial/till or organic, stream terrace wetlands; and others.


POUND RIDGE
RECREATION
BEDFORD
Laurel Reservoir
10
1
2
4
3
8
6
9
7
5
SCALE 1"=1000'
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL
U.S.G.S. 1960
POUND RIDGE

Swamp Garden — A.E. Bye

CHAPTER TWO

The Ecology of Pound Ridge

It may be helpful to consider some general characteristics of Pound Ridge before turning to the closer study of each watershed, sector by sector, in the following chapter. A map of Pound Ridge can be found on page 8.

I. Topography

Pound Ridge has a varied topographic configuration which ranges from steep cliffs and river gorges to open fields and extensive wetlands.

Most of its 14,130 acres is made up of rolling hills, some parts of which present large open vistas across old farm lands. The most prominent topographic feature, located in the northern part of the town, is a plateau approximately 3,500 acres in area. The elevations on the southern and eastern rim range from 600 to 830 feet. These hills drop abruptly into a semicircular valley of Stone Hill River flowing at an elevation of 450 feet. Other topographic features include the Lake Kitchawan basin in the north-eastern part of the town; two elongated bodies of water — Trinity Lake and Mill River Reservoir in the Mill River valley south of Lake Kitchawan; a cluster of lakes including Blue Heron Lake and Mallard Lake in the western part of the town; and the Siscowit Reservoir basin in the southeastern corner of the town.

The southwestern boundary of the town runs along the bottom of a steep ravine formed by the Mianus River. The gorge of the Mianus River is another area of topographic distinction. In many wooded areas large and prominent rock outcroppings and small ponds add to the variety of the terrain.

II. Bedrock Geology

Pound Ridge has two large and clearly defined areas underlaid by water-bearing rock formation of Inwood marble. One is located around the periphery of the Ward Pound Ridge Reservation following the lines of the valleys of Cross River in the north and Stone Hill River in the south. The other stretches from Lewisboro southward under Lake Kitchawan, tapering off in the vicinity of Indian Hill and south of Trinity Pass.

Other types of rock consist of Siscowit granite gneiss complexes in the eastern part of the town and Fordham gneiss underlying areas north and south of Trinity Lake, Mill River Reservoir, and most of the Ward Pound Ridge Reservation plateau. Manhattan Formation, which is composed of weathered gneiss and schist, is found in the remaining central and southwestern parts of the town.

All geological formations in the area are characterized by extensive patterns of bedrock fracture planes that carry underground water. This is evident from the study prepared by Environmental Assessment Associates (1976) as well as from the experience of well drilling in the town. A map of approximate configuration of the bedrock fracture planes is on p. 25. The abundance of underground water throughout the area is an incentive to development, but at the same time the many systems of underground fractures offer easy penetration of the water table by pollutants.

III. Soils

Pound Ridge has a great many areas with soils that, with respect to development, are either unsuitable or difficult. The problem is compounded by generally steep terrain and shallowness of soils, which affect septic-tank efficiency in many areas. Septic fields have to be installed and maintained according to New York State Health Department standards. Since Pound Ridge has predominantly two- and three-acre zoning, soil classification by itself would not deter development in most areas. Soil conditions, however, are important in an over-all environmental analysis.

IV. Hydrology

Of the eleven watersheds identified in Pound Ridge, nine have their headwaters within the town boundaries. With the one exception of the Mill River all the town's water resources

originate within its borders. (The Mill River flows into Pound Ridge from a thinly populated section of Lewisboro.) Any stress or contamination of the surface water is therefore almost certain to originate in Pound Ridge itself. For example, deterioration of water quality in Lake Kitchawan can be traced to the high level of development on its eastern bank, and problems in Scotts Corners may be the result of extensive construction on poor soils.

Precipitation in Westchester County averages 42 inches a year. For Pound Ridge this amounts to approximately 14.7 billion gallons of water a year. Because of steep slopes and thin soils, however, about sixty percent of that amount is drained off immediately into open bodies of water. Large wooded areas capture about twenty percent, and an estimated ten percent is lost to evaporation. Only the remaining ten percent infiltrates underground. This amounts to little more than a billion gallons a year. Obviously, proper use and protection of this water are among the goals of environmental planning.

The study by Environmental Assessment Associates (1976) provides a basis for an estimate of future water demand. It says the national average for water consumption for estate or luxury residences is 100 to 150 gallons a day per person. The national average for apartments is 40 to 50 gallons a day. In Westchester the average is 90 gallons a day. In Pound Ridge the consumption of water is presently at the rate of 98 gallons a day. Thus there is obviously no danger of a water shortage in the foreseeable future, and water supply will not be a limiting factor in development.

Because of the fast rate of drainage, well water in Pound Ridge is in general exceptionally pure. Only small amounts of polluting substances penetrate the water table, which is the source of drinking water. Adverse ecological conditions are observed primarily in the surface water. This is, however, of concern to neighboring communities such as New Canaan, Stamford, and Bedford, which are located "downstream" from Pound Ridge and whose water supply is affected by many of the environmental conditions created in Pound Ridge.

The Environmental Assessment Associates study used laboratory tests to determine water quality. It found that surface water in some parts of Pound Ridge was "severely stressed", but it did not attempt to give the reasons for this. The stresses it found may not necessarily be the result of human intervention in the hydrological system but may be caused by natural phenomena such as plant decay and water stagnation.

The hydrological cycle in Pound Ridge is depicted in Figure 1 on page 12.

Some general problems that may affect the town's future development include the following:

1. Soils high in sand and gravel or over the bedrock with large fractures, such as occur in marble and fault zones, transmit and store water well. They are therefore good places for wells but poor places for septic systems, because the effluent is not retained long enough to be thoroughly purified before reaching a well. This results in polluted groundwater.

This may also occur in soils on glacial till when septic systems are too close to wells. Similarly, streams and lakes can become malodorous and choked with weeds when fed by too many septic systems or ones that are poorly placed. Existing public health regulations are not always adequate to prevent such undesirable conditions.

2. Conversely, soils too high in clay or with hardpan do not allow the effluent of septic systems to drain away fast enough. Contaminated water, therefore, ponds at the surface, causing a nuisance and a public health problem.

3. The storage of groundwater is not uniform throughout a watershed but tends to be less on the upper slopes and ridgetops. Wells too closely spaced will interfere with one another, causing yields to drop, and may go dry during periods of low recharge.

4. As the forest is cut and replaced by roads, driveways, and other paved or compacted surfaces, the soil's absorptive capacity is lessened and the frequency and severity of downstream floods increase.

V. Vegetation

Apart from topography, vegetation is the

most visible part of the environment and is the aspect of nature most familiar to the inhabitants of Pound Ridge. The area has a diverse landscape with many distinctive vegetation types within its 14,130 acres.

What follows is a description of the species composition characteristic of each of the nine plant communities found in Pound Ridge and a complete species list for most of them. The species lists include the plants that are generally found in such communities. It is possible that a few additional varieties could be found.

1. **Old field.** This community is characterized by a predominance of grasses, sedges, and herbs, with a few scattered shrubs and trees. Shrubs that grow vigorously in the open, such as the highbush blueberry and raspberry, and that reproduce vegetatively in clones, such as gray dogwood, are among the first invaders as the process of reforestation begins. This "post-disturbance" vegetation of grasses, with colorful daisies, butterfly weed, goldenrod, and characteristic red cedars, is bounded by handsome old stone walls and provides aesthetically pleasing diversity in an otherwise forested landscape. The red cedars, whose seedlings invaded the cleared fields during the period of active agriculture in Pound Ridge, often survived browsing because they are very bristly and unpalatable to livestock. These cedars and the fastgrowing gray birches are the most frequent tree invaders found in the old-field vegetation type. The large variety of seed-bearing herbs and berried shrubs make the abandoned fields an ideal habitat for many birds and small animals. In some meadow thickets one can flush a woodcock or pheasant.

There are many examples of old field vegetation, among them the complex of red-cedar fields west of Trinity Lake on water company land and the fields north of Upper Shad Road and east of Long Ridge Road.

Old Field Species

TREE STRATUM
Trees larger than 15 feet at maturity:
Acer rubrum, *(Red Maple)*
Acer saccharum, *(Sugar Maple)*
Betula lenta, *(Black Birch)**
Betula populifolia, *(Grey Birch)**
Carpinus caroliniana, *(Blue Beech)*
Fraxinus pennsylvanica, *(Green Ash)*
Juniperus virginiana, *(Red Cedar)**
Nyssa sylvatica, *(Black Gum)*
Ostrya virginiana, *(Hornbeam)*
Populus grandidentata, *(Big Toothed Aspen)**
Populus tremuloides, *(Trembling Aspen)*
Prunus pennsylvanica, *(Choke Cherry)*
Prunus serotina, *(Black Cherry)*
Pyrus malus, *(Apple)*
Quercus rubra var. borealis, *(Northern Red Oak)*
Quercus velutina, *(Black Oak)*
Robina pseudo-acacia, *(Black Locust)*

SHRUB STRATUM
Woody trees smaller than 15 feet and larger than 3 feet at maturity:
Amelanchier ssp, *(Shadbush)*
Cornus racemosa, *(Grey Dogwood)**
Eleganus angustitulia, *(Russian Olive)*
Gaylussacia baccata, *(Huckleberry)*
Myrica pennsylvanica, *(Bayberry)*
Potentilla fruticosa, *(Shrubby Cinquefoil)*
Rhus glabra, *(Smooth Sumac)**
Rhus copallina, *(Winged Sumac)*
Rubus ideaus, *(Red Raspberry)*
Rubus phoenicolasius, *(Wine Berry)*
Rubus occidentalis, *(Black Raspberry)*
Rubus odoratus, *(Purple Flowering Raspberry)*
Rosa spp., *(Wild Roses)*
Smilax herbacea, *(Carrion Flower)*
Smilax rotundifolia, *(Greenbriar)*
Spirea latifolia, *(Meadowsweet)*
Spirea tomentosa, *(Steeple Bush)*
Vaccinium carymbosuln, *(Highbush Blueberry)**
Viburnum lentago, *(Nannyberry)*
Vitis spp., *(Wild Grape)*

HERB STRATUM
Woody or herbaceous plants smaller than 3 feet at maturity:
Achillea millefolia, *(Yarrow)*
Agrostis alba, *(Redtop)*
Alliaria officinalis, *(Garlic Mustard)*
Andropogon virginicus, *(Broomsedge)*
Andropogon scoparius, *(Little Bluestem)*

*dominant species

Anthoxanthum odoratum, *(Sweet Vernal Grass)*
Antennaral spp., *(Pussytoes)*
Ambrosia artemisifolia, *(Common Ragweed)*
Asclepias syrica, *(Common Milkweed)*
Asclepias tuberosa, *(Butterfly Weed)*
Chamaelirium lutem, *(Devil's Bit)*
Cichorium intybus, *(Chicory)*
Comptonia perigrina, *(Sweet Fern)*
Coronilla varia, *(Crown Vetch)*
Crysanthemum leucanthemum, *(Ox-eye Daisy)*
Dactylus glomeratus, *(Orchard Grass)*
Daucus carota, *(Queen Anne's Lace)*
Dennstaedia punctiloba, *(Hay scented Fern)*
Erigeron spp., *(Daisy Fleabane)*
Festuca ovina, *(Sheep Fescue)*
Fragaria americana, *(Strawberry)*
Galium spp., *(Bedstraws)*
Leersia virginica, *(Catchfly Grass)*
Linaria vulgaris, *(Butter and Eggs)*
Lotus corniculatus, *(Birdfoot Trefoil)*
Meliotus alba, *(White Sweet Clover)*
Meliotus officinalis, *(Yellow Sweet Clover)*
Parthenocissus quinquefolia, *(Virginia Creeper)*
Phytolacca americana, *(Pokeweed)*
Poa pratense, *(Kentucky Bluegrass)*
Phleum pratense, *(Timothy Grass)*
Polygonum lapathifolium, *(Pale Smartweed)*
Potentilla spp., *(Cinquefoils)*
Prunella vulgaris, *(Self Heal)*
Pteridium aquilinum, *(Bracken Fern)*
Lysimachia quadrifolia, *(Whorled Loosestrife)*
Rhus radicans, *(Poison Ivy)**
Rubus Hispidus, *(Bristly Dewberry)*
Rudbeckia hirta, *(Black Eyed Susan)*
Silene cucubalus, *(Bladder Campion)*
Solanum carolinense, *(Horse Nettle)*
Solidago spp., *(Goldenrods)**
Taraxavum officinale, *(Dandelion)*
Trifolium pratense, *(Red Clover)*
Urtica dioca, *(Stinging Nettle)*
Vaccinium angustifolium, *(Low Bush Blueberry)*
Verbascum thapsus, *(Mullein)*
Vicia spp., *(Vetch)*

2. **Successional forest.** In this plant community the aspect is that of a young forest that is changing. Black birch and large-toothed aspen are common pioneers. Large, beautiful sugar maples growing along the stone walls have in many cases served as an abundant seed source, resulting in some successional stands of almost pure sugar maple. Winged seeds from large white and green ashes found along stone walls also seed into fields. Pioneer trees may include a large number of species, but ash, black and gray birch, black locust, aspen, black cherry, and sugar maple are the most common.

The shade of these trees changes the light and temperature conditions of the soil beneath them, and their leaf litter rebuilds the soil structure and humus content that were altered by agriculture. As the vegetation modifies the environmental conditions, the forest edge encroaches further on the once-cleared land, and one of the more mature forest-vegetation types found in Pound Ridge begins to establish itself. The successional period, when the species that first invade the unforested land can thrive, is transitional. Few of the mature trees, shrubs, and herbs that eventually provide self-perpetuating and relatively stable vegetation cover are members of the species commonly found in successional stages.

The forerunners of the more mature forest lose dominance because their seedlings are intolerant of shade, because root systems of different species compete for nutrients and water, and because these and other factors interact. Black birch, for example, although it is a successful clearing invader, is particularly susceptible to *Nectria* fungi.

Stands of fungi-cankered black birch surrounded by vigorous seedlings and saplings of other species such as sugar maple, sassafras, and tulip poplar are a testimony to the complex successional interactions and are quite common in Pound Ridge.

Examples of the successional forest vegetation community are the sugar-maple stand seeding an old apple-orchard complex south of Stone Hill Road and east of Honey Hollow Road and the black-birch stand infected with *Nectria* north of Stone Hill River and east of Michigan Trail.

This community is too variable and transitional (between field and forest types) for us to give a species list.

*dominant species

Pound Ridge lies in a region of diverse forest vegetation. To the north, in New England, lies the forest region dominated by hemlock, northern hardwoods, and white pine, where sugar maple, beech, and yellow birch mix with conifers. To the south are regions of mixed forests, where oak-hickory associations of more mesophytic mixed hardwoods such as tulip poplar, sugar maple, and beech share dominance. The local forest vegetation reflects a mixing of these types, which surround Pound Ridge on a north-south climatic continuum.

Although Pound Ridge is located in a region designated as the glaciated section of the oak-chestnut region of dominant forest vegetation, the American chestnut, the most valuable and one of the largest and stateliest of the forest's dominant species, has been wiped out in the last fifty years.

The chestnut blight and its effect on the lower Hudson forest region illustrate the impact of a biological disaster on the forest and the different successional directions that can follow a large-scale disturbance of the ecosystem. Chestnut blight is caused by *Endothia parasitica,* an ascomycetous fungus. Like the cause of Dutch elm disease, it is an imported pathogen, thought to have been introduced on nursery stock from the Orient. In 1904, American chestnuts in New York began to die suddenly. The introduction of this alien fungus into a system where the environment was conducive to rapid growth, where the host (the American chestnut) had no genetic resistance, and where the fungus could exist saprophytically on the bark of oaks that were forest co-dominants of the chestnut resulted in the chestnut blight's advance at a rate close to twenty-four miles a year.

The root collar of the chestnut, however, resists the infection and produces root sprouts that reach sapling height in this region. Today Pound Ridge lies in what has been designated the "sprout hardwood" region of the northeast. Following the blight and logging operations that are part of the history of this landscape, many oaks and American chestnuts have reproduced vegetatively by sprouting. This sprouting ability is one of the mechanisms working in the process of reforestation to maintain some of the original forest composition.

Sprouts of American chestnut are common in forested portions of Pound Ridge, as are the rotting stumps of the blighted trees, the result of logging operations to salvage the chestnut wood. These are the remnants of forest trees that reached sixty to ninety feet and could be three to five feet in diameter at maturity. The chestnut sprouts today are usually three to eight feet high and grow to one to two inches in diameter before they show symptoms of chestnut-blight cankers. The largest sprout we have seen in Pound Ridge is four inches in diameter and about twenty feet high. It shows no sign of disease at this time and is growing in the mature mixed forest west of the Siscowit Reservoir on the Stamford Water Company land.

Forest succession has taken several different directions after the elimination of the American chestnut. Of the four vegetation communities that follow, two in particular—oak and mixed hardwood—have been most responsible for successional replacement after the chestnut blight.

3. **Oak forest.** The four oak species commonly growing in this community are northern red, white, black, and chestnut oaks, and these are often found in association with black birch and sassafras. A subdivision within this type can be called "oak knolls." This is a community occuring on well-drained rocky hills that support a good proportion of chestnut oak and often an understory of mountain laurel, an ericaceous evergreen shrub that grows well in the slightly acidic soil formed by oak litter and in some places forms an almost impenetrable stratum. In other oak areas the shrub layer is more open and the ericaceous high- and low-bush blueberries are present. Herb layer species are characteristically not abundant in this community, but they include the beautiful pink lady's slipper orchid, wild sarsaparilla, wintergreen, and mosses.

Gypsy-moth defoliation has been particularly severe on oak knolls dominated by chestnut oak. Many of these knolls in Pound Ridge support dead trunks of this oak species, with young chestnut oak, black oak, and red oak species seeding in.

Examples of the oak-forest type are found

in numerous Pound Ridge locations. One is the oak ridge west of Route 124 and beyond the substation.

Oak Forest Species

TREE STRATUM
Trees larger than 15 feet at maturity:
Acer rubrum, *(Red Maple)*
Acer saccharum, *(Sugar Maple)*
Betula alleghenensis, *(Yellow Birch)*
Betula lenta, *(Black Birch)**
Carya ovata, *(Shagbark Hickory)*
Carya glabra, *(Pignut Hickory)*
Carya tomentosa, *(Mockernut Hickory)*
Fagus grandifolia, *(Beech)*
Liriodendron tulipifera, *(Tulip Poplar)*
Prunus serotina, *(Black Cherry)*
Quercus alba, *(White Oak)**
Quercus prinus, *(Chestnut Oak)**
Quercus rubra var. borealis, *(Northern Red Oak)**
Quercus velutina, *(Black Oak)**
Sassafras albidum, *(Sassafras)*

SHRUB STRATUM
Woody trees smaller than 15 feet and larger than 3 feet at maturity:
Acer pennsylvanicum, *(Striped Maple)*
Castanea dentata, *(Chestnut (sprouts))*
Hamamelis virginiana, *(Witch Hazel)*
Kalmia latifolia, *(Mountain Laurel)**
Vaccinium corymbosum, *(Highbush Blueberry)**

HERB STRATUM
Woody or herbaceous plants smaller than 3 feet at maturity:
Aralia nudicaulis, *(Wild Sarsaparilla)*
Cypripedium acaule, *(Pink Lady's Slipper)**
Gaultheria procumbens, *(Wintergreen)*
Gaylussacia baccata, *(Huckleberry)*
Geranium maculatum, *(Wild Geranium)*
Hepatica acutiloba, *(Hepatica)*
Hepatica americana, *(Haircup Moss)*
Malanthemem canadense, *(Canada Mayflower)**
Polystichum acrostichoides, *(Christmas Fern)**
Thelypteris nova boracensis, *(New York Fern)*
Vaccinium angustifolium, *(Lowbush Blueberry)**

*dominant species

4. **Mixed hardwood forest.** In the oak-dominant mixed-hardwood forest, it is likely that sugar maples, tulip poplars, and black birches, as well as additional oak seedlings, invaded the forest gaps left by the chestnut blight. This results in a forest with many northern red oaks, white oaks, and black oaks, but with thirty to fifty percent of the canopy trees belonging to other hardwood species.

In the mixed-mesophytic type of hardwood forest, sugar and red maples and tulip poplars share dominance with white ashes, beeches, and four species of hickory. Maple-leaved viburnum and witch hazel are common in the shrub layer. Woodland herbs such as Solomon's seal, wild geranium, wild ginger, and asters are colorfully dispersed among ferns, which include New York, lady, hay-scented, and maidenhair.

The outstanding example of a mature mixed-mesophytic forest is the Mianus Watershed study area, southeast of Twin Lakes off Pine Brook Road.

Mixed Hardwood Forest Species

TREE STRATUM
Trees larger than 15 feet at maturity:
Acer saccharum, *(Sugar Maple)*
Acer rubrum, *(Red Maple)*
Betula lenta, *(Black Birch)*
Carpinus caroliniana, *(Blue Beech)*
Carya cordiformis, *(Bitternut Hickory)*
Carya glabra, *(Pignut Hickory)*
Carya ovata, *(Mockernut Hickory)*

SHRUB STRATUM
Woody trees smaller than 15 feet and larger than 3 feet at maturity:
Castanea dentata, *(American Chestnut (sprouts))*
Hamamelis virginiana, *(Witch Hazel)*
Viburnum acerifolim, *(Maple Leafed Viburnum)**
Viburnum dentatum, *(Arrowwood)*

HERB STRATUM
Woody or herbaceous plants smaller than 3 feet at maturity:
Aetaea pachypoda, *(White Baneberry)*

*dominant species

Aetaea rubra, *(Red Baneberry)*
Athyrium felix-femino, *(Lady Fern)*
Adiantum pedatum, *(Maidenhair Fern)*
Agrimonia spp., *(Agrimony)*
Asarum canadense, *(Wild Ginger)*
Aster spp., *(Asters)*
Botrychium virginianum, *(Rattlesnake Fern)*
Caulophyllym thalictroides, *(Blue Cohash)*
Dennstaedtia punctilobula, *(Hay-scented Fern)**
Desmodium glutinosum, *(Pointed Leaf Tick Trefoil)*
Dicentra cucullaria, *(Dutchman's Breeches)*
Dryopteris spinulosa, *(Spinulose Wood Fern)*
Geranium maculatum, *(Wild Geranium)*
Maianthemum canadense, *(Canada Mayflower)**
Medeola virginiana, *(Indian Cucumber Root)*
Podophyllum peltatum, *(May Apple)*
Polygonum beflorum, *(Solomon Seal)*
Polystichum acrostichoides, *(Christmas Ferns)*
Pryol spp., *(Shinleaf)*
Rhus radicans, *(Poison Ivy)**
Sanguinaria canadense, *(Bloodroot)*
Smilacina racemosa, *(False Solomon's Seal)*
Solidago spp., *(Goldenrods)*
Theypteris novaboraiensis, *(New York Fern)*
Trillium erectum, *(Wake Robin)*

5. **Hemlock and Mixed Hardwood Forest.** A typical hemlock and mixed hardwood forest is found in Pound Ridge on the eastern side of the Mianus River near the Southwood Homes area. Overstory species from the hardwood community are mixed with hemlocks in varying proportions. The shrub layer in this community is usually sparse, and its species are a mixture of the hardwood type with that of the hemlock community.

This community typically has a variable mixture of species common to the hemlock community and the mixed-hardwood community. Therefore no separate species list is given.

6. **Hemlock forest.** In a hemlock forest, such as that found on the steep slopes of the Mianus Gorge, an occasional beech, northern red oak, or black birch grows with these thick-crowned conifers. Mountain laurel can be found in spots, although the shrub and herb layers are rather sparsely vegetated in the shade of the hemlock canopy. However, in this herb layer several lovely wildflowers can be found, including pink lady's slipper, rattlesnake plantain, partridge berry, starflower, and the saprophytic Indian pipes. Ground pines and other club mosses add patches of green to the well-shaded hemlock-needle forest floor.

Hemlock Forest Species

TREE STRATUM
Trees larger than 15 feet at maturity:
Betula lenta, *(Black Birch)*
Fagus grandifolia, *(Beech)*
Quercus rubra, *(Red Oak)*
Tsuga canadensis, *(Hemlock)**

SHRUB STRATUM
Woody trees smaller than 15 feet and larger than 3 feet at maturity:
Hamamelis virginiana, *(Witch Hazel)*
Kalmia latifolia, *(Mountain Laurel)*

HERB STRATUM
Woody or herbaceous plants smaller than 3 feet at maturity:
Aralia nudicaulis, *(Wild Sarsaparilla)*
Chimaphila maculata, *(Spotted Wintergreen)*
Cypripedium acaule, *(Pink Lady's Slipper)*
Goodyera spp., *(Rattlesnake Plantain)*
Lycopodium complenatum, *(Ground Pine)*
Lycopodium lucidulum, *(Shining Clubmoss)*
Lycopodium obscurum, *(Tree Clubmoss)*
Maianthemum canadense, *(Canada Mayflower)*
Mitchella repens, *(Partridge Berry)*
Monothropa uniflora, *(Indian Pipe)*
Parthenocissus quinquefolia, *(Virginia Creeper)*
Polypodium vulgare, *(Common Polypody)*
Polystichum acrostichoides, *(Christmas Fern)*
Trientalis borealis, *(Starflower)*

7. **Conifer plantation.** There are several single-species conifer plantings in Pound Ridge, such as the Norway spruce of Carolyn's Grove, off Stone Hill Road, and the red pine on water company properties. These areas in some cases cover several acres and are a notable feature of the landscape.

*dominant species

*dominant species

Conifer Plantation Species

The tree groups below were usually planted in separate groups according to species. In some cases, however, mixtures of several species have been planted.
Larix laricina, *(Larch)*
Picea abies, *(Norway Spruce)*
Picea glauca, *(White Spruce)*
Pinus resinosa, *(Red Pine)*
Pinus strobus, *(White Pine)*
Pinus sylvestris, *(Scotch Pine)*
Thuja occidentalis, *(Arborvitae)*
Tsuga canadensis, *(Hemlock)*

8. **Open-water vegetation.** This community, which exists in Pound Ridge's ponds and streams, was not investigated by the survey team.

Open-water Vegetation Species

Alisma spp., *(Water Plantain)*
Alnus rugosa, *(Speckled Alder)*
Arisaema atrorubens, *(Jack in the Pulpit)*
Cephalanthus occidentalis, *(Buttonbush)*
Crysospleneum americanum,
Elecharis spp., *(Spikerush)*
Eupatorium perfoliatum, *(Boneset)*
Hydrocotyl americana, *(Water Pennywort)*
Impatiens biflora, *(Jewel Weed)*
Leersia virginica, *(Catchfly grass)*
Ludwiga palustris, *(Water Purslane)*
Myriophyllum spp., *(Water Millefoils)*
Nymphaea varigatum, *(Millheae Pond Lily)*
Nymphaea spp., *(Waterlilies)*
Phragmites cummunis, *(Phragmites)*
Polygonum sagittum, *(Arrow Leafed Tear-thumb)*
Polygonum spp., *(Smartweed)*
Pontederia cordata, *(Pickerel Weed)*
Potomogeton spp., *(Pondweeds)*
Sagittaria spp., *(Arrowheads)*
Sambucus canadensis, *(American Elder)*
Trillium erectum, *(Red Trillium)*
Typha latifolia, *(Cattails)*
Utricularia vulgaris, *(Common Bladderwort)*

9. **Wetlands vegetation.** In Pound Ridge swamp vegetation occurs in lakes that have been naturally vegetated or in areas hollowed by glaciation so that the water table is at or just below the surface of the soil. Muck and peaty soil are built up by the decomposition of the vegetation. Some of the Pound Ridge wetlands have tree, shrub, and herb layers. The swamps are shaded by red maple (swamp maple), the dominant species, with associated black ash, American elm, black gum, and yellow birch also found in some of the mature swamp forests. The shrub layer in this vegetation community is dominated by sweet pepper bush and spice-bush in varying proportions, with swamp azalea occurring in some spots.

The tall wetland ferns, cinnamon and interrupted, and the characteristic sensitive and royal ferns are closely associated with skunk cabbage, jewel weed, and tussock sedge. Often large tulip poplars over two feet in diameter can be found on sloping ridges surrounding swamps. It is likely that some of the largest tulip poplars survived clearing for agriculture because access was poor.

An example of a swamp forest is the extensive stretch of red maple swamp south of Mallard Lake and across Upper Shad Road. A mature complex forest with large yellow birches exists in some of the open areas of the Briarwood residential complex.

Wetlands Vegetation Species

TREE STRATUM
Trees larger than 15 feet at maturity:
Acer rubrum, *(Red Maple)**
Betula allegheniensis, *(Yellow Birch)*
Fraxinus nigra, *(Black Ash)*
Liriodendron tulipifera, *(Tulip Poplar)*
Nyssa sylvatica, *(Black Gum)*
Quercus bicolor, *(Swamp White Oak)*
Ulnus americana, *(American Elm)*

SHRUB STRATUM
Woody trees smaller than 15 feet and larger than 3 feet at maturity:
Alnus spp., *(Alder)*
Azalea viscosum, *(Swamp Azalea)*
Clethra alnifolia, *(Sweet Pepperbush)*
Lindera benzoin, *(Spicebush)*

*dominant species

*dominant species

Lonicera spp., *(Fly Honeysuckle)*
Lyonia lugustrina, *(Maleberry)*
Vibrunum dentatum, *(Arrowwood)*
Vibrunum lentago, *(Nannyberry)*
Sambucus canadensis, *(Common Elderberry)*

HERB STRATUM
Woody or herbaceous plants smaller than 3 feet at maturity:
Arisaema atrorubens, *(Jack in the Pulpit)*
Caltha palustris, *(Marsh Marigold)*
Carex stricta, *(Tussock Sedge)*
Impatiens biflora, *(Jewel weed)*
Onoclea sensibilis, *(Sensitive Fern)**
Osmunda cinnamonea, *(Cinnamon Fern)**
Osmunda claytoniana, *(Interrupted Fern)*
Osmunda regalis, *(Royal Fern)*
Symplocarpus foetidus, *(Skunk Cabbage)*
Thalictrum polygamum, *(Tall Meadow Rue)*
Theiypteris palustris, *(Marsh Fern)*
Typha latifolia, *(Cattail)*
Viola spp., *(Violets)*

*dominant species

Wetlands Forest — A.E. Bye

CHAPTER THREE

Eleven Pound Ridge Watersheds: An Analysis with Maps and Inventory Charts

Watersheds and Major Drainage Routes

HUDSON RIVER DRAINAGES (via New Croton Reservoir and River)

1. Lake Kitchawan — Cross River — Cross River Reservoir
2. Stone Hill — Stone Hill River
3. Blue Heron Lake — Pitch Swamp — Stone Hill River
10. Ward Pound Ridge Reservation — Cross River Reservoir
11. Honey Hollow — Cross River Reservoir

LONG ISLAND SOUND DRAINAGES

A. Via Mianus River

5. Mianus — Mianus River — East Branch Mianus River — Bargh Reservoir
7. Shad Roads Area — East Branch Mianus River

B. Via Rippowam River

4. Mill River North — Mill River — Laurel Reservoir — Rippowam River — New Stamford Reservoir
8. Mill River South — Mill River — Laurel Reservoir — Rippowam River — New Stamford Reservoir
9. Barnegat — Laurel Reservoir — Rippowam River — New Stamford Reservoir
6. Siscowit — Rippowam River — New Stamford Reservoir

The maps, the charts, and the written texts in this chapter present similar information in different forms. Together they provide a comprehensive, convenient body of information on which to base decisions about land use anywhere in Pound Ridge. The first chart for each watershed is an inventory, describing the status of the land in 1974, the year the survey was made. To the right is a second chart, indicating the mutual environmental effect on each of its sectors. The third chart, the "Summary", compares the effect of development if the watershed were fully developed under present zoning regulations with development under recommendations that are more environmentally sound.

For each sector of a watershed the following information is given:

- Sector number
- Acreage
- Location and general characteristics
- Existing roads and accessibility
- Present stage of development
- Mutual impact of natural conditions (A) and man-made conditions (B)
- Bedrock formation
- Soils
- Hydrological conditions
- Vegetation (usually excluding open water and wetlands)
- Population
- Conclusions
- Recommendations

All the properties mentioned are identified in the PRIZE computerized data.

Critical Areas in the Planning Process—1973

These are numbered in sequence and indicated on watershed maps. The description of each area is included in each watershed analysis.

Environmental Problem Sites:

Mostly small acreages on which CODA recognized some existing problem or a strong potential for the eminent development of a problem. For example — potential eutrophication of surface waters, septic drainage problems, erosion due to poor land management, local dumping sites.

Natural Areas of Special Interest:

Generally defines small acreages on which some aspect of natural phenomena is sufficiently well developed to be worthy of preservation for scientific or educational purposes, or

both. All aspects of natural sciences are covered such as geology, vegetation, soils, hydrology, locations of unique flora or fauna.

Historic Sites:

Includes old burial grounds or Indian sites, buildings, old camp sites, mill sites or other evidences of early industry, old farm houses, etc.

Water Sampling Sites (only on Hydrology map):

During the early stages of CODA's 1973 summer field work, the Town Government was reported to be considering a scientific study of Pound Ridge's water quality. Since CODA's field work brought it in contact with the entire spectrum of surface water conditions in town, CODA felt it could save time and money for Pound Ridge taxpayers by recording logical places for obtaining water samples for standard analysis.

Therefore, this report locates 121 surface water sampling sites recommended for standard analysis. Their selection was done under the supervision of hydrologist Thomas Kohlsaat.

CODA's water sampling sites, are located on lakes and streams, and include a range of water quality conditions from pristine springs and small streams to highly euthropic lakes and their downstream drainages. The surface water testing study conducted by EAA in 1974-1976 supports in general the findings of CODA's field work.

Ecologists in the Field — Lisl Steiner

Key to the Map

Existing Land Controls

developed up to zoning limit

tax exempt

wetlands

open water

zoning district boundary

tax block boundary

Proposed Additional Land Controls

sector boundary

"C" (conservation) zone

4-5 acre zone

REP — residential environmental protection zone

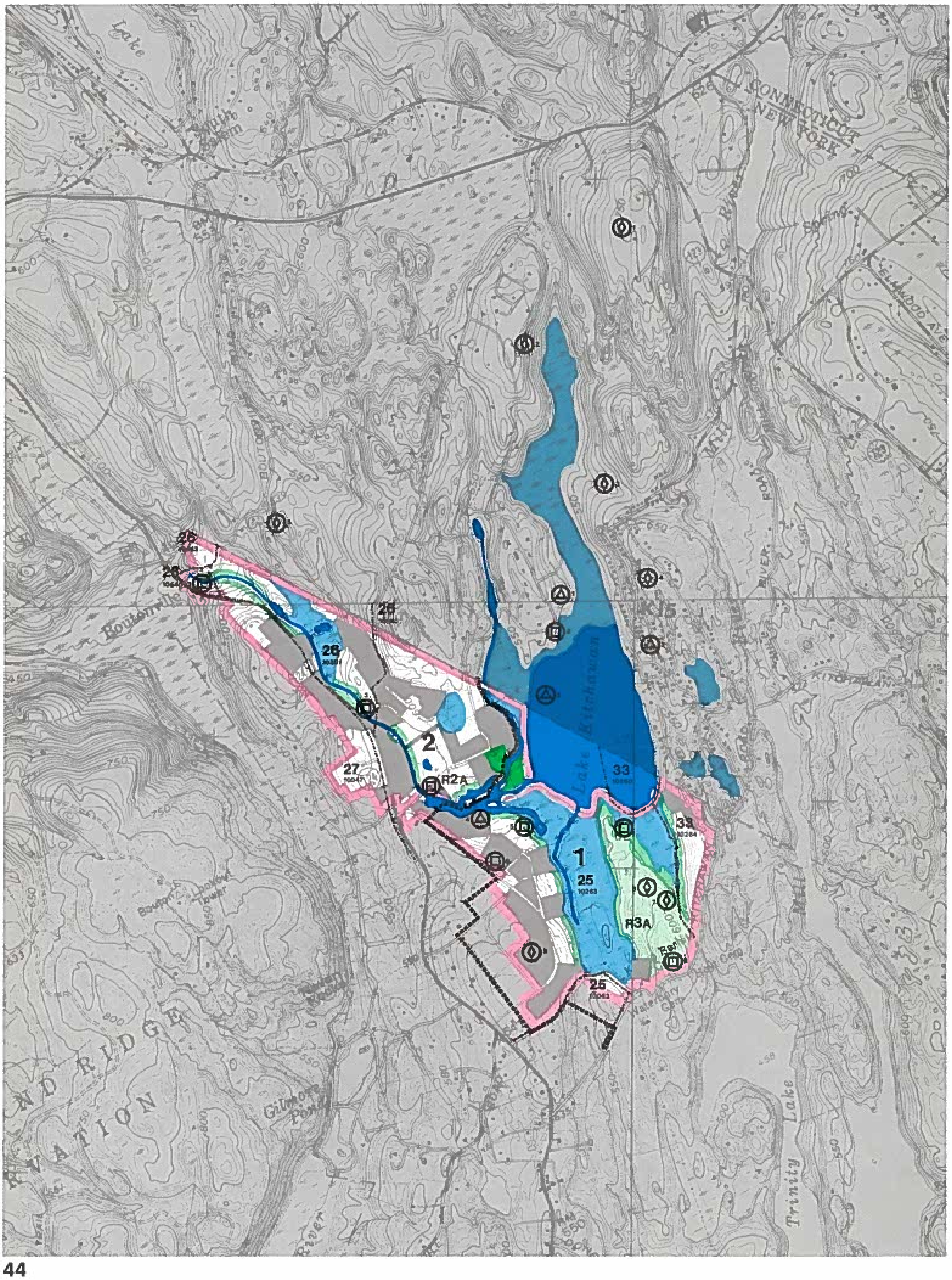
SARD — special allowance residential development zone

Historic district HD

Watershed 1

Lake Kitchawan

An Analysis With The Map
and Inventory Chart


Lake Kitchawan
Lake
Trinity Lake
Gilmore Pond
CONNECTICUT
NEW YORK
ELMWOOD AVE
Boutonville
Bouton Lookout Tower
RIDGE
VATION
Waterbury Gap
1
2
25
26
27
28
33
R2A
R3A
K15
River
Spring

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 1

land status - aug. 1974

physical characteristics

types of vegetation in sector's percentage

soils for septic tanks

surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted
1	25 10263 25 10301 33 10264 26 10540 26 10542 33 10265 33 10267	226.3	166.7	73.6	2 3	25	49	.3	.1	28.0	12.4	66.2	29.2	E			2.7	3.7		45.2	6.7	22.2	44.3	32.8		•	
2	25 10263 25 10301 33 10264 26 10540 26 10542 33 10265 33 10267	216.5	151.9	70.1	2	30	58	8.5	3.9	18.9	8.7	26.1	12.1	E			1.0			45.6	32.6	85.2	7.3	7.4			•
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
16																											
TOTALS		442.9	318.6			55	107	8.8		46.9		92.3															

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

ACRES FOR CONSERV.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
25.0	106.8	1															
26.0	137.0	2	●														
		3															
		4															
		5															
		6															
		7															
		8															
		9															
		10															
		11															
		12															
		13															
		14															
		15															
		16															
51.0	243.8	TOTAL ACREAGE															

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
4	6,7,8	5,6,7,8
2		1,2,3

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS	CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	population	259	308														
	roads	−	+														
	sewage pl.	−	−														
	water	o	o														
	vegetation	+	+														
	rural char.	−	−														

567

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- \+ pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

324

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING	CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	population															178	146
	roads															−	−
	sewage pl.															−	−
	water															o	+
	vegetation															+	+
	rural char.															−	+

WATERSHED 1

Lake Kitchawan

This watershed centers on Lake Kitchawan, with most of its area in Lewisboro to the north and east. Drainage rises in the northern and southern highlands and flows through swamps that drain into the lake. Water leaving the lake flows into the western canals, which lead into a northward-flowing stream-swamp complex, leaving the watershed through a gorge. From this exit point the water flows into Cross River, which in turn flows into the Cross River Reservoir. Thus any activity affecting water quality in this watershed will ultimately influence water quality in the reservoir.

Lake Kitchawan's lake and swamp system lies on top of an easily erodable marble formation. Difficult access to the lake through the swamp complex controls this area's development, but a gneiss hill, which slopes abruptly to the eastern side of the lake, provides easy access and is the site of an intensive residential development. The Hunter Peninsula, which affords access to the lake from the south, is a probable site of future development.

Southeast of the lake, on a gently sloping hill of gneiss and schist, is an area that was formerly agricultural, probably pasture land abandoned some twenty-five years ago. It is apparently not being actively subdivided at present.

Critical Areas in the Planning Process—1973

Environmental Problem Sites ⓐ **Map Symbol**

1. The Northern Swampland. Bordering the northern lobe of Lake Kitchawan is a swamp which has been partially brushed by a builder. The debris has been burnt. These activities together promote the eutrophication of the lake.

2. Eastside Development (in Lewisboro). On the steep east shore of Lake Kitchawan there is a development of dozens of houses. Septic drainage from this development is draining into the lake. The winterization of summer houses increases the amount of septic drainage. (We suspect that the drainage may be flowing into the lake through cracks in the marble bedrock surrounding the lake). The area is cut with roads, which promote increased sedimentation of the lake.

3 & 4. Canals Complex. The lake and focal point of this watershed is a shallow lake the quality of which apparently has been rapidly diminishing. The lake used to have bass and trout to 18 inches, but now fishing is all but impossible and swimming unattractive. We observed on May 18, 1973, abundant potamogenton and benthic algae. It was reported that the euthrophication became critical 5-6 years ago, and that 3-4 years ago, a chemical herbicide was applied, notwithstanding extensive opposition from conservationists.

Unfortunately, any chemicals applied in the lake may find their way into the Cross River Reservoir. A winding system of water channels creates a drainage network southwest of Lake Kitchawan. Water enters these canals from northern swamplands, the lake itself and from the southern wetlands and drains northwest into the Cross River Reservoir.

Estates which are beside the canals face both Scofield and Cross Pond Roads. Between the lake and the canals is a thick brushy swamp vegetation.

On May 29th, 1973, the flow from the canals northward was estimated at 4-6 cubic feet per second at the point where Scofield Road crosses the drainage stream. The water site appeared quite clear. However, field observation and the fact that the canals drain a eutrophied lake suggest that water conditions will limit the amenity of living by these canals. Due to conditions favorable to construction, residential lots will cover much of the area. In this situation, thin wooded buffer strips between artifically maintained savannah would be aesthetically pleasing.

Natural Areas of Special Interest ⓞ **Map Symbol**

1. *Abandoned Farmland:* Old farmland which has been seeding in from the hedgerows to red maple, white ash, gray dogwood, cherry, spirea, a little cedar. The soil has a good deal of clay content and this area looks wetter than

WATERSHED 1

many other old field types we have seen in town before.

2. *Mature Mixed Stand:* Large red and white oak, over 20 inches in diameter, tulip poplar in excess of two feet (one was three feet). Very rich forest soil with ground cover of *Actea.* Sugar maple up to two feet. Thick shrub layer of beech, sugar maple and flowering dogwood.

3. *West Slope Forest:* Wet mesophytic forest on a slope, in which sugar maple are more than one foot in diameter and tulip poplar are one and a half to two feet in diameter.

4. *Mature Hemlock:* A closed stand with stems one to one and a half feet in diameter. Very little herb or shrub layer. Next to a stand of mixed hardwoods — hemlock with white ash and black birch. Very pleasant and open.

5. *Northwest Hemlock Hardwood:* It contains many trees in excess of 16 inches in diameter and is of a type uncommon in the region. The hemlock will continue to dominate the site and pass beyond its present boundaries.

6. *Hunter Peninsula:* Has a scenic view of the lake and lakeshore, abundant bird life and a pleasant old field-savannah aspect. Two pine plantations on the site add to the landscape architecture, and the remains of an old estate add a pleasant historical dimension.

7. *Young Maple Forest:* A landscape feature of exceptional beauty.

8. *The Emil Leichter Savannah*: Presently maintained as a sparsely wooded grassland. Trees presently include gray birch, ash, aspen, red maple, and sugar maple.

Historic Sites: **Map Symbol**

1. Old mill remains at watershed exit
2. Indian site
3. Delevan Cemetery
4. Indian site
5. Indian site
6. Indian site
7. Indian site
8. Knapp Barhite Cemetery

PRUP-CODA Studio 1974 — Lisl Steiner

WATERSHED 1

Lake Kitchawan
Sector 1
226.4 acres

Location and General Characteristics

Sector 1 lies between the southern shore of Lake Kitchawan and Kitchawan Road. On the western side the dry land has a gently sloping topography in a north-easterly direction. Elevation ranges from 680 feet at the southwestern corner to 520 feet at the edge of the larger swamp. In the central part the dry land forms a narrow wedge protruding into the lake and is flanked by wetlands on both sides. In the eastern part the dry land forms a fairly steep slope facing west over the smaller swamp.

Existing Roads and Accessibility

Kitchawan Road and a network of local roads with connections to Salem Road provide access to this sector. The central part does not have any interior roads but could be easily accessible in the future because of gentle topography and lack of forest cover.

Present Stage of Development

The western part is fully subdivided and fairly well developed. The other part of this sector has only sporadic development. On the whole, 73.6% of the land is considered not developed. One large piece of private property occupies the central part of this sector. It consists of dry land and large areas of wetlands (Town Tax Map, Section 25, parcel 11, 104.111 acres). There are about 25 residences, and under the current zoning regulations of R3A, 49 additional homes could be built.

Mutual Impact

A. The land in this sector is environmentally connected to Lake Kitchawan, which means that any environmental conditions which may result from development would affect the adjacent wetlands and, eventually, the lake itself. Lake Kitchawan is already considered to be affected by pollution from nearby development, mostly in Lewisboro.

B. All areas of Sector 1 are fairly well protected from physical effects of traffic or development in adjacent sectors. The western part has only local roads that do not carry through traffic. If further development occurs, access roads will also be of local character.

Bedrock Formation

The Lake Kitchawan area, including the swamps and the entire site of Sector 1, lies on top of an easily erodable marble formation (Inwood marble), which suggests that the bedrock may hold underground water. This possibility is accentuated by an extremely pronounced bedrock fracture-planes system extending from the southern shore of Lake Kitchawan to the great swamp in Watershed 4. The location of fracture planes also suggests the possibility of a connection between the lake and Trinity Lake Reservoir in Watershed 4.

Soils

Large swamp areas constitute 32.8% of the sector, with soils unsuitable for any development (types 1 and 2). The central part of the westernmost edge of the sector has soils characterized by shallow bedrock, 44.9% of which represents a serious limitation for construction and location of septic fields (type 4). Most of the subdivided land on the western side is on these difficult soils. The remaining 22.2% of the area has soils considered suitable for development (types 5 and 6) but with a limiting factor because of steep slopes.

Hydrological Conditions

Sector 1 does not have any open water on its developable parts. Surface drainage flows directly into large areas of wetlands connected to Lake Kitchawan. The EAA study locates this sector in its watershed HR 31-P44-35P 109-6-7. The surface-water quality throughout this area is moderately stressed.

Vegetation

45.2% of the vegetation cover in Sector 1,

besides the swamp, is mainly old fields and 6.7% young successional forests, which cover the eastern part of the edges of the smaller wetlands. Some mature mixed-hardwood forests are found on the steep slopes on the western edge of the great swamp (3.7%). In an area by the lake near the Lewisboro town line is a hemlock and mixed hardwood forest (2.7%), classified as being of exceptional quality. This sector contains other natural areas of special interest. There is a wet mesophytic forest on a slope, in which sugar maples are more than one foot in diameter and tulip poplar are one and a half to two feet in diameter. There is also a beautiful young maple forest. Hunter Peninsula has a scenic view of the lake and lakeshore, abundant bird life, and a pleasant old-field savannah aspect. Two pine plantations on the site add to the landscape architecture, and an old estate adds a pleasant historical dimension. The Emil Leichter savannah is being maintained as a sparsely wooded grassland. Trees at present include gray birch, ash, aspen, red maple, and sugar maple.

Population

1. 1974	87
2. Max. under current zoning	259
3. Max. excluding wetlands and C zone	146

Under No. 3 there would be 1.5 acres per person.

Conclusions

Sector 1 is an area of active development. At present, this is concentrated in the western part, but large properties in other parts could lead to further growth. Environmental conditions are very fragile. They include the lake, already affected by environmental pollution, large wetlands areas directly affected by development activity on buildable land on higher elevations, generally poor soils, and the aquifer bedrock formation. Contrary to previous surveys, the EAA study did not find the quality of water in Lake Kitchawan affected by pollution.

Recommendations

1. Include the entire central part of the sector in the REP zone. This would include about 40 acres of uplands surrounded by wetlands.

2. Establish an approximately 100-foot-wide C zone between the edges of the wetlands and the contour line at elevation 550 feet. This will include about 26 acres.

3. Verify the findings of EAA study in relation to Lake Kitchawan.

Sector 2
216.5 acres

Location and General Characteristics

Sector 2 is the northwestern part of the watershed. One of its boundaries is indicated as the Lewisboro town line, but the site actually extends into the Town of Lewisboro. The topography of the sector is moderate, forming a gently sloping valley and some wetlands. Elevations range from 650 to 530 feet.

Existing Roads and Accessibility

Salem Road (Route 124) crosses the western part of the sector, and there is a network of smaller local roads that serve the southern part. Every part of the sector is accessible by these roads.

Present Stage of Development

With the exception of a few larger properties, the entire area of this sector is subdivided. 70.1% of the land is considered not developed. There are about 30 existing residences, and under current zoning regulations of R2A an additional 58 could be built.

Mutual Impact

A. The land of Sector 2, together with its extension in Lewisboro, is a self-contained unit. The future environmental impact of development can be measured in a single stream that drains into this area. Eventually this stream

WATERSHED 1

flows into Cross River, thus carrying the pollution into the Cross River Reservoir.

B. Salem Road is a heavily used highway, and all properties located next to it are subject to the effects of noise and air pollution. The southern part of the sector, which is further away from Salem Road, has only local streets that are not much used. With the development in the Lewisboro part of the watershed, some of the present local roads may be expanded and made into through roads, which will change the character of the area.

Bedrock Formation

Sector 2 lies at the edge of the marble rock formation. The geology indicates a limited number of fracture planes in this area. However, the southern part has two systems running diagonally toward Lake Kitchawan and its marble strata. This would indicate a conection of underground drainage from the plateau toward the lake.

Soils

85.2% of the land has soils suitable for development (type 6). 7.4% of the remaining land has soils unsuitable for development (types 1 and 2) and 7.3% difficult (types 3 and 4).

Hydrological Conditions

A complex network of canals flowing out of Lake Kitchawan defines the southern boundary of the sector. These canals merge into a stream that flows through the entire length of the sector until it joins Cross River, which empties into Cross River Reservoir just east of Ward Pound Ridge Reservation. All the land of this sector is drained into these waters. The EAA study locates Sector 2 in its watershed HR 37-P 44-35P 109-6-7. The surface-water quality in the southern part is moderately stressed, while the remaining area is slightly stressed.

Vegetation

45.6% of the dry land is covered with old fields and 32.6% with young successional forest, which marks the northern part and extends into Lewisboro. In the northernmost corner is found a small area (1%) of hemlock and mixed hardwood forest, considered to be of exceptional quality. It contains many trees in excess of 16 inches in diameter and is of a type uncommon in the region. The hemlock will continue to dominate the site and pass beyond its present boundaries.

Population

1. 1974	105
2. Max. under current zoning, excluding tax-exempt land	308
3. Max. excluding open water, wetlands, and C zone	178

Under No. 3 there would be 1.2 acres per person.

Conclusions

Sector 2 has excellent conditions for development. Good access by road, good soils, gentle topography, and lack of heavy forest cover enhance its attractiveness. However, its proximity to the waterway connecting environmentally threatened Lake Kitchawan and the connection to Cross River Reservoir require special attention.

Recommendations

1. The town should maintain a water-sampling service at locations indicated on the hydrology map (page 29).

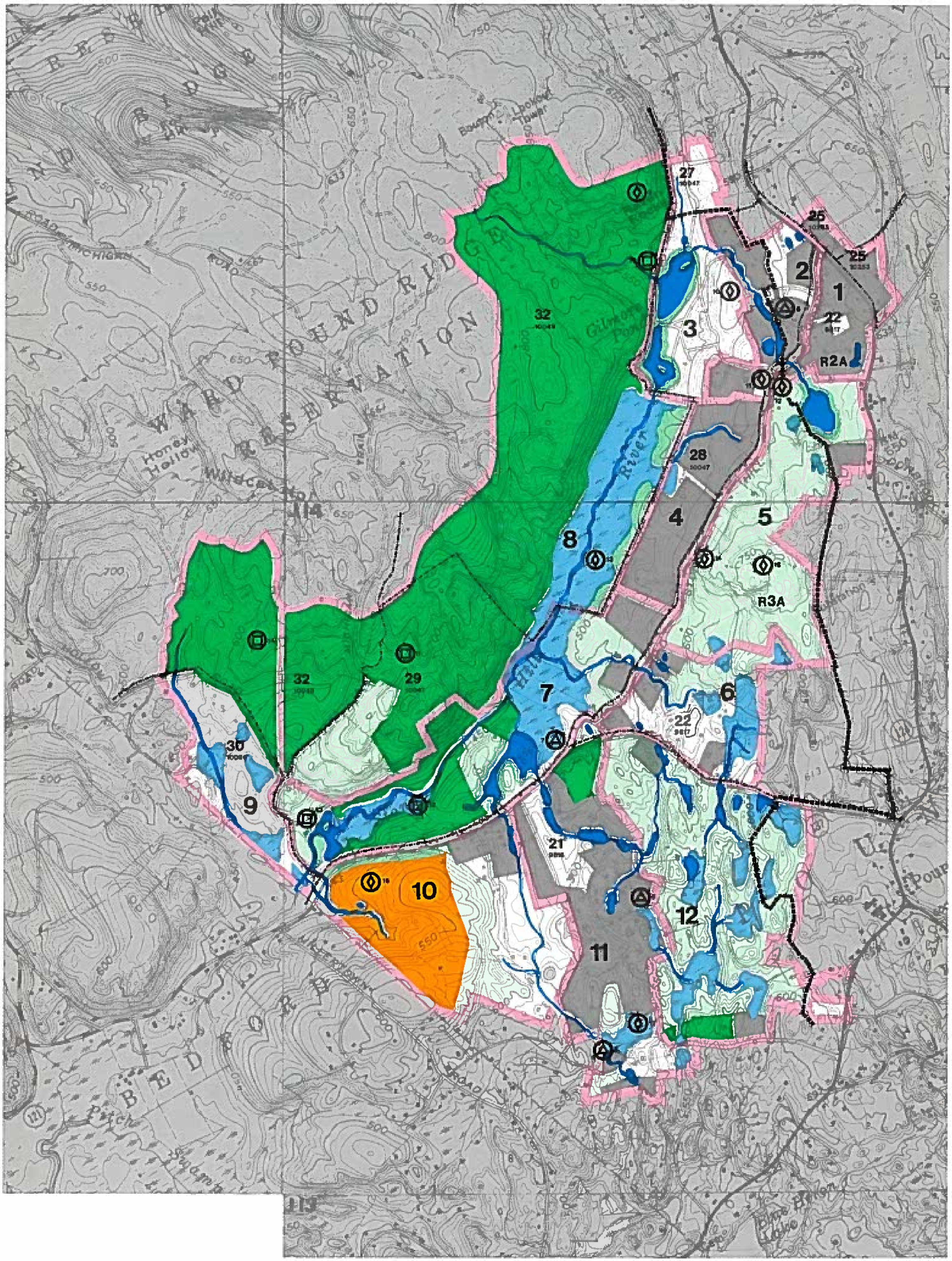
2. Establish C zones 100 feet on each side of the stream, beginning at Lake Kitchawan and extending to Boutonville, where the stream leaves Watershed 1. This will be 26 acres.

PRUP-CODA Studio 1973

Watershed 2

Stone Hill

An Analysis With The Map
and Inventory Chart



WARD POUND RIDGE RESERVATION
Honey Hollow
Gilmore Pond
River
BEDFORD
32
27
25
25
2
1
22
3
R2A
28
4
5
8
R3A
29
32
7
6
22
30
9
21
10
12
11

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 2

land status - aug. 1974 / physical characteristics / types of vegetation in sector's percentage / soils for septic tanks / surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted	ACRES FOR CONSERV.
1	32 9817 25 10063 25 10063	58.4	2.8	4.7	2	21	1			.6	1.0			E				2.0		96.9		69.1	30.8		•			
2	29 10047 30	66.0	43.1	65.3	2 3	9	14			2.3	3.4			E				39.4	5.3	34.8	17.0	77.0	23.0			•		
3	32 10047 30 10047	90.6	84.7	93.4	2 3	2	29			15.0	16.5			E				50.0	9.9	17.9	10.9	94.6		5.4	•			5.0
4	29 10041 32	81.3	62.2	76.5	3	9	12					23.1	28.4	E				28.3		34.6	8.7	91.4	4.5	4.1	•			4.0
5	22 9817	155.4	150.3	96.7	2 3	2	46			5.1	3.3	3.4	2.2	E				48.4	24.6	21.6		8.1	91.9		•			3.0
6	22 9817	88.1	67.1	76.2	3	7	19			4.9	5.6	6.7	7.6	E				73.8		13.0		8.5	91.5		•			
7	22 9817 29 47 30	198.3	106.0	53.4	3	5	31	79.8	40.2	11.9	6.0	58.9	29.7	D	15.3			16.3		27.1	5.5	75.7	2.6	21.7		•		10.0
8	28 10047 30	687.0	37.7	5.5	3		12	649.3	94.5	6.7	1.0	64.9	9.4	D			8.3	42.0	38.9			1.7	87.4	10.7	•			3.0
9	30 10038 30 32 10048 10048 10039 32 10048	169.5	51.4	30.3	3	6	15	100.0	59.0			18.8	11.1	E				75.7	6.8	6.3		25.4	61.3	13.3	•			
10	21 9816	180.2	172.8	95.9	3	3	55			2.9	1.6	8.8	4.9	D	7.1			30.0		37.3	19.0	86.2	8.0	5.7		•		12.0
11	21 9816	156.8	47.5	30.3	3	42	8	9.9	6.8	4.8	3.0	11.4	7.3	E	8.2			51.1	10.5	11.4	8.4	51.8	41.8	6.4		•		
12	21 9816	235.9	219.3	95.1	2 3	3	91	9.6	4.1	9.6	4.1	41.4	17.5	D	1.0			61.9	8.6	6.8		19.6	70.0	10.4		•		
13																												
14																												
15																												
16																												
TOTALS		2167.9	1044.9			109	333	848.6		59.0		230.7																37.0

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1					●												57.8
2	●				●												63.7
3		●						●									70.6
4					●												58.2
5	●																143.0
6					●												76.5
7			●	●	●	●		●		●	●	●					37.7
8			●	●													37.7
9																	150.7
10											●						66.5
11												●					130.7
12																	175.3
13																	
14																	
15																	
16																	
																	37.0 1068.4 TOTAL ACREAGE

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
5	11	
	10	
	12, 14, 15	
7		12, 13
	9, 13	10, 11
		14
	16	
6, 8	17	

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS	CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	population	77	80	108	73	168	91	44	42	73	203	175	318					1452
	roads	+	+	+	+	−	+	+	+	−	−	+	−					
	sewage pl.	−	−	−	−	−	−	−	−	−	+	−	+					
	water	+	o	+	+	+	+	o	+	+	o	o	o					
	vegetation	−	−	+	−	−	−	−	+	−	−	−	−					
	rural char.	−	−	+	−	−	−	−	+	−	−	−	−					

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- + pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING	CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
	population					258	175	196	73	42	44	91	151	47	85	80	77	1319
	roads					+	+	−	+	+	+	+	−	−	+	+	+	
	sewage pl.					−	−	−	−	−	−	−	−	−	−	−	−	
	water					o	o	o	−	−	o	−	−	−	−	o	−	
	vegeta ion					+	−	−	+	+	+	+	+	+	+	−	−	
	rural char.					+	−	+	+	+	+	+	+	+	+	−	−	

WATERSHED 2

Stone Hill

This watershed is bounded by the southwestern ridge of the Ward Pound Ridge Reservation and by a series of gentler rolling hills and ridges to the south. The river itself lies on marble bedrock just below the southern escarpment of the reservation and was probably formed by the wearing away of marble from the more resistant rock mass of the reservation.

Residential developments along Stone Hill Road and Old Stone Hill Road are oriented toward the splendid view of the reservation escarpment, the visual focal point of the watershed.

The Stone Hill River lies on a broad (800 to 1,200 feet) band of swamps set upon a flat marble bedrock. The swamps, which are mostly brushy or heavily forested, are an obstacle to seeing or even reaching the river. On the southern bank of the river, near where it meets northerly flowing tributaries, is a line of gravel pits and natural ice-contact features.

In the southeastern part of the watershed there is gently undulating topography with a sluggish drainage, characterized by an extensive swamp system and pockets of wet forest with varying degrees of interconnection. This area is currently under rapid development, and there is evidence of ponds being dredged and access roads being built.

In the southwestern part of the watershed there is an extensive old field with views of the ridge. This is a likely site for future development.

Critical Areas in the Planning Process—1973

Environmental Problem Sites — **Map Symbol**

5. Potential septic problems due to intensive development around low-laying areas, including ponds, and on sand and gravel soils, which may not have sufficient inherent ability to purify septic system effluents before they reach the water table.
6. Extensive mined-out gravel pit.
7. Dumping into wetlands by gravel pit.
8. Roads running into wetlands on Bernier subdivision (Hoyt Road off Pound Ridge-Bedford Road.)

Natural Areas of Special Interest — **Map Symbol**

9. *Raven Rocks:* on top of a steep escarpment and one of the highest points in town, offers a panoramic view of much of Pound Ridge. It has a pitch pine stand of a sort otherwise seen only in the Reservation and also has superb examples of primary succession. On the escarpment leading up to it there are a lot of dead chestnut oaks, large specimens of other species, and large tulip poplars.
10. *Blueberry Old Field:* was managed for blueberries and now contains blueberries, cherry, red cedar, young sugar maples. Is probably a good wildlife habitat.
11. *Impressive rock outcrop.*
12. *Impressive rock outcrop.*
13. *Swamp along Old Stone Hill River,* a practically impenetrable wetlands of brushy to forested swamp, is one of the largest in town and is a valuable wildlife habitat.
14. *Rock Face.*
15. *Thin soil plateau* with oak and numerous examples of primary succession. It has an excellent view of the Ward Pound Ridge Reservation.
16. *Orchard - old field - conifer plantation complex:* this area has a great diversity of vegetation.
17. *Exceptional stand of mature swamp forest.*
18. *Carolyn's Grove:* A Norway spruce plantation which is greatly overstocked. The Nature Conservancy owns the site.

Historic Sites — **Map Symbol**

10. The original pound constructed by Indians from which Pound Ridge gets its name.
11. Indian site.
12. Cemetery off of Stone Hill Road.
13. Old foundations.
14. Old foundations.

WATERSHED 2

Stone Hill
Sector 1
58.4 acres

Location and General Characteristics

Sector 1 is in the northeastern corner of the watershed. It has a flat topography and an open landscape.

Existing Roads and Accessibility

Old Stone Hill Road and Salem Road intersect on this land. Salem Road runs through the center of this sector and provides access to most properties. Old Stone Hill Road serves the remaining lots.

Present Stage of Development

This sector is fully subdivided and nearly fully developed. There are about 21 residences, and under current zoning regulations of R2A only one additional home could be built.

Mutual Impact

A. This sector, lying at the edge of the watershed, is not affected environmentally by other areas. Its own environmental conditions could, however, be transmitted into Sectors 2 and 5.

B. All properties in this area are adjacent to either of the two main roads and all are subject to physical effects of traffic, noise, and air pollution.

Bedrock Formation

There is one bedrock-fracture-plane system running north-south through the center of this area. It indicates the possibility of underground drainage connecting to the vicinity of a medium-size lake in Sector 5.

Soils

69.1% of the soils are suitable for development (type 6). The strip of developed land along Salem Road (30.8%) has shallow bedrock and rocky soils which create problems for septic fields (type 4).

Hydrological Conditions

This flat land contains a few small ponds. There is no evidence of any distinctive surface drainage system. Rainwater and septic fields are draining slowly in a southwesterly direction towards Sectors 2 and 5. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is slightly stressed.

Vegetation

The vegetation is 96.9% old fields, with one small area (2%) of mixed hardwood forest.

Population

1. 1974	73
2. Max. under current zoning	77

Under No. 2 there would be 0.7 acre per person.

Conclusions

Sector 1 is developed, and no major physical changes are foreseen. With more intensive development of Pound Ridge and towns in the north, substantial increase in traffic is possible. This may include bus service and the widening of Salem Road.

Recommendations

None.

Sector 2
66 acres

Location and General Characteristics

Sector 2 is in the northeastern corner of the watershed. It has a flat topography and an open landscape.

WATERSHED 2

Existing Roads and Accessibility

Old Stone Hill Road provides access to most properties. Several long local roads serve interior lots.

Present Stage of Development

This sector is well subdivided, with only a few properties that could be further divided. There are about 9 residences, and under current zoning regulations of R2A and R3A an additional 14 could be built.

Mutual Impact

A. This sector is environmentally affected by Sectors 1 and 5. Its own conditions are transmitted to Sector 3.

B. Many properties in this area are adjacent to the main highway and are subject to physical effects of traffic, noise, and air pollution. Homes located in the interior have only local roads and are less exposed to these problems.

Bedrock Formation

There is one bedrock-fracture-plane system running north-south through the center of this area. It indicates the possibility of underground drainage connecting to the vicinity of a medium-size lake in Sector 5.

Soils

77% of the soils are suitable for development (type 6). In a few areas along the stream and in the southwest portion soils are poor (types 3 and 4), subject to flooding or with shallow bedrock. They constitute 23% of the area.

Hydrological Conditions

This flat land has an apparently simple drainage system of surface waters. A stream flows northward through its length from the medium-size lake in Sector 5 and into Sector 3, where it joins Stone Hill River. There are several small ponds along the stream course. Underground drainage parallels the surface-water flow. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is slightly stressed. There are potential septic problems because of development around low-laying areas, including ponds, and on sand and gravel soils, which may not have sufficient inherent ability to purify septic effluents before they reach the water table.

Vegetation

The vegetation in areas near the highway consists mostly of old fields (34.8%) and successional forest (17%). The northern and western parts are covered with mixed hardwood forest (39.4%), with one area of oak forest (5.3%).

Population

1. 1974	31
2. Max. under current zoning	80

Under No. 2 there would be 0.8 acre per person.

Conclusions

Sector 2 is almost all developed. Some additional division of larger properties may take place in the future. This could occur only with further growth of Pound Ridge and towns to the north, when economic incentives would favor smaller lots near main roads.

Recommendations

Town should check the quality of septic fields in the areas adjacent to the stream.

Sector 3
90.6 acres

Location and General Characteristics

Sector 3 is in the northern part of the water-

WATERSHED 2

shed. Its topography is gently sloping in a westerly direction. Elevation is between 600 and 450 feet. The western boundary is defined by steep cliffs of the Ward Pound Ridge Reservation.

Existing Roads and Accessibility

This land is accessible in all parts through a well-developed network of local roads. They connect with Old Stone Hill Road and Salem Road in Sector 2.

Present Stage of Development

Sector 3 is sparsely populated. It has mostly medium-size properties and one large one (Town Tax Map, Section 28, parcel 31, 27.389 acres). There are two existing residences, and under current zoning regulations of R3A an additional 29 could be built.

Mutual Impact

A. This sector is the recipient of environmental effects occurring in Sector 2 and to some degree in Sector 5. It lies at the headwaters of the watershed, and thus its own environmental conditions could affect Sectors 7 and 8.

B. This land is secluded and does not experience adverse effects of development or traffic in other areas.

Bedrock Formation

Underlying this sector is a narrow stratum of marble. This is water-bearing rock, offering high well yields but at the same time vulnerable to pollution. Several short bedrock fracture planes follow the slope of topography, pointing toward the lakes at the lowest portion of the land. This indicates an underground drainage system feeding the lakes.

Soils

94.6% of the land has soils suitable for development with limitations for septic field construction (type 5). Small areas of wet soils (5.4%) are located on the edges of the sector (type 2).

Hydrological Conditions

This sector contains the headwaters of Stone Hill River. Two lakes are formed in the upper course of the flow. They accept tributary waters from Sectors 2, 5 and 8. All surface drainage is directed into these lakes. The EAA study locates this sector in its watershed HR 31-P44 36-14. The surface-water quality throughout the area is slightly stressed.

Vegetation

A large part of this sector is covered with mature hardwood forest (50.0%). Other types of vegetation consist of old fields (17.9%), successional forest (10.9%), and oak forest (9.9%).

Population

1. 1974	7
2. Max. under current zoning	108
3. Max. excluding open water and C zone	85

Under No. 3 there would be 1.0 acre per person.

Conclusions

Sector 3 has several properties that may be subdivided, but intensive development should not be anticipated. The proximity of the source of Stone Hill River requires protective measures against overdevelopment.

Recommendations

Create a protective buffer zone 100 feet wide around the lakes, and include the lakes along with the buffer in a C zone. This will take about 5 acres of land.

Sector 4
81.3 acres

Location and General Characteristics

Sector 4 is in the center of the watershed. It is a narrow strip of land bordered on the east

by Old Stone Hill Road. Its topography slopes gently from the road toward the wetlands that form the western boundary. Elevation varies from 620 to 460 feet.

Existing Roads and Accessibility

Old Stone Hill Road provides access to all properties.

Present Stage of Development

This sector is well subdivided, with only a few properties that could be further partitioned. There are about 9 residences, and under current zoning regulations of R3A an additional 12 could be built.

Mutual Impact

A. Sector 4 is environmentally connected to Sector 5, from which it receives all drainage waters. Its own environmental conditions are transferred directly to the wetlands of Sector 8.

B. All properties in this sector are adjacent to the main road and are affected by the traffic conditions on this road.

Bedrock Formation

There are numerous bedrock-fracture-plane systems running perpendicular to the slope. They all seem to connect the area adjacent to the highway with the wetlands below. This pattern indicates the possibility of underground drainage, which may in the future affect the quality of water in Stone Hill River.

Soils

71.4% of the land has good soils (type 5), 4.5% is difficult (type 3) and 24.1% is unsuitable for development (type 2).

Hydrological Conditions

There are no areas of open water, and surface drainage flows directly into the wetlands that occupy the lower elevation of the sector. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is slightly stressed.

Vegetation

The northern part of the sector and the strip along the highway have old-field vegetation (34.6%). Mature forest (28.3%) and successional forest (8.7%) cover the slopes below the highway, and 28.4% has wetlands vegetation.

Population

1. 1974	31
2. Max. under current zoning	73
3. Max. excluding wetlands and C Zone	47

Under No. 3 there would be 1.7 acres per person.

Conclusions

No major physical changes are expected in this sector. With more intensive development of Pound Ridge and towns to the north, a substantial increase in traffic on Old Stone Hill Road is possible.

Recommendations

Include all land above the wetlands area to the contour line at elevation 460 feet in a C zone. This will require about 4 acres.

Sector 5
155.4 acres

Location and General Characteristics

Sector 5 is on the east side of the watershed. Its western boundary is Old Stone Hill Road. It is a distinctive hill, with the summit (elevation 770 feet) located in the center of the sector.

Existing Roads and Accessibility

Old Stone Hill Road provides access to this sector, but there are no roads leading to its interior parts.

WATERSHED 2

Present Stage of Development

There are several medium-size properties and two large properties (Town Tax Map Section 22, parcel 20-32.922 acres; parcel 43-22 acres). There are 2 residences, and under current zoning regulations of R2A and R3A an additional 46 could be built.

Mutual Impact

A. Lying on the edge of the watershed, this sector is not affected environmentally by other areas. Its own environmental conditions could be transmitted to Sectors 2 and 4.

B. Parts of the properties lying along Old Stone Hill Road are affected by the traffic on this road. The interior parts are well secluded and protected from noise and traffic.

Bedrock Formation

There is one distinctive bedrock-fracture-plane system running from the highest elevation toward the lake in the northern part. This indicates an underground drainage which feeds the lake.

Soils

91.9% of all soils on this land are rocky (type 4), with shallow bedrock. These create problems for construction of septic fields. Only a narrow strip along the road has better soils (type 5), occupying 8.1% of the land.

Hydrological Conditions

A medium-size lake is located in the northern part of the sector. A stream flowing out of the lake forms one of the tributaries of Stone Hill River. The surface drainage from the hillside drains directly into Sector 4. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is slightly stressed.

Vegetation

The area adjacent to the highway has old-field vegetation (21.6%). The remaining land has mature mixed hardwood forest (48.4%) and a large oak forest covering the highest elevations (24.6%), a thin soil plateau with oak and numerous examples of primary succession. It has an excellent view of the Ward Pound Ridge Reservation.

Population

1. 1974	7
2. Max. under current zoning	168
3. Max. excluding open water and C zone	151

Under No. 3 there would be 0.9 acre per person.

Conclusions

Although Sector 5 has a number of properties that could be subdivided, poor soils should deter intensive development.

Recommendations

1. Include this sector in REP zone to safeguard the quality of water draining into Stone Hill River. This would be about 141 acres.

2. Establish buffer 100 feet wide around northern lake and include the entire lake area in a C zone. This would take about 3 acres.

Sector 6
88.1 acres

Location and General Characteristics

Sector 6 is on the eastern edge of the watershed. It is bordered on the south by Old Stone Hill Road. Its topography does not have any strong characteristics except for some wetlands areas in the eastern part.

Existing Roads and Accessibility

All parts of the land are accessible from Stone Hill Road and Old Stone Hill Road.

WATERSHED 2

Present Stage of Development

This sector is composed of medium-size properties that could be further subdivided. There are about 7 residences, and under current zoning regulations of R3A an additional 19 could be built.

Mutual Impact

A. This sector could receive some of the environmental effects from the upland areas of Sector 5. Its own environmental conditions may affect Sectors 7 and 12.

B. All properties lying along two main roads are experiencing the effects of rather heavy traffic. The interior parts are well secluded and protected from noise and traffic.

Bedrock Formation

There is a distinctive pattern of bedrock fracture planes running through this area. It begins near Stone Hill Road and stretches to the Stone Hill River in the north. This indicates a well developed underground drainage connecting this land with the river valley.

Soils

This sector has soils generally difficult for development (types 3 and 4), with 91.5% in shallow bedrock, imposing severe limitations on the construction of septic tanks. Only one small area (8.1%) near Old Stone Hill Road has soil suitable for development (type 5).

Hydrological Conditions

Two streams originate on this land — one flowing south toward the large wetlands in the eastern part into Sector 12 and the other west from a small wetlands in the center, becoming a tributary of Stone Hill River in Sector 7. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is classified as slightly stressed.

Vegetation

Most of the land bordering the two roads has old-field vegetation (13%); the remaining land is mostly covered with mature mixed hardwood forest (73.8%).

Population

1. 1974	24
2. Max. under current zoning	91

Under No. 2 there would be 0.9 acre per person.

Conclusions

This sector is located near major roads and would offer a good area for development, but poor soil conditions should deter intensive development.

Recommendations

Include large property which delineates the northern boundary (parcel 18) in REP zone. This will take 21.8 acres.

Sector 7
198.3 acres

Location and General Characteristics

Sector 7 is the area of the lower Stone Hill River valley. It is defined by the escarpment of the Ward Pound Ridge Reservation and Old Stone Hill Road.

Existing Roads and Accessibility

Old Stone Hill Road provides access to all the areas of dry land in this sector.

Present Stage of Development

There are three areas of land suitable for development, one in the center and one at each end of the sector. In between there are parcels of tax exempt lands (Town Tax Map Section 29, parcel 2, 27.525 acres: parcel 4, 73.185 acres; parcel 7, 19.079 acres [Sachs Park]). There are

WATERSHED 2

about 5 residences on the buildable land, and under current zoning regulations of R3A an additional 31 could be built.

Mutual Impact

A. Sector 7 lies at the exit of the watershed and is the collector of all environmental conditions in the entire area.

B. All properties lying along Old Stone Hill Road are affected by the traffic on this road. With more intensive development in Sector 10, traffic safety might require the widening of the road. This would change the character of the area.

Bedrock Formation

There is only one bedrock-fracture-plane system, which reaches the Stone Hill River from the direction of Sector 6.

Soils

75.7% of the land in this sector has soils suitable for development (type 5). Wetlands and wet soils (types 1 and 2) take 21.7% of the area, located mostly in the tax-exempt parts. One small (2.6%) area in the western end of the sector has rocky soils (type 4).

Hydrological Conditions

Stone Hill valley and large wetlands are the main hydrological features of this area. All surface and possibly underground drainage collects in the river valley. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is slightly stressed, with one exception where it is severely stressed. This small area is located around a medium-size pond west of Sachs Park in the central portion of the sector. This pond accepts waters draining from Sectors 11 and 12.

Vegetation

This sector has mixed types of vegetation. There are old fields along the road (27.1%), successional forests in some locations (5.5%) and large areas of conifers (15.3%), mostly in the tax-exempt land. Mature mixed hardwood forests (16.3%) grow at the foot of escarpment of the Ward Pound Ridge Reservation.

Population

1. 1974	17
2. Max. under current zoning excluding tax-exempt land	126
3. Max. including open water, wetlands and C zone	44

Under No. 3 there would be 3.8 acres per person.

Conclusions

Sector 7 has several medium-size properties that could be subdivided. Because of the proximity of the buildable land to the wetlands and open water, special attention should be paid to the methods of development.

Recommendations

1. Create minimum 100-foot-wide protective buffer to contour line at elevation 460 feet at the edge of all wetlands and open water. This buffer should be included in C zone. This would take about 10 acres.

2. Include all other developable land in REP zone. This would take about 96 acres.

Sector 8
687.0 acres

Location and General Characteristics

This sector occupies the northwest corner of the watershed. It consists of the highest ridge of the Ward Pound Ridge Reservation, its escarpment, and the central area of Stone Hill River with its large wetlands.

Existing Roads and Accessibility

Michigan Trail provides the only access from Pound Ridge to this area.

WATERSHED 2

Present Stage of Development

This sector is totally undeveloped. 94.5% of the area is tax-exempt and belongs to the Ward Pound Ridge Reservation. One large parcel of land off Michigan Trail could be subject to future development Town Tax Map, Section 29, parcel 9, 37.73 acres). Under current zoning of R3A, 12 homes could be built.

Mutual Impact

A. This sector is at the edge of the watershed. It is not affected by any other land. It is environmentally connected to Sectors 3 and 7.

B. There is none in this area.

Bedrock Formation

There are numerous bedrock fracture planes. They spread out in a pattern perpendicular to the river valley all along the escarpment of the reservation. This indicates extensive drainage channels feeding into Stone Hill River.

Soils

87.4% of the soils in the highlands of Pound Ridge Reservation are rocky, with shallow bedrock (type 4). These include the only portion of developable land. Other soils occupy small areas—type 5, 1.7% and type 3, 1%.

Hydrological Conditions

The entire area of this sector drains into the Stone Hill River, which flows at the lowest elevation. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout the area is classified as slightly stressed.

Vegetation

All upland areas of Ward Pound Ridge Reservation are in mature mixed hardwood forest (42%) and oak forest (38.9%). The northernmost part of the watershed has a large hemlock and mixed hardwood forest (8.3%). Raven Rocks, on top of a steep escarpment and one of the highest points in town, offers a panoramic view of much of Pound Ridge. It has a pitch pine stand of a sort otherwise seen only in the reservation and also has superb examples of primary succession. On the escarpment leading up to it, there are a lot of dead chestnut oaks, large specimens of other oak species, and large tulip poplars. The swamp along Old Stone Hill River, a practically impenetrable wetlands of brushy to forested swamp, is one of the largest in town and is a valuable wildlife habitat.

Population

1. 1974	0
2. Max. under current zoning, exluding tax-exempt land	42

Under No. 2 there would be 16.3 acres per person.

Conclusions

The only developable area in this sector may soon come up for subdivision. It is located on a steep slope and has poor soil conditions.

Recommendations

Include all developable land in REP zone. This will take about 38 acres.

Sector 9
169.5 acres

Location and General Characteristics

Sector 9 is near the exit of the watershed and is bordered by the Bedford town line. Honey Hollow Road divides the sector into two parts; one is part of Ward Pound Ridge Reservation and the other, to the south, contains developed land.

Existing Roads and Accessibility

Honey Hollow Road, which connects with Stone Hill Road, provides access to the developed land. The portion of Ward Pound Ridge

Reservation and the undeveloped areas have no roads.

Present Stage of Development

The inhabited part of the sector is fully subdivided and moderately developed. There are a few medium-size properties that could be further divided. This is unlikely, however, as their acreage includes many wetland areas. There are about 6 residences, and under current zoning regulations of R3A an additional 15 could be built.

Mutual Impact

A. This sector lies on the edge of the watershed and is not affected environmentally by other areas. Its own environmental conditions are transmitted into Stone Hill River, slightly below the town line.

B. This land is well secluded and even in its developed part is not affected by traffic disturbances.

Bedrock Formation

There is no survey of the bedrock-fracture-plane system in this sector.

Soils

61.3% of the soils in the area are unsuitable for development, having poor drainage and being subject to ponding (type 3). An area south of Honey Hollow Road (25.4%) contains better soils (type 5). The lowland areas (13.3%) are wet and unsuitable for development (types 1 and 2).

Hydrological Conditions

Sector 9 forms a small drainage basin of one stream flowing from the reservation through the wetlands area and into the Stone Hill River. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality throughout this area is slightly stressed.

Vegetation

The lower part of the watershed has small areas of old-field vegetation (6.3%) and oak forest (6.8%). The remaining land has mature mixed hardwood forest (75.7%).

Population

1. 1974	21
2. Max. under current zoning excluding tax-exempt land.	73

Under No. 2 there would be 2.3 acres per person.

Conclusions

The land in this sector offers very little opportunity for development, as over 100 acres are already protected by the reservation.

Recommendations

Include all wetland areas in REP zone. This will take 19 acres.

Sector 10
180.2 acres

Location and General Characteristics

This sector is in the southwest part of the watershed and makes a boundary with the Bedford town line. Old Stone Hill Road is the northern boundary. It has a distinctive topography in the form of one gently rising hill. Elevation ranges from 580 to 440 feet.

Existing Roads and Accessibility

Stone Hill Road provides access to all parts of this land, but there are no internal roads. A short road serves homes in the northeast corner of the sector.

Present Stage of Development

Sector 10 is very sparsely populated, with 95.9% of its area undeveloped. There are three large properties that occupy most of the land (Town Tax Map, parcel 59, 21.296 acres; parcel

WATERSHED 2

61, 49.796 acres; parcel 67, 76.445 acres). One of these large properties is owned by a development company and is likely to be developed in time. There are about 3 residences, and under current zoning regulations of R3A an additional 55 could be built.

Mutual Impact

A. The eastern part of this sector is affected by conditions in Sector II. The hill, which occupies most of the other land, is not affected by any other area. All environmental conditions in Sector 10 would affect the Stone Hill River valley in Sector 7.

B. Stone Hill Road carries rather heavy traffic, both local and transient; this condition affects adjacent areas. The majority of the land in this sector is secluded at present, but this condition will change markedly with expected development.

Bedrock Formation

There is no survey of bedrock-fracture-plane systems in this area.

Soils

This sector has some of the best land for development in Pound Ridge. The soils on 86.2% are suitable for development (types 5 and 6). There are only three small areas (8%) subject to ponding and with shallow bedrock (types 3 and 4), and there is one area (5.7%) of wet soils in the northeast part of the sector (types 1 and 2).

Hydrological Conditions

One stream runs along the eastern boundary of the sector. It begins in the wetlands in Sector II and flows into the lake in Sector 7. The hill area has only one short gully where a small stream flows toward Stone Hill River. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface-water quality in most of the area is slightly stressed. One small area in the lower part of the steam, which flows from Sector II, is severely stressed.

Vegetation

This area, which was once farmland, has a diversity of young vegetation. 37.3% has old-field vegetation, 19% has successional forest, and 7.1% has a variety of conifers. The remaining 30%, mostly on the southern slope of the hill and in the stream valley, is mature mixed hardwood forest. One area of special interest was once an attractive agricultural area, and even now a small orchard is being maintained. It has some old fields that have been seeded by large, old sugar maples to form almost solid stands of young sugar maples one to five years old and also has a wealth of conifer plantations, including white pine, Scotch pine, red pine, and larch. There is also a locust area. Now mainly used as a bridle path area, it is likely to be developed, and care should be taken to keep its rich diversity.

Population

1. 1974	10
2. Max. under current zoning	203
3. Max. excluding C zone	196

Under No. 3 there would be 0.9 acre per person.

Conclusions

This sector offers excellent land for development. Large properties, gentle slopes and the lack of mature vegetation make it a natural location for intensive growth. There is a problem, however, that should be considered in granting development permits. Lowlands in the eastern portion are part of a large aquifer that stretches northward into the Stone Hill River valley in Sectors 7 and 8. Part of the aquifer is already classified as having severely stressed surface-water. All precautions must be taken against further contamination from development activity.

Recommendations

1. Include large property (Parcel 67) along Stone Hill Road in SARD zone. This will take about 70 acres.

2. Include 200-foot-wide strip of land along Stone Hill Road in C zone. This area will corres-

pond in length with the frontage that Parcel 67 has on the road. It will take about 12 acres.

3. Road network for development must be planned so as not to increase traffic on the narrow and already heavily used Stone Hill Road.

4. Town should maintain water survey in areas indicated on the hydrology map.

Sector 11
156.8 acres

Location and General Characteristics

Sector 11 is in the southern part of the watershed. It is a narrow stretch of land demarcated on the north by Stone Hill Road. It has a varied topography of rolling hills, wetland areas, and small ponds.

Existing Roads and Accessibility

The entire sector is served by an extensive network of local connecting and dead-end roads. This network is linked in the north with Stone Hill Road and in the south with Pound Ridge in Watershed 8.

Present Stage of Development

The land is fully subdivided (Bernier Subdivision) and almost fully developed. 9.9 acres of the land are tax-exempt and used by the town maintenance services. There are about 42 residences and under current zoning regulations of R2A and R3A an additional 8 could be built.

Mutual Impact

A. Lying on the edge of the watershed, this area should not be affected by any other land. However, its well-sculptured topography and complex drainage system indicate possible underground connections with Sector 12. Its own environmental conditions affect small parts of Sector 10 and a central part of Sector 7.

B. All properties in this sector are serviced by local streets and are protected from adverse effects of traffic or development in other areas.

Bedrock Formation

There are numerous bedrock fracture-plane systems, particularly in the southern part of the sector. All of them are on a north-south axis, with the exception of the longest, which cuts the land at its midpoint in an east-west direction. This indicates the possibility of underground connections of the highly developed central part of the sector with the stream valley in the lowlands of Sector 10. The water in that valley is already classified as severely stressed.

Soils

The central part and most of the southern parts, which constitute 41.8% of the area, have difficult soils for development (types 3 and 4). Another 6.4% is unsuitable for development (types 1 and 2). These happen to be the areas where most intensive subdivision and development exist already. The northern, less developed part (51.8%) has suitable soils for development (type 6).

Hydrological Conditions

This sector has a complicated surface drainage system. A number of wetlands, ponds and streams form a network draining north into a lake on the north side of Stone Hill Road in Sector 7 and eventually into the wetlands of the Stone Hill River. The EAA study locates this sector in its Watershed HR 31-P44-36-14. The surface-water quality in most of the area is classified as slightly stressed. Only the northern-most part around Twin Ponds is severely stressed.

Vegetation

The southern and central parts are marked by mature mixed hardwood forest (51.1%) and oak forest (10.5%). The northern part has a mixture of old-fields (11.4%), successional forest (8.4%), and conifers (8.2%). The wetlands areas in the southern part have an exceptional stand of mature swamp forest.

WATERSHED 2

Population

1. 1974 147
2. Max. under current zoning excluding tax-exempt land 175

Under No. 2 there would be 0.8 acre per person.

Conclusions

This sector is intensively developed, and no basic changes are expected. The development represents a new type of subdivision that introduces a concept that may be used with adverse effects in other parts of Pound Ridge. This growth occurs in an area of rather poor soils that are not suitable for such development because of difficult hydrology. It must be assumed that some environmental problems have already been created. One indication of this is shown in the analysis of surface waters. In an area on both sides of Stone Hill Road the water is severely stressed. This area contains a lake that is fed by two streams flowing from areas of high development and poor soils in Sector 11. The drainage patterns indicated by bedrock fractures support further the possibility of underground connections between the area of pollution and the area of possible effects. This case is an example of the complications that may arise if otherwise sound development is conducted without guidelines provided by an environmentally based land-use plan. (see figure 2-pg. 189).

Recommendations

None.

Sector 12
235.9 acres

Location and General Characteristics

Sector 12 is in the southeastern corner of the watershed. In the north it is bordered by Stone Hill Road. It has a varied topography with rolling hills, medium-size wetlands and small ponds. It is a high ground with elevations around 600 feet.

Existing Roads and Accessibility

Stone Hill Road provides access from the north and Hoyt Road from the south. There are no internal roads, and the site is not easily accessible because of its numerous wetlands and waterways.

Present Stage of Development

The land is sparsely populated, with 95.1% of the area considered undeveloped. There are several large properties (Town Tax Map, Section 21, parcel 37, 60.0 acres; parcel 63, 47.820 acres; parcel 64, 28.628 acres; parcel 78, 29.765 acres). All of these could be subject to more intensive development. The limiting factor, however, would be the large amount of wetlands on all of these properties. There are 9.65 acres along Hoyt Road that are tax-exempt and constitute common open land for the Bernier sub-division. There are about 3 residences, and under current zoning regulations of R3A an additional 91 could be built.

Mutual Impact

A. Lying on the edge of the watershed, this area is mostly unaffected by other lands. One exception exists in its northeastern part, where a connection is made by a stream draining from wetlands in Sector 6. The complex drainage system indicates a flow of water into Sector 11.

B. Most of the land is secluded and, with the exception of the part next to Stone Hill Road, is not affected by outside conditions.

Bedrock Formation

There are several bedrock fracture planes distributed throughout this area in a rather haphazard pattern. They appear to form an arc curving from south to west. This indicates that the underground drainage is directed toward the Stone Hill River valley.

WATERSHED 2

Soils

There are three small areas in the north, east, and west (19.6%) that have soils fairly suitable for development (type 5). 70.0% of the land has soils difficult for development (type 4), and the remaining 10.4% has wet soils unsuitable for development (types 1 and 2).

Hydrological Conditions

This sector has a complicated surface drainage system. Wetlands, ponds, and streams form a network of waterways draining in a northwesterly direction. The flow of this water gathers in the ponds on the Morton property. The water in this area is described as severely stressed. The EAA study locates this sector partly in its watershed HR 31-P44-36-14 and partly in Connecticut 6. The surface-water quality in HR (Hudson River) Watershed is described as slightly stressed, with one area on the former Davis property moderately stressed. The southern part of this sector, which lies in watershed Connecticut 6, is described as severely stressed.

Vegetation

Most of the area of this sector is covered with mature mixed forest (61.9%). In the southern part there is oak forest (8.6%). Old fields (6.8%) and conifers (1.0%) are found along Stone Hill Road.

Population

1. 1975	10
2. Max. under current zoning excluding tax-exempt land	318
3. Max. excluding open water and wetlands	258

Under No. 3 there would be 0.9 acre per person.

Conclusions

This sector has large parcels of land under private ownership that may offer an incentive for development in the future. Poor soils, large wetlands, and difficult hydrological patterns should cause concern. In addition, some parts of the sector already have severely stressed surface water conditions. Since there is no development activity there, stress must be caused by natural factors. The surface waters draining from this sector, as well as the possibility of underground channels, point to areas in Sectors 7, 10 and 11 that are also classified as severely stressed. Therefore any further development in this area without proper consideration of environmental factors may add to the deterioration of the existing conditions here and in adjacent areas.

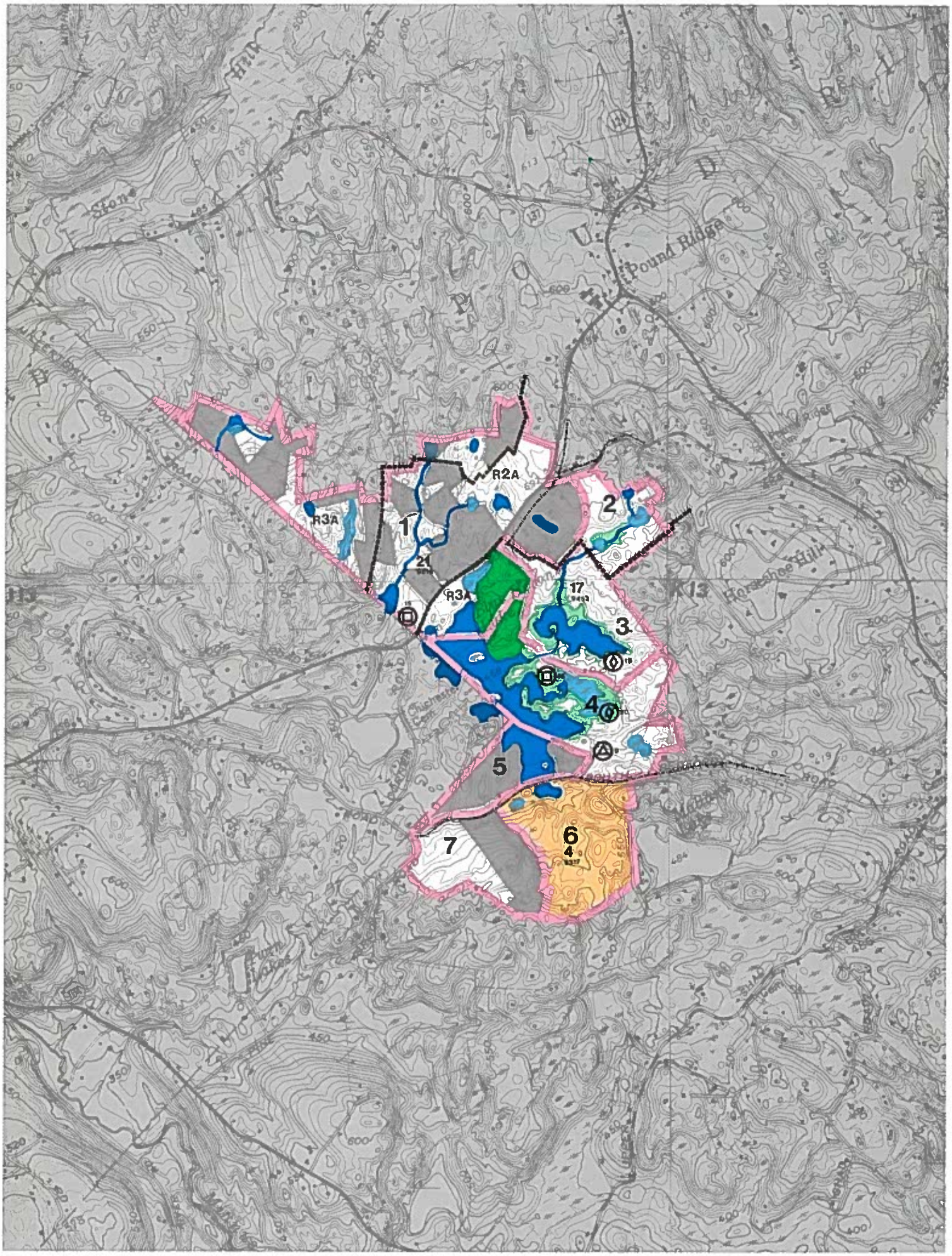
Recommendations

Include entire area of this sector in the REP zone. This will take about 220 acres.

Watershed 3

Blue Heron

An Analysis With The Map
and Inventory Chart


R2A
R3A
R3A
1
2
3
4
5
6
7
21
17
Pound Ridge
Horseshoe Hill

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 3

land status - aug. 1974

physical characteristics

types of vegetation in sector's percentage

soils for septic tanks

surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR' ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted
1	17 9452 78 9816	249.3	121.9	48.9	2 3	52	37	17.1	6.9	7.6	3.1	4.5	1.8	E	1.6			53.1	7.3	33.0		44.0	55.9		•		
2	17 9452	33.4	33.4	100.0	2		15			.7	1.9	3.3	9.7	E				70.6		25.3		99.9			•		
3	17 9452	68.2	68.2	100.0	3		22			13.4	19.7	2.8	4.1	E			8.3	55.4	2.6	9.8		92.3		7.7	•		
4	17 9452	92.0	67.4	73.2	3	4	18	12.6	13.7	17.7	19.3	2.4	2.6	D	12.3			49.3	1.5	12.9	2.1	75.1	3.2	21.7	•		
5	17 9452	39.3	21.4	54.4	3	6	3			11.4	29.1			E	9.4			27.6		34.0		65.3	5.6	29.2	•		
6	4 9317	110.2	105.8	95.9	3	2	32			1.7	1.6	.7	.6	E			1.3	88.0	6.9		1.6	23.4	76.6		•		
7	4 9317	41.1	32.1	78.1	3	3	9							E				70.3		29.7		50.0	50.0		•		
8																												
9																												
10																												
11																												
12																												
13																												
14																												
15																												
16																												
TOTALS		633.8	456.3			67	136	29.7		52.5		13.7																

MUTUAL ENVIRONMENTAL IMPACT OF CODA PARCELS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

CODA SECTORS	ACRES FOR CONSERV.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		92.7																
2	5.0	29.4																
3	14.0	45.0		●														
4	20.0	39.3	●	●	●													
5	5.0	22.9	●	●	●	●		●	●									
6		107.7																
7		41.1																
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
TOTALS	44.0	377.1	TOTAL ACREAGE															

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
		15
	19	
9	20	16

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
population	291	52	77	62	31	119	42									
roads	+	+	−	−	+	−	−									
sewage pl.	−	−	−	−	−	−	−									
water	+	+	+	+	+	+	+									
vegetation	+	+	+	+	+	+	+									
rural char.	+	+	+	+	+	+	+									

674

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- \+ pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

549

CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
population										42	96	12	6	50	52	291
roads										−	−	+	+	−	+	+
sewage pl.										−	−	−	−	−	−	−
water										+	+	+	+	+	+	+
vegetation										+	+	+	+	+	+	−
rural char.										+	+	+	+	+	+	+

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING

WATERSHED 3

Blue Heron Lake

Drainage rises in a semicircle of uplands and flows into the Blue Heron Lake complex. This is the largest lake complex in Pound Ridge and is interconnected by several streams. It flows to the pitch swamp in Bedford and to the Stone Hill River.

Between two lobes of the lake is a superb clethra swamp with hemlocks growing on hillocks of dark-colored gneiss. This swamp should be preserved.

Since the lake is lobed, there is a long length of shoreline. Settlement is mainly on the lakeshore and in a development north of the lakes. The western and southern parts of the lake are more heavily developed than the eastern ones, probably because of large single landholdings in the east.

The lakeside has the air of a summer resort, with the lake being used extensively for fishing, swimming, and boating. The appearance of the water and its attractiveness for human use suggest that it is of good quality.

Critical Areas in the Planning Process—1973

Environmental Problem Sites — **Map Symbol**

9. Use of herbicide.
10. Eutrophication of pond from developments upstream. Extensive algae growth and an oil skim on the pond.

Natural Areas of Special Interest — **Map Symbol**

19. *Slope forest* with large beech trees up to one and a half feet in diameter.
20. *Clethra hemlock lowland:* is mainly impenetrable hillocks of hemlocks. The area has probably not been disturbed for a long time.

Historic Sites — **Map Symbol**

15. Cemetery.
16. An old, double hearth chimney with a high cast-iron stand pipe nearby, of unknown purpose.
17. Chichester Cemetery.

WATERSHED 3

76 Blue Heron Lake
Sector 1
249.3 acres

Location and General Characteristics

Sector 1 is located in the northern part of the watershed along the Bedford town line. Pound Ridge Road (Route 124) crosses the southern portion. This area has a very varied topography, with hills and small ridges running in a generally north-south direction.

Existing Roads and Accessibility

All parts of this sector are easily accessible through a network of local roads connecting to Pound Ridge Road.

Present Stage of Development

This sector is fully subdivided as part of a large development area. Most of the parcels are already developed. There are about 52 residences, and under current zoning of R2A and R3A an additional 37 could be built. In the southern part of the sector there are 17.091 acres of tax-exempt land that are protected from development.

Mutual Impact

A. This sector lies on the edge of the watershed and is not affected by any other land. Its own environmental conditions affect areas in Bedford that are an extension of Watershed 3.

B. With the exception of the land bordering the highway, the sector is serviced by local roads and does not suffer from traffic or air and noise pollution.

Bedrock Formation

One long bedrock fracture plane crosses this sector in an east-west direction. In addition, there are several short fractures perpendicular to the longer one. This pattern indicates the possibility of underground drainage from the northern part of the sector into the long fracture, with possible connections to Sector 2 and Sector 12 in Watershed 8.

Soils

There are two distinctive soil patterns in this area. The eastern part has soils suitable for development (types 5 and 6), with only small areas of soils with poor drainage (type 3). Most of the western part has soils difficult for development (types 3 and 4), characterized by shallow bedrock and subject to ponding. Of the whole, good soils occupy 44.0% of the area and difficult, 55.9%.

Hydrological Conditions

The hydrological system of this sector includes several streams flowing south from points of origin in small ponds and wetlands. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface water quality in the northeastern part adjacent to Pound Ridge is classified as severely stressed. The remaining areas are described as slightly stressed.

Vegetation

Old fields along Pound Ridge Road constitute 33% of the area. The remaining land is covered with mature mixed hardwood forest (53.1%) and some areas of oak (7.3%).

Population

1. 1974	181
2. Max. under current zoning	291

Under No. 2 there would be 0.8 acre per person.

Conclusions

It can be anticipated that this sector will soon be fully developed. No special adverse effects are expected to occur.

Recommendations

None.

WATERSHED 3

Sector 2
33.4 acres

Location and General Characteristics

This sector forms a small isolated area on the northeastern edge of the watershed.

Existing Roads and Accessibility

West Lane is the only access road.

Present Stage of Development

This sector is not developed. It consists of one large property and two smaller ones. Under current zoning regulations of R2A 15 homes could be built.

Mutual Impact

A. The land in this sector is not affected by adjoining areas. Its own environmental conditions could affect Sectors 3, 4 and 5.

B. This land is secluded from any physical effects from other areas. If it is subdivided in the future there already are provisions for connecting it with the intensive development west of Horseshoe Hill in Sector 11 of Watershed 8.

Bedrock Formation

This land lies on a long bedrock fracture plane extending from Sector 1 in the west and ending in Sector 12 of Watershed 8.

Soils

The soils of the entire area are suitable for development (type 5).

Hydrological Conditions

One small stream originates in this area and flows in a southwestern direction toward Sector 3. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface water quality throughout is classified as slightly stressed.

Vegetation

Mature mixed hardwood forest covers the southern and eastern parts of the area (63.0%), and open fields are found in 25.3%.

Population

1. 1974	0
2. Max. under current zoning	52

Under No. 2 there would be 0.6 acre per person.

Conclusions

If intensive development occurs in this area it might also be linked to the development in Sector 3. Both areas will probably have road connections to Sector 11 in Watershed 8. Mutual dependence of these areas should be considered in development decisions

Recommendations

Include the stream and wetland area in C zone. This will require about 5 acres.

Sector 3
68.2 acres

Location and General Characteristics

This sector lies in the central-eastern part of the watershed. It has a gentle topography sloping down toward a medium-size lake in the center.

Existing Roads and Accessibility

This land is accessible by a narrow driveway connected to Pound Ridge Road. An easement along its western borders provides the possibility of connection to South Bedford Road. There are no internal roads.

WATERSHED 3

Present Stage of Development

The land is not developed. It consists of one large private property (Town Tax Map, Section 17, parcel 69, 68.225 acres). Under current zoning of R3A, 22 homes could be built.

Mutual Impact

A. This land is connected with Sector 2, and the cumulative effect of the two sectors is felt first in the lake and is then possibly transferred to Blue Heron Lake in Sectors 4 and 5.

B. There are no external physical factors affecting this land. If it is subdivided in the future there already are provisions for connecting it with the intensive development in the Horseshoe Hill area and with South Bedford Road, which would open the area to through traffic.

Bedrock Formation

There are a few short bedrock fracture planes pointing to a possible underground connection with Sector 4.

Soils

Nearly all of the soils of this sector are suitable for development (types 5 and 6). Only 7.7% is in small wetlands.

Hydrological Conditions

The lake, which covers 19.7% of the sector, is the main catch basin for surface drainage. A small stream flowing from Sector 2 increases the drainage area. The lake has an overflow on its southern shore that connects with Blue Heron Lake in Sector 4. The underground drainage indicates the same north-south flow of water. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface water quality throughout is classified as slightly stressed.

Vegetation

Most of the dry land is covered with mature mixed hardwood forest (55.4%). There are a few areas on the southern boundary which have hemlock and mixed hardwood forest (8.3%) and groupings of oak (2.6%). Small areas of old fields are located at the western end of the lake (9.8%).

Population

1. 1974	0
2. Max. under current zoning	77
3. Max. excluding open water, wetlands, and C zone	50

Under No. 3 there should be 1.1 acres per person.

Conclusions

This sector will probably be developed in the future. Together with the existing community of Horseshoe Hill in Watershed 8 and good development lands in Sector 2 it could be part of a well populated area.

Recommendations

1. Before subdivision of this land is approved, establish C zone of about 100 feet around the shore of the lake, from the water edge to contour line at elevation 500 feet. This would require about 7 acres.
2. Include the streams and wetlands in C zone. This will require about 7 acres.
3. Avoid designing through roads across C zones.

Sector 4
92.0 acres

Location and General Characteristics

Sector 4 lies in the center of the watershed. Its main topographical feature is Blue Heron Lake, located on its southern boundary.

WATERSHED 3

Existing Roads and Accessibility

South Bedford Road provides the only access to this land. Several dead-end roads lead to the interior.

Present Stage of Development

The land, together with the water, is held in rather large properties. There are about 4 residences, and under current zoning regulations R3A an additional 18 could be built. In the northern part of the watershed there are 12.6 acres of tax-exempt land that are protected from development.

Mutual Impact

A. The Blue Heron Lake area in this sector is affected by the environmental conditions of Sectors 1, 2 and 3. The cumulative effect of this may be transferred into the lower areas of the town of Bedford.

B. All the land in this sector is secluded and not affected by external physical conditions, but in the future, should development occur in Sectors 2 or 3, new roads will change the situation.

Bedrock Formation

There are several short bedrock-fracture-plane systems located in the southern and northern edges of this sector which all point toward the lake. This suggests a clear underground drainage toward the lake.

Soils

Most of this sector (75.17%) has suitable soils for development (types 5 and 6). The remainder is open water and wetlands.

Hydrological Conditions

All surface drainage and underground channels point toward Blue Heron Lake, which is in the main basin of the entire watershed. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface-water quality throughout is classified as slightly stressed.

Vegetation

The land surrounding Blue Heron Lake has a varied vegetation including mature mixed hardwood forest (49.3%), oak forest (1.5%), old fields (12.9%), and some successional forest on the edge of the water (2.1%). The wetlands area has an exceptional hemlock and mixed hardwood forest that is mainly impenetrable clethra with attractive hillocks of hemlock. The area has probably not been disturbed for a long time.

Population

1. 1974	14
2. Max. under current zoning excluding tax-exempt areas	62
3. Max. excluding open water, wetlands, and C zones.	16

Under No. 3 there would be 2.3 acres per person.

Conclusions

This sector offers only a limited possibility for development in spite of good soils near the lake. The richly sculptured shoreline of the lake does not lend itself to subdivision. Most of the large properties include open water.

Recommendations

1. For any kind of development special attention must be focused on easy drainage toward the lake.
2. Establish C zone of 100 feet around the shore of the lake. This will require about 12.0 acres.
3. Include wetlands area overgrown with hemlock and mixed hardwood forest in the C zone. This will require about 8.0 acres.

Sector 5
39.3 acres

Location and General Characteristics

Sector 5 is a small area on both sides of

WATERSHED 3

Blue Heron Lake and north of South Bedford Road.

Existing Roads and Accessibility

South Bedford Road provides easy access to all parts of this land.

Present Stage of Development

This sector is almost fully developed. One large property of 14.5 acres could be further subdivided. There are about 6 residences, and under current zoning regulations of R3A an additional 3 could be built.

Mutual Impact

A. The southern shore of Blue Heron Lake is affected by land on higher altitudes south of South Bedford Road in Sectors 6 and 7. It is affected in the northern part by environmental conditions in Sectors 1, 2, 3 and 4.

B. South Bedford Road is a local road, and there is little through traffic.

Bedrock Formation

There are several short bedrock-fracture-plane systems located in the eastern part. They all point toward the lake.

Soils

Most of the land in this sector (65.3%) has soils suitable for development (type 6). In the western corner there is a small area (5.6%) of wet soils (type 3), and the remainder (29.2%) is open water.

Hydrological Conditions

Sector 5 is the recipient of all surface drainage from sectors 6 and 7, which flows directly into the lake. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface water quality throughout is classified as slightly stressed.

Vegetation

Vegetation in this sector includes mature mixed hardwood forest (27.6%), old fields (34.0%) and conifers (9.4%).

Population

1. 1974	21
2. Max. under current zoning	31
3. Max. excluding open water, wetlands, and C zone	26

Under No. 3 there would be 2.1 acres per person.

Conclusions

Sector 5 is not expected to have any increase in development.

Recommendations

Establish C zone of 100 feet around the lake. This will require about 5.0 acres.

Sector 6
110.1 acres

Location and General Characteristics

This sector lies in the southeastern part of the watershed. It has a gentle topography forming a shallow basin inclining toward Blue Heron Lake.

Existing Roads and Accesssibility

South Bedford Road, which forms the northern boundary, offers the main access to this land. There is a private dead-end road running along the western edge, but there are no other internal roads.

Present Stage of Development

This sector is mostly undeveloped. There are one large and two medium private properties, Town Tax Map, Section 4, parcel 41, 71.788 acres). There are about two residences, and under current zoning regulations of R3A an additional 32 could be built.

WATERSHED 3

Mutual Impact

A. This land, lying on the boundary of the watershed, is not affected by any other area. Its own environmental conditions could affect Blue Heron Lake and parts of Sector 6.

B. South Bedford Road is a local road, and there is not much through traffic.

Bedrock Formation

There are several short bedrock-fracture-plane systems located in the eastern part of the sector which all point toward Blue Heron Lake and connect with the Mallard Lake area in Watershed 8, Sector 8.

Soils

Most of the land (76.6%) has soils difficult for development, with shallow bedrock (type 4). Only the northern portion along South Bedford Road (23.4%) has soils suitable for development (types 5 and 6).

Hydrological Conditions

All surface drainage and underground channels point toward Blue Heron Lake, which is the main basin of the entire watershed. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface water quality throughout this area is classified as slightly stressed.

Vegetation

This land is heavily wooded with 88.0% covered by mature mixed hardwood forest. There also are small areas of oak (8.2%), and hemlock-hardwood forest (1.3%).

Population

1. 1974	7
2. Max. under current zoning	119
3. Max. under new zoning	96

Under No. 3 there would be 1.1 acres per person.

Conclusions

This sector will probably be developed in the future, but the poor quality of soils will have a limiting effect on density. The study of underground drainage indicates a possible connection between Blue Heron Lake and the Mallard Lake area, where the surface water is described as severely stressed.

Recommendations

This sector should be up-zoned to R4A to limit density of development. This would reduce the adverse effects on Blue Heron Lake that might be caused by poor soils, surface and underground drainage.

Sector 7
41.1 acres

Location and General Characteristics

This sector lies in the southwestern part of the watershed. It has a gentle topography inclining toward South Bedford Road.

Existing Roads and Accessibility

South Bedford Road, which forms the northern boundary, provides the main access to this land. There are two long private driveways in the eastern part but no other internal roads.

Present Stage of Development

There are about 3 residences and under current regulations of R3A an additional 9 could be built.

Mutual Impact

A. This land, lying on the boundary of the watershed, is not affected by any other area. Its own environmental conditions could affect Sector 5 and Blue Heron Lake.

B. South Bedford Road is a local road, and there is not much through traffic.

WATERSHED 3

Bedrock Formation

There are no bedrock fracture planes in this area.

Soils

50% of the land, mostly in the northern part, has soils suitable for development (types 5 and 6). 50% of the higher elevation in the south has rocky soils with shallow bedrock (types 3 and 4).

Hydrological Conditions

Surface drainage flows northward toward South Bedford Road. There are no streams or wetlands in this area. The EAA study locates this sector in its watershed HR 31-P44-36-P122A. The surface water quality throughout is classified as slightly stressed.

Vegetation

The western part has old fields (29.7%), and the remaining land is covered with mature mixed hardwood forest (70.3%).

Population

1. 1974	10
2. Max. under current zoning	42

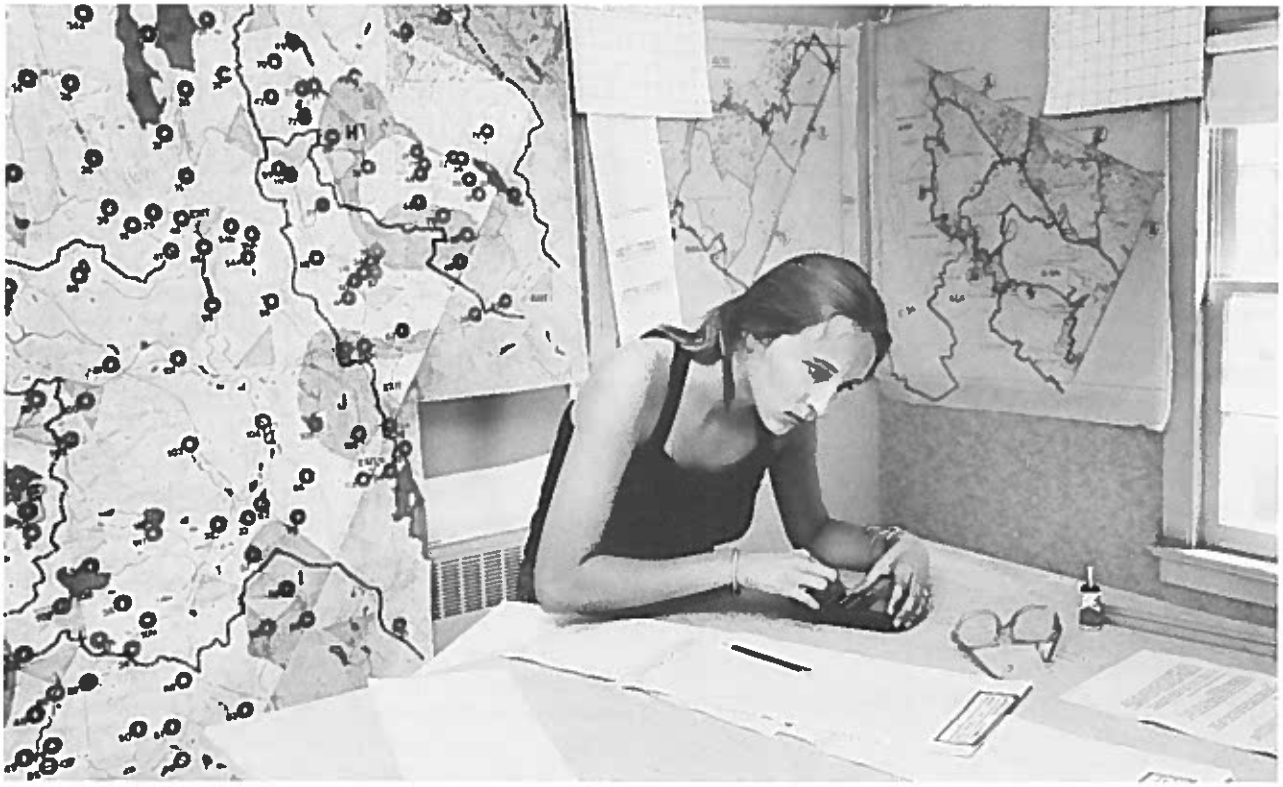
Under No. 2 there would be 0.9 acre per person.

Conclusions

This sector will probably be developed in the future according to the current zoning regulations.

Recommendations

None.

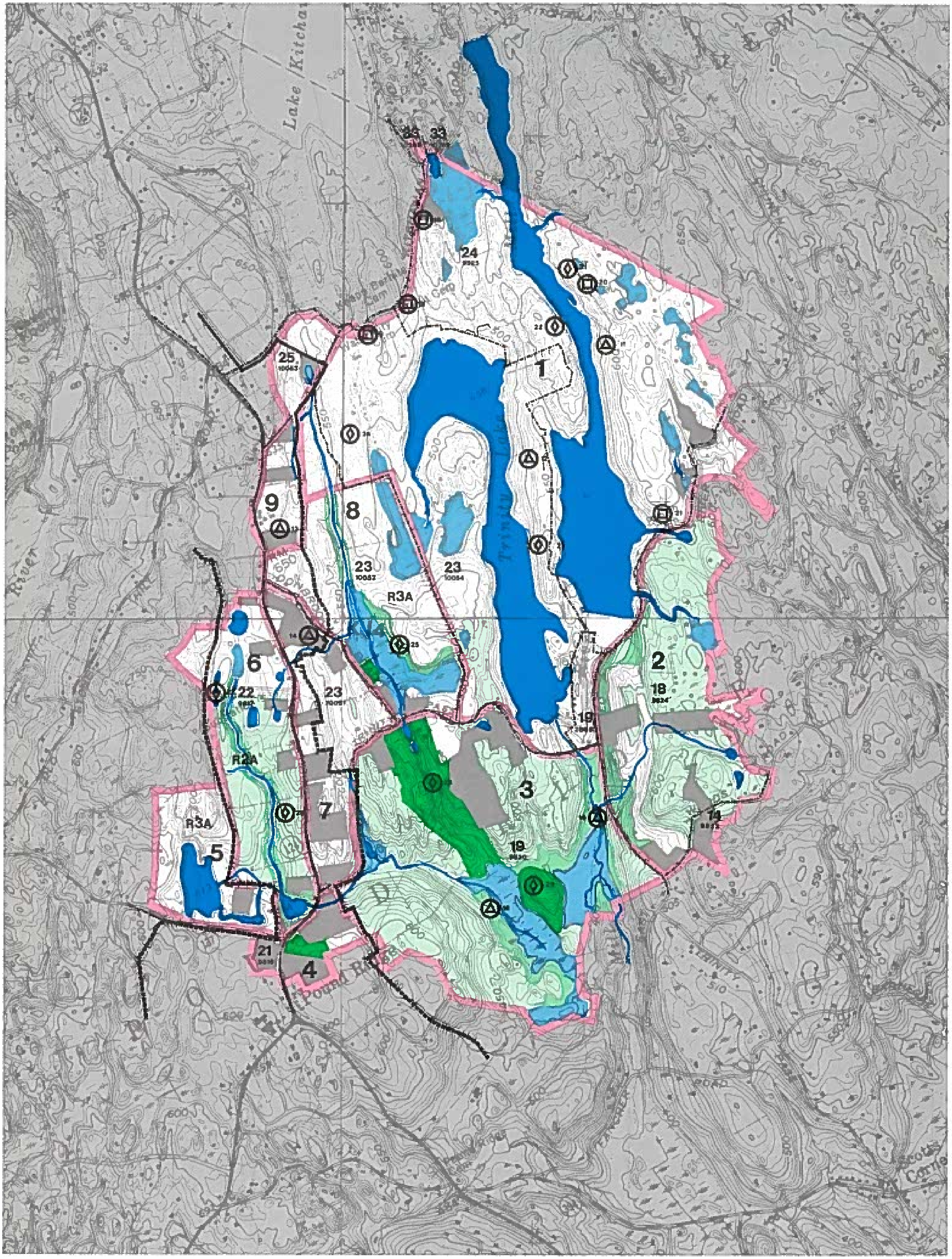


Data Calculations 1975

Watershed 4

Mill River North

An Analysis With The Map
and Inventory Chart


1
2
3
4
5
6
7
8
9
R3A
R2A
R3A
23
23
23
24
25
22
18
19
14
21
33
Trinity Lake

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 4

land status - aug. 1974

physical characteristics

types of vegetation in sector's percentage

soils for septic tanks

surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted	ACRES FOR CONSERV
1	24 9825	823.6	810.4	98.4	3	6	263			213.1	25.8	27.1	3.3	E	.4	.9	6.3	42.4	3.7	10.8	6.3	21.4	70.5	8.1	•			
2	18 9824	208.3	148.7	71.4	3	21	40			2.4	1.1	10.2	4.9	D		3.3	4.0	56.1	24.6	5.9		35.2	64 7		•			20.0
3	19 9820	356.2	230.9	64.8	2 3	10	89	97.7	27.4	5.7	1.6	50.5	14.2	E		.4	11.0	31.8	19.5	20.6	.8	39.8	51.0	9.0		•		15.0
4	18 9820	37.0	16.0	43.2	2	9	2	3.6	9.7					E	3.7				28.7	67.6		83.7	16 3		•			
5	24 9817	71.8	59.8	83.3	3	4	18			13.4	18.7	6.3	8.8	D	4.6			51.1	3.2	13.7		22.5	77.5		•			
6	22 9817	135.4	110.0	81.2	2 3	6	57			2.9	2.1	.7	.5	E	.2			54.0	1.6	41.5		22.5	73.7	3.8	•			18.0
7	23 10061	93.3	65.4	70.0	2 3	14	18			1.8	2.0	4.2	4.5	E				55.2	7.6	23.9	6.8	46.8	53.2			•		
8	23 10052	132.3	124.4	94.0	2 3	3	56	1.0	.8	1.5	1.1	34.8	26.3	E			.7	7.0		36.6	28.3	40.4	42.7	16.8	•			16.0
9	23 10052 25 10053	49.8	37.7	75.7	2 3	6	13			.8	1.7	.6	.3	E				26.4	2.1	38.5	30.1	58.7	41.3		•			
10																												
11																												
12																												
13																												
14																												
15																												
16																												
TOTALS		1908.1	1603 3	84.0		79	533	102.3	5.4	241.5	12.7	134.4	7.0															69.0

TOTAL ACREAGE 1460.3

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

	acreage	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	583.4		●							●							
2	175.0																
3	187.3	●	●		●	●	●	●	●	●							
4	37.0																
5	52.1																
6	113.8				●	●											
7	87.3						●										
8	80.0							●		●							
9	48.7																
10																	
11																	
12																	
13																	
14																	
15																	
16																	

TOTAL ACREAGE 1460.3

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
11,12	21,22,23,24	9,18,19,20,21
15,16	26,29	
	28	
	27	
14		
	25	
13		

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
population	941	213	346	38	55	231	211	206	66								2307
roads	−	−	+	+	−	+	+	−	+								
sewage pl.	−	+	−	−	−	−	−	+	−								
water	+	o	o	+	+	o	−	o	+								
vegetation	+	−	−	+	+	−	+	+	−								
rural char.	+	−	−	+	+	−	+	−	−								

LEGEND

NUMBERS

\+ ADEQUATE
− INADEQUATE

\+ NEEDED
− NOT NEEDED

\+ pure
o affected
− polluted

\+ PRESERVED
− ALTERED

\+ PRESERVED
− ALTERED

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CODA SECTORS	
							66	94	112	200	55	38	337	190	661	population	1753
							+	−	+	+	−	+	+	−	+	roads	
							−	−	−	−	−	−	−	−	−	sewage pl.	
							+	+	+	+	+	+	+	+	+	water	
							−	+	+	+	+	+	+	+	+	vegetation	
							−	+	+	+	+	−	−	+	+	rural char.	

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING

WATERSHED 4

Mill River North

This watershed is unlike most of the others in Pound Ridge because much of its drainage originates miles away in Connecticut. Pound Ridge thus has limited control over the quality of the Mill River, which flows through its central corridor.

The watershed provides the largest open space in town, but lack of access roads and the fact that most of the land is Water Company property make it largely unexplored by residents. Because of the development of the large property (formerly known as the "Simon Property"), however, this watershed may be used more by the public. The location and construction of the major road system on this property has intensified soil erosion and siltation into streams and wetlands. The development's six-acre recreation area has been built on wetlands bordering the Mill River.

There are many sites of ecological interest, including a large, very dry old-field complex with a high proportion of exposed bedrock and some fine hemlock and mixed hardwood forests. The two largest bodies of water in town — the Trinity Reservoir and the Mill River Reservoir, which are both man-made — are here. On the eastern bank of the latter is a fascinating "lost village" of old stone walls and foundations.

Critical Areas in the Planning Process—1973

Environmental Problem Sites (△) **Map Symbol**

11. Area gouged out for dam fill.
12. Area gouged out for dam fill.
13. Dump behind Marshall Oil Company.
14. New road spilling into wetlands.
15. Rubble spilling into a stream on the Simon property development with resulting sedimentation of the stream, and
16. Wetlands and its associated aquifer system are being destroyed by a road on the [same] property.

Natural Areas of Special Interest (◈) **Map Symbol**

21. *Mandrake:* One location has an unusually large 30-foot square area of may apple in a mesic mixed woodland. The soil is shallow but fine and has a rich herb layer including violets and rattlesnake fern. The "lost village" is in this area.
22. *Beech slope:* Mature beech, sugar maple, and oak grow on a steep slope. From a path running along the top of the slope there is a view to the reservoir 80 feet below.
23. *Hemlock forest:* with mature hemlock has a parklike atmosphere and a long view up Trinity Lake.
24. *A diverse field:* On the thin, very dry soil of one field are red cedars, gray dogwood clones, and diverse wild flowers. This field has some patches of rock outcroppings covered by a coarse sandy soil.
25. *Slope:* There is one growth of unusually well developed hop hornbeam trees on a sheltered slope.
26. *Halle Ravine:* The well developed mature stand of mature hemlock in the Halle Ravine.
27. *Large Fault:* At least 50 feet wide in the power line right of way.
28. *Pocket of large trees:* (Including white oak, black birch, and tulip poplar) has an opening in which there is a large glacial erratic twenty feet long, seven feet high, and seven feet wide on which is perched a pink granite boulder.
29. *The forests on Indian Hill:* To the north a pure hemlock forest with a parklike atmosphere and to the south one of mixed hemlock and hardwood. Indian Hill is unique in being surrounded by wetlands.

Historic Sites (▣) **Map Symbol**

9. Waterbury Cemetery.
18. Old foundation and stone wall complex.
19. Hoyt Cemetery.
20. The "lost village" (or shoemakers village). An extensive complex of old stone walls and old foundations abandoned sometime in the late 1800's.
21. Brown Cemetery.

WATERSHED 4

88 Mill River North
Sector 1
823.6 acres

Location and General Characteristics

Sector 1 is located in the northern part of the watershed. Its northern boundary is the Lewisboro town line. Its main features are the Trinity Lake and Mill River reservoirs. These bodies of open water, owned by the Stamford Water Company, occupy 25.8% of the sector. The land is richly sculptured, with elongated hills having steep slopes. Elevation ranges from 650 feet to the reservoir level of 458 feet.

Existing Roads and Accessibility

This sector is accessible from the north through Kitchawan Road and from the south from Trinity Pass Road and Old Mill River Road. There are no roads leading to the interior.

Present Stage of Development

Most of the land in Sector 1 is owned by the Stamford Water Company, and 98% is still undeveloped. There are about 6 residences on the periphery of the sector. Under current zoning regulations of R3A an additional 263 could be built.

Mutual Impact

A. The entire Watershed 4, and Sector 1 in particular is the extension of a drainage basin that originates in Lewisboro. The main environmental link between these areas is the Mill River, which flows southward from Lewisboro through Sector 1 (Mill River Reservoir) into Sector 3 and then into Watershed 8.

B. Most of Sector 1 is not open now to residential development. This sector is not affected by any external physical factors. The roads that define its southern and northern boundaries are little used.

Bedrock Formation

The hilly area between Trinity Lake and the northern part of Mill River Reservoir has an intensive system of bedrock fracture planes running mostly in a north-south direction. There is one long fracture plane in the western part of the sector that crosses the watershed boundary and ends near the southern shore of Lake Kitchawan in Watershed 1. The western part of the sector is underlaid by a marble formation. This means that there is an abundance of underground water, making the area vulnerable to pollution.

Soils

Only in the western and eastern edge of the area (21.4%) are soils classified as suitable for development (type 5). Other soils are either underlaid with shallow bedrock (type 4), 70.6%, or unsuitable for development (types 1 and 2), 8.1%.

Hydrological Conditions

Trinity Lake and Mill River Reservoir are man-made. Mill River Reservoir is actually an enlarged segment of the river, while Trinity Lake has its own sources, which are augmented by the drainage waters of the surrounding hill. The overflow from Trinity Lake joins the Mill River. On the flat uplands on both sides of the lakes are several small-to-medium-size wetlands. The EAA study locates this sector at the top of its Connecticut 6 watershed. The surface water quality in and around Mill River Reservoir is described as moderately stressed. The remaining area is described as slightly stressed.

Vegetation

The vegetation in this sector is varied. The largest area has mature mixed hardwood forest (42.4%), mainly in the northern and western sections. The western and southern parts are mainly old fields (10.8%) and successional forests (6.3%). Throughout the area are found uniform groupings such as hemlock (0.9%), hemlock and mixed hardwood (6.3%), conifers

WATERSHED 4

(0.4%), and oak (3.7%). Some parts of this forest are of exceptional quality. One location has an unusually large (900 square feet) area of may apple in a mesic mixed woodland. The soil is shallow but fine and has a rich herb layer including violets and rattlesnake fern. The "lost village" is in this area. In another location mature beech, sugar maple, and oak grow on a steep slope. From a path running along the top of the slope there is a view to the reservoir eighty feet below. A forest with mature hemlock has a parklike atmosphere and a long view up Trinity Lake. On the thin, very dry soil of one field are red cedars, gray dogwood clones, and diverse wildflowers. This field has some patches of rock outcroppings covered by a coarse, sandy soil.

Population

1. 1974	21
2. Max. under current zoning	941
3. Max. excluding open water and wetlands.	661

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 1 will probably remain as a reservoir area. Therefore no significant change can be expected. Whatever development may occur would be along the existing roads and would have minimal impact on the environmental conditions in this area.

Recommendations

None.

Sector 2
208.3 acres

Location and General Characteristics

Sector 2 is in the eastern part of the watershed on the eastern bank of the Mill River. The topography rises steeply from the river valley at 400 feet and reaches the top plateau at 630 feet.

Existing Roads and Accessibility

The western boundary of this sector follows Old Mill River Road, and the southern boundary follows East Woods Road. Access to the interior could be made available from both the north and south, but the land along Old Mill River Road is very steep and makes access difficult.

Present Stage of Development

This sector is partially developed, and there are several medium-size properties that could be subdivided. Two large private properties occupy 31% of the area (Town Tax Map, Section 18, parcel 23, 38.995 acres; and parcel 35, 26.037 acres). There are about 21 residences, and under current zoning regulations of R3A an additional 40 could be built.

Mutual Impact

A. Hydrological conditions on this land are transmitted through the drainage system into the Mill River and Mill River Reservoir. In this way Sector 2 is environmentally connected to Sectors 1 and 3 and eventually to Watershed 8.

B. Sector 2 is a self-contained land unit with rather difficult access from the south and north. Dense mature forest that covers the steep western slopes provides an adequate buffer between Old Mill River Road, which is fairly well used, and the upland area, which might be subject to future development.

Bedrock Formation

An extensive network of bedrock fractureplanes crisscrosses the entire area of Sector 2. Some of these planes cross the watershed boundary and extend into Watersheds 6 and 9. This pattern indicates mutual effects on ground water quality in the areas where three watersheds converge. The effect on development for this general area is discussed in the analysis of Watershed 6.

Soils

The upland areas have soils with shallow

bedrock 64.7% (type 4). The remaining 35.2% has soils suitable for development (types 5 and 6), but with severe limitations for septic tanks because of the steepness of the terrain.

Hydrological Conditions

Sector 2 has one continuous slope from its eastern high elevation toward the Mill River in the west. In addition to surface drainage, there are two small stream valleys originating in the upland area. One flows into the Mill River Reservoir in Sector 3. The EAA study locates this sector in its Connecticut watershed 6. The quality of the surface water is described as moderately stressed.

Vegetation

The vegetation in this sector is varied. The largest part is in mature mixed hardwood forests (56.1%), mostly in the north and west on the uplands plateau. Steep slopes in the west have hemlocks (3.3%), hemlock and mixed hardwood forest (4.0%), and large areas of oaks (24.6%). Some parts of this forest land, mainly above Old Mill River Road, are of exceptional quality.

Population

1. 1974	73
2. Max. under current zoning	213
3. Max. excluding C zone	190

Under No. 3 there would be 1.0 acre per person.

Conclusions

Sector 2 could accommodate more intensive development, especially on its upland areas where the topography is gentle and access does not provide special difficulties. Two large properties located in that part make this possible. However, soils with shallow bedrock and limitations for septic tank installation could create environmental problems directly affecting Mill River Reservoir.

Recommendations

1. Include steep slope east of Old Mill River Road in C zone. The length of this zone should cover all land, developed or not, from the East Woods Road intersection in the south to include Parcel 35 in the north. The width of the zone should include all land between Old Mill River Road up to the contour line at elevation 500 feet in its southern and central section, including Parcel 46, and elevation 550 feet in its remaining northern section. This would include approximately 20 acres.

2. Include all upland areas from elevation 550 feet in REP zone. This would include about 160 acres.

Sector 3
356.3 acres

Location and General Characteristics

Sector 3 is in the southern part of the watershed and is an area of transition into Watershed 8. It is bounded on the north and east by Trinity Pass. The topography is varied and contains some of the most interesting and valuable nature conservancies in Pound Ridge. These include Halle Ravine, Indian Hill, and large wetlands which surround it. Elevation ranges from 600 feet to 400.

Existing Roads and Accessibility

The roads that form this sector's boundaries provide easy access to most areas. A system of new roads services the large recent subdivisions. These roads, although not meant for through traffic, provide a shortcut between Trinity Pass and East Woods Road in Watershed 8.

Present Stage of Development

This sector is almost fully subdivided into two-acre lots. There are a few larger properties in the northern part, some of which belong to the Stamford Water Company. They are the ex-

WATERSHED 4

tension of the water company's watershed area in Sector 1. Over 60% of the buildable land is considered not developed and 27.4% of the total (the Halle Ravine, Indian Hill and wetlands) is tax-exempt. There are about 10 residences, and under current zoning regulations of R2A and R3A an additional 89 could be built.

Mutual Impact

A. Sector 3 is environmentally connected to all other sectors in Watershed 4. A large wetlands collects drainage waters from three directions. It is also linked to the Mill River, which is the principal carrier of all environmental conditions from Watershed 4 into Watershed 8. The steep topography of the land subdivided for development directs the surface drainage into this wetlands area. For this reason Sector 3 should be considered an environmental area of great importance. There is a problem of rubble spilling into a stream on the former Simon property development, with resulting sedimentation of the stream, and a wetlands and its associated aquifer system are being destroyed by a road on the same property.

B. Besides its great ecological vulnerability, Sector 3 could be affected by traffic, noise and air pollution in the event of more intensive development.

Bedrock Formation

Topographically, Sector 3 has the form of a large bowl, with the wetlands area in the center. This topography is accentuated by a number of bedrock fracture planes that begin at the higher elevations and point toward the lowlands in a concentric configuration. This pattern, which is unique in Pound Ridge, accentuates the environmental vulnerability of the sector, since these bedrock fractures act as drainage channels discharging directly into the wetlands area. Marble bedrock formation underlies the entire eastern half of the sector. This makes for an abundance of underground water but at the same time makes it vulnerable to pollution.

Soils

Sector 3 has a variety of soils. The wetlands area and the river valley (9%) have soils unsuitable for development or with poor drainage and ponding (types 1, 2 and 3). The highlands area (51%) consists of shallow bedrock and rocky soils with limitations for construction and septic field location (type 4). The highest areas, to the west of Halle Ravine and along the southern boundary (39.8%), have soils suitable for development (type 6).

Hydrological Conditions

Sector 3 is the drainage basin of the entire watershed. It is also a transfer area of surface water into Watershed 8. The EAA study locates Sector 3 in its Connecticut 6 watershed. The surface water quality throughout the area is described as slightly stressed.

Vegetation

Vegetation in Sector 3 offers a great variety, making this one of the most beautiful parts of Pound Ridge. The largest area is covered with mature mixed hardwood forest (31.8%), interspersed with old fields (20.6%), large parts of oak forest (19.5%), and hemlock and mixed hardwood forest (11.4%). Most of these forests are considered to be of exceptional quality, particularly the well-developed stand of mature hemlock in the Halle Ravine and the forests on Indian Hill — to the north a pure hemlock forest with a parklike atmosphere and to the south one of mixed hemlock and hardwood. Indian Hill is unique in being surrounded by wetlands.

Population

1. 1974	35
2. Max. under current zoning, excluding tax-exempt land.	346
3. Max. excluding C zone	337

Under No. 3 there would 1.0 acre per person.

Conclusions

Sector 3 is almost fully subdivided, but is also an area of great environmental fragility. It is a microcosm of the Pound Ridge environment, combining residential areas with nature conservancy areas of first qualtiy. It is well served by

WATERSHED 4

roads and has an abundance of wetlands. These elements are not always compatible. Therefore, great effort should be made to balance the preservation of natural features and the demands for new development. Concern for this area lies at the root of the LUTE study.

Recommendations

1. Include a buffer zone at the edge of the wetlands into C zone. This zone should occupy all land between the wetlands and the contour line at elevation 420 feet, but not less than 100 feet in the middle. This would take about 15 acres.
2. Include remaining upland area in REP zone. This would take about 240 acres.

Sector 4
37.1 acres

Location and General Characteristics

Sector 4 is a small area around the northern part of Pound Ridge Hamlet. It occupies the top of a hill with gently sloping topography toward the north. It is located at the intersection of Stone Hill Road and Route 124.

Existing Roads and Accessibility

All properties in this sector have direct access from Route 124.

Present Stage of Development

With the exception of one property this sector is entirely developed. The Hiram Halle Library is located in its center; this property (9.7% of the area) is tax-exempt. There are about 9 residences, and under current zoning regulations of R2A, an additional 2 could be built.

Mutual Impact

A. The environmental conditions in the area affect a medium-size pond in Sector 6, located to the west of Route 124.

B. Because of its location at the intersection of heavily used highways, the entire area is severely affected by traffic, noise and air pollution.

Bedrock Formation

There are no bedrock fracture planes in this sector, but the topography and the drainage point toward a medium-size fracture system located in Sector 6.

Soils

Soils underlying the top of the hill on which this sector is located are generally suitable for development (types 5 and 6). They occupy 83.7% of the area. The eastern edge has a small area (16.3%) of soils with shallow bedrock (type 4).

Hydrological Conditions

This sector has no surface water. One slope drains rain water toward the pond located in Sector 6. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality in the vicinity of this area is described as slightly stressed.

Vegetation

The vegetation coverage in Sector 4 is mostly old fields (67.6%). The only wooded area is on the eastern hilly side and is covered by oak forest (28.7%).

Population

1. 1974	31
2. Max. under current zoning	38

Under No. 2 there would be 0.9 acre per person.

Conclusions

This sector, being almost fully developed, should maintain its present character. An effort should be made to prevent added development or changes in building style.

WATERSHED 4

Recommendations

Include this sector together with the remaining area of the hamlet in the Town Historic District Zone.

Sector 5
71.8 acres

Location and General Characteristics

Sector 5 is in the southwestern corner of the watershed, north of Stone Hill Road (Route 137). It has a varied topography. Bordering the road are lowlands with one medium-size lake at elevation 613 feet, while the western and northern sections consist of fairly steep hills rising to an elevation of 740 feet.

Existing Roads and Accessibility

Stone Hill Road provides the only access. There are no internal roads, and access to the uplands is difficult.

Present Stage of Development

Less than 16% of this sector is developed. Two large private properties, which are considered not developed, occupy most of the western and upland areas (Town Tax Map, Section 22, parcel 9, 32.155 acres; parcel 62, 22.311 acres). There are about 4 residences, and under current zoning regulations of R3A an additional 18 could be built.

Mutual Impact

A. This sector, which is situated on the boundary of the watershed, is not affected environmentally by any other area. Because of the extensive drainage system that flows out of the lake, the environmental conditions that might occur would be transmitted to Sectors 3 and 6.

B. The proximity of a heavily used highway is felt in the southern part of the sector, but the western and northern parts are self-contained and are not subject to any physical disturbance.

Bedrock Formation

There is only one bedrock fracture plane, running north-south to the highest part of the site and on the axis of the lake below the hill. This indicates the possibility of an underground drainage from the high elevation into the lake — which could be the origin of the lake.

Soils

The majority of the soils overlaying this sector, 77.5%, are stony, with shallow bedrock (type 4). The remaining strip of land along the highway (22.5%) has soils suitable for development (type 5).

Hydrological Conditions

The lake is the recipient of all surface and possibly underground drainage water of the area. The water flows from the lake in an easterly direction toward Sector 6 and finally into the wetlands in Sector 3. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality throughout the area is described as moderately stressed.

Vegetation

This sector is heavily wooded, with 51.1% of its area covered with mature mixed hardwood forest. In the highest elevation of its northern part there is an oak forest covering 3.2% of the area. In the southwestern part 13.7% is described as old fields.

Population

1. 1974	14
2. Max. under current zoning	77
3. Max. excluding open water and wetlands	55

Under No. 3 there would be 1.3 acres per person.

Conclusions

Although this sector is not fully developed, difficult terrain and poor soils make it an unlikely place for extensive subdivision.

WATERSHED 4

Recommendations

The town should maintain the water-sampling service to monitor the water quality of the lake. See hydrology map for location of sampling sites.

Sector 6
135.4 acres

Location and General Characteristics

Sector 6 is located on the western edge of the watershed. On the east it is bounded by Route 124. Its topography is gentle, with an average altitude of 600 feet. A shallow stream valley runs the length of the sector from north to south.

Existing Roads and Accessibility

Route 124 provides easy access to all properties.

Present Stage of Development

Sector 6 is very sparsely populated, and over 80% of the land is considered undeveloped. There are about 6 residences, and under current zoning regulations of R2A an additional 57 could be built. One large private property is located in the southern part of this sector (Town Tax Map, Section 22, parcel 16, 34.078 acres).

Mutual Impact

A. Sector 6 is a self-contained land unit. It is not affected environmentally by any other area, except at its southernmost tip, where a small lake accepts the entire drainage from Sector 5. Environmental conditions in this area will affect Sectors 3 and 7.

B. Sector 6 has a narrow strip of land that lies next to a heavily used road (Route 124). The properties adjacent to the highway are within physical impact of this traffic. The eastern part, which lies near the stream, is heavily wooded and undisturbed by traffic.

Bedrock Formation

There are a few bedrock fracture planes in this sector, mostly in its southern and central parts. One fairly long fracture runs parallel to Route 124, and another crosses the midsection of the sector perpendicular to the road.

Soils

Nearly 74% of the area has shallow bedrock with limitations for construction of septic fields (type 4). Soils suitable for development (type 5) are located on both sides of the upper part of the stream and constitute 22.5% of the area. The remaining soils (3.8%) are unsuitable for development or with poor drainage and ponding (types 1, 2 and 3).

Hydrological Conditions

Sector 6 forms an elongated stream basin which drains small ponds and wetlands located in the north toward a medium-size pond in the southern part. The EAA study locates this sector in its Connecticut 6 watershed. The quality of the surface water is described as slightly stressed with the exception of the southern pond which is described as moderately stressed.

Vegetation

Mature mixed hardwood forest covers most of the western and central-eastern part of the sector (54%). The remaining land is mostly old fields (41.5%), oaks (1.6%), and conifers (.02%). One part of the forest land between the highway and the stream is classified as of exceptional quality. There is a large fault at least fifty feet wide in the power-line right of way. A pocket of large trees (including white oak, black birch, and tulip poplar) has an opening in which there is a large glacial erratic twenty feet long, seven feet high, and seven feet wide on which is perched a pink granite boulder.

WATERSHED 4

Population

1. 1974	21
2. Max. under current zoning	231
3. Max. excluding C zone	200

Under No. 3 there would be 0.6 acre per person.

Conclusions

The northern part of Sector 6 is fairly well subdivided, but one large private property in the southern part could be subdivided into approximately 15 parcels. There would be a substantial limitation to development, however, because of bad soil underlying that property.

Recommendations

1. Include all areas having poor soils for development into REP zone. This will include about 31 acres.
2. Establish 100-foot-wide C zone along each side of the stream. This will take about 18 acres.

Sector 7
93.4 acres

Location and General Characteristics

Sector 7 is in the western part of the watershed and forms a triangle defined by Salem Road (Route 124), Donbrook Road, and Trinity Pass. It has a steep topography sloping eastward. Elevations vary from 600 feet along Route 124 to 500 feet along Trinity Pass.

Existing Roads and Accessibility

Salem Road and Donbrook Road provide easy access to all properties, and there are no interior roads.

Present Stage of Development

This sector is well subdivided, with only a few larger properties, mostly in the eastern part, that could be further divided. 70% of the land is considered undeveloped. There are about 14 residences, and under current zoning regulations of R2A and R3A an additional 18 could be built.

Mutual Impact

A. Sector 7 could be affected slightly by the environmental conditions in Sector 6. It has no important bodies of water. The drainage flows into Sectors 8 and 3, making these areas possible recipients of environmental problems occurring along Route 124.

B. Every property located in this sector has frontage on one of the three surrounding roads. These roads carry through traffic and affect the area in varying degrees. Route 124 is a principal contributor to noise and air pollution. With further development in Sector 3, Trinity Pass would carry much heavier traffic.

Bedrock Formation

There are no significant bedrock fracture planes in this area.

Soils

Soils with shallow bedrock (type 4) underly 53.2% of the area. Along Route 124, where most of the properties are developed, better soils (type 5) underlie the southern and eastern parts of the sector (46.8%). The latter are generally the areas which are still not developed.

Hydrological Conditions

There are no significant drainage channels from this sector. Most water is drained through the soils. The effects of possible contamination from septic systems located on shallow bedrock soil might not be detected on the site itself but may contribute to the conditions in Sectors 3 and 8. The EAA study locates this sector in its Connecticut 6 watershed. The quality of the surface water in the vicinity is described as slightly stressed.

WATERSHED 4

Vegetation

Mature mixed hardwood forest covers 55.2% of the area, mostly in the central and eastern parts. The rest of the land includes old fields (23.9%) and successional (6.8%) and oak (7.6%) forests.

Population

1. 1974	49
2. Max. under current zoning	112

Under No. 2 there would be 0.8 acre per person.

Conclusions

Most of the development occurs on rocky soils with shallow bedrock, which are not suitable for septic fields. Because of the steepness of the topography and lack of visible fracture planes on this site it is possible to assume that some contamination from the septic systems is drained very quickly through the thin soils and on top of the bedrock. This contamination could end in either of two locations: the large wetlands area of Sector 8, or the Indian Hill wetlands in Sector 3.

Recommendations

1. The town should maintain water-sampling service on the southern and eastern boundaries of the sector to check for possible septic tank contamination. See Hydrology Map for location of sampling sites.

2. Conduct tests of well water for possible contamination on the following properties: Sector 7, Parcels 7, 15, 17 and 19, and Sector 3, Parcel 53.

Sector 8
132.4 acres

Location and General Characteristics

Sector 8 is in the western part of the watershed and east of Donbrook Road. Its southern and northeastern parts are occupied by large wetlands. The remaining part has a gently rolling topography with elevations varying between 520 and 570 feet.

Existing Roads and Accessibility

Donbrook Road in the west and a small portion of Trinity Pass in the south provide access to the border areas. The interior parts of this sector, although they have gentle topography, are not connected to the main roads.

Present Stage of Development

This sector is practically undeveloped. Several smaller properties are located off Trinity Pass. The remaining land is occupied by two large private properties that are not developed (Town Tax Map, Section 23, parcel 6, 61.989 acres; parcel 7, 49.947 acres). There are 3 existing structures. Most of the land is in R3A-zone with a small portion in R2A zone.

Mutual Impact

A. Sector 8 is connected in its northern part to undeveloped land in Sectors 1 and 9 and in the southwestern part to developed land in Sectors 6 and 7. Through its drainage system it could affect the Halle Ravine in Sector 3.

B. 90% of the dry land is located either away from roads or near secondary roads that do not carry heavy traffic. In the north and east it borders Sector 1, with its water company properties.

Bedrock Formation

There is a very distinctive pattern of bedrock fracture planes running through the wetlands area parallel to Donbrook Road. In the northern upland portion there begins another system of very long fracture planes running directly north through Sector 1 and into Watershed 1 near Lake Kitchawan. Marble bedrock formation underlies the entire eastern half of this sector, which makes for an abundance of underground water but at the same time makes it vulnerable to pollution.

WATERSHED 4

Soils

The western and southern part of the sector (40.4%) has soils suitable for development (type 5). The central and eastern part has soils with shallow bedrock, which is a limiting factor for construction and location of septic fields. The remaining soil (16.8%) is unsuitable for development, as it is extremely wet (types 1 and 2).

Hydrological Conditions

Sector 8 forms a shallow drainage basin of one stream flowing from the north through large wetlands in the southern portion. This receives a small tributary on the west side flowing from Sector 6 and through Sector 7 into the large wetlands. There is another large wetlands area in the northeastern corner that extends into Sector 1. The EAA study locates this sector in its Connecticut 6 watershed. The quality of the water is described as slightly stressed throughout the area.

Vegetation

There is little forest cover in this sector. Most of the area is old fields (36.6%) and young successional forest (28.3%). The northwestern edge of the large wetlands is overgrown with mature mixed hardwood forest that is classified as of exceptional quality. There is one growth of unusually well-developed hop hornbeam trees on a sheltered slope.

Population

1. 1974	10
2. Max. under current zoning	196
3. Max. excluding wetlands and C zone	137

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 8 in its western portion offers good opportunities for development. In the interior and northern parts these opportunities are limited by present lack of roads, poor soils, and shallow bedrock.

Recommendations

1. Include northern and northeastern edge of large wetlands in C zone. This protection area should be a minimum of 200 feet wide, covering the land from the marsh inland up to contour line at elevation 560 feet. This will protect exceptional forest on steep slopes. It will take about 10 acres.

2. Establish 100-foot-wide C zone along each side of the stream. This will take about 6 acres.

Sector 9
49.8 acres

Location and General Characteristics

Sector 9 occupies the northwestern corner of the watershed.

Existing Roads and Accessibility

The southern part of the sector abuts on Route 124 and the northern part on Kitchawan Road. All properties are accessible from these roads.

Present Stage of Development

This sector is fully subdivided and fairly well developed. There are only two properties in the southern part that can be further divided. There are about 6 residences, and under current zoning regulations of R2A an additional 13 could be built.

Mutual Impact

A. Lying on the edge of the watershed, Sector 9 is not affected environmentally by any other area. Surface drainage flows westward towards Sectors 1 and 8.

B. All properties in Sector 9 are adjacent to heavily used highways and are subject to noise and air pollution.

WATERSHED 4

Bedrock Formation

One long bedrock fracture plane lies next to the eastern boundary of this sector, touching all properties in that area. This fracture is part of a larger system that stretches from Lake Kitchawan to the wetlands area in Sector 8.

Soils

Soils in this sector are clearly divided into two long bands running north-south: Soils suitable for development (type 5) cover 58.7% and soils difficult for development (type 4) cover 41.3%. In the northernmost part of the area around a small pond the soils are very poor for development and subject to ponding (type 3).

Hydrological Conditions

Two small ponds located in the northern and southern parts drain each area respectively. Small streams flowing out of these ponds merge into a large stream that flows through a corner of Sector 1 into the center of Sector 8, passing large wetlands and finally reaching Halle Ravine in Sector 3. The EAA study locates this sector in its Connecticut 6 watershed. The quality of the surface water is described as slightly stressed throughout the area.

Vegetation

The northern part of the sector is covered with mature mixed hardwood forest (26.4%). In the center there is an area of oak forest (2.1%), and in the south there are old fields (38.5%) and successional forest (30.1%).

Population

1. 1974	21
2. Max. under current zoning	66

Under No. 2 there would be 0.7 acre per person.

Conclusions

This land will probably become fully developed because of its convenient location near highways and generally suitable soils for development.

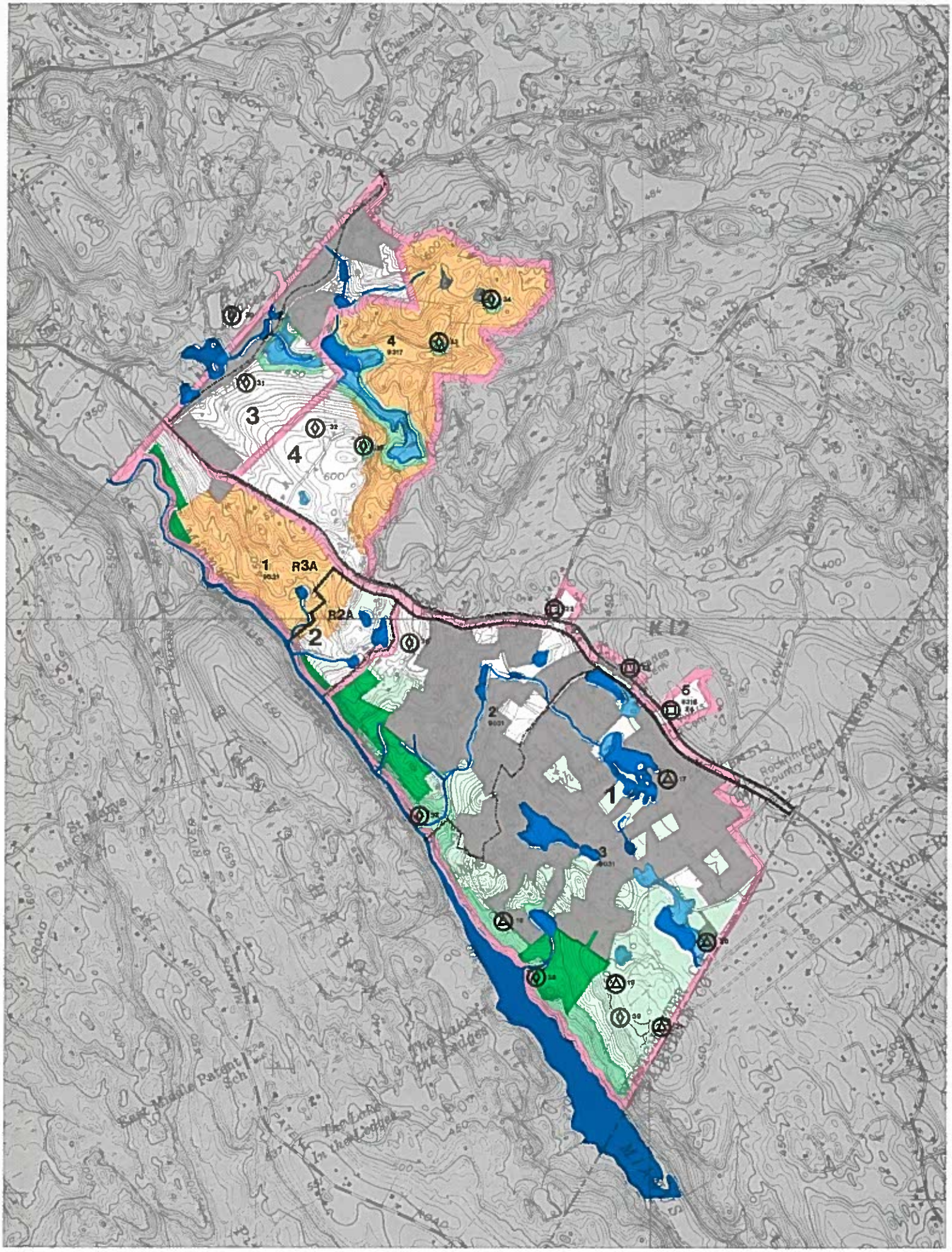
Recommendations

The town should maintain water sampling services to check eventual pollution of the stream from the development in Parcels 7 and 13 off Kitchawan Road, which have unsuitable soils. See hydrology map for location of sampling sites.

Watershed 5

Mianus

An Analysis With The Map
and Inventory Chart


R3A
R2A
1
2
3
4
5
Rockrimmon Country Club
East Middle Patent Sch
The Lake
The Ledges

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 5

land status - aug. 1974 | physical characteristics | types of vegetation in sector's percentage | soils for septic tanks | surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR'l ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted	ACRES FOR CONSERV.
1	2 90.1 9031	618.2	330.3	53.4	2 3	122	132	48.0	7.8	28.1	4.5	10.6	1.7	E		5.6	31.4	7.1		33.5	16.1	26.7	69.6	3.4		•		35.0
2	1 9031	147.0	114.9	78.1	2 3	4	41	23.1	15.7	2.4	1.7			D		1.1	3.9			50.5	42.9	28.4	71.6		•			
3	4 9317 4 9450	122.1	64.3	52.6	3	25	14			4.1	3.3	6.5	5.3	E	1.1			16.8		27.6	45.8	60.9	39.0		•			11.0
4	4 9317	252.0	233.9	92.8	3	6	75			3.3	1.3	12.1	4.8	D	9.5	.4		49.8	.8	12.9	20.5	25.4	73.0	1.5	•			23.0
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												
13																												
14																												
15																												
16																												
TOTALS		1139.5	743.4			157	262	71.1		37.9		29.2																69.0

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development - excluding conservation (C), open water and wetland areas

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2				●												
3				●												
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																

	ACRES FOR CONSERV.	
1	35.0	496.5
2		121.5
3	11.0	100.5
4	23.0	213.6
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
TOTAL ACREAGE	69.0	932.1

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
17,18,19,20,21	36,37,38,39	22, 23, 24
	31	
	32,33,34,35	

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
population	745	131	136	283												
roads	+	−	−	−												
sewage pl.	−	−	−	−												
water	o	o	o	o												
vegetation	−	−	−	−												
rural char.	−	−	−	−												

1295

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- \+ pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

1106

CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
population													202	111	109	684
roads													−	+	+	+
sewage pl.													−	−	−	−
water													+	+	+	o
vegetation													+	+	+	+
rural char.													+	+	+	−

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING

WATERSHED 5

Mianus

This watershed parallels the Mianus River, including part of Bedford on the north and running south to the Connecticut border. It includes a number of lakeside communities (Twin Lakes, Robin Hood Lake, Highland Lake). Along the Mianus River is a superb hemlock gorge, part of which is owned by the Nature Conservancy and part by the Greenwich Water Company. In the southern region, astride the Connecticut-New York line, is a rapidly developing residential area backing up to the riverside hemlock area.

The largest undeveloped area is found in the northern part of the watershed, near the Twin Lakes. It is one of the finest pieces of open space in the town and includes an old-age mixed hardwood forest, a spruce-pine plantation complex, and a conifer-old field complex.

The river here is something of a curiosity, since for a short stretch to the west of Pound Ridge it flows northward, then turns south near Indian Hill in Bedford and runs parallel to itself through Pound Ridge. It is thought that the original channel continued northward but was "captured" by the southward-flowing branch during mountain-building or glaciation episodes that rearranged the landscape.

Critical Areas in the Planning Process — 1973

Environmental Problem Sites — **Map Symbol** △

17. Near *Highland Lake*, where some houses were set beside poorly drained areas. This might result in odors or contamination of the lake.

18. *Dumping:* The cul-de-sac here was being filled in by brush and assorted trash.

19. *Interface between superb natural area and residential zone:* In our opinion there could have been a wider buffer zone between residential development and the hemlock woods.

20. *Large development astride N.Y./Ct. border:* This area may exert a lot of pressure on lands owned by the Nature Conservancy or other environmental problems typical of dense developments.

21. *Gravel pit:* An area which has been scalped for till and which is now an eyesore.

Natural Areas of Special Interest — **Map Symbol** ◎

30. *Blueberry field with trails:* A diverse, pleasant old field (on excessively drained glacial outwash sands and gravels), with excellent wildlife habitat and recreational potential. (In Bedford).

31. *Bower path of Shadbush on old estate:* There is an unusual 10-foot-high bower of arching shadbush forming a path on an old estate.

32. *Conifer-old field complex:* fascinating complex of mixed conifers, partially mowed fields and paths. Excellent wildlife habitat. Potential recreational area.

33. *Mature mixed hardwood forest with hemlock along a gorge:* One of the first agricultural areas abandoned in the town, as evidenced by stone walls and large trees (up to two feet) of beech, sugar maple, black gum, tulip poplar, black birch. We are recommending this area for conservation as a natural area. It is a unique, superb area, of a stature rarely seen in New England.

34. *Spruce-white pine complex:* A Norway spruce grove that seeded in from a few large planted specimens. Adjacent to the area is a grove of white pine (possibly also seeded from planted pines). We are recommending this area for conservation because it is unique and attractive.

35. *Superb Sugar Maple Slope:* On a boulder strewn slope an almost solid stand of sugar maple one to one and a half feet in diameter. This is a rare type in town worthy of conservation.

36. *An old dairy-farm complex:* A gently rolling area with mowed fields, hedgerows, and young successional forest, constituting an excellent bird habitat.

37. *Hemlock ridge:* Along the river a hemlock stand, which is superb in some places, lines the gorge. On the Bedford side it is heavily used as a nature education area. On the Pound Ridge side it is used much less because of the

WATERSHED 5

lack of a trail system and an educational program.

38. *There is an exceptional stand of hemlock* overlooking the Mianus River and along a stream. From the stand it is possible to gaze down at the Mianus River and also hear the rushing water of the stream. Red Trillium is abundant.

39. *Hemlock hardwood stand:* located east of pure hemlock gorge. The hilltops are covered with hemlock-oak hardwoods mixed in with hemlock, including beech, yellow birch, red and chestnut oak, tulip poplar, sugar maple, and white ash.

Historic Sites — **Map Symbol**

22. Miller Cemetery.
23. Sarles Cemetery.
24. Avers Cemetery.

PRUP Conferences — J. Glowczewski

WATERSHED 5

Mianus
Sector 1
618.2 acres

Location and General Characteristics

Sector 1 is in the southernmost corner of the watershed. Its southwestern boundary is the Mianus River, and its southeastern boundary is the state line. The northeastern boundary is Long Ridge Road. Its topographical characteristics are flat, open land along the highway, gradually dropping into a deep ravine toward the river. Elevations are 500 feet near the Rockrimmon Country Club to 250 feet at the water's edge.

Existing Roads and Accessibility

Long Ridge Road (Route 104) provides all access. Several local roads and driveways distribute traffic to already developed and subdivided parts of the land. This road network ends at the edge of the Mianus Gorge.

Present Stage of Development

This sector is one of the most intensively developed areas in Pound Ridge. All the flat areas are subdivided. On the slopes above the Mianus River are several large properties (Town Tax Map, Section 2, parcel 7, 25.278 acres; Section 3, parcel 2, 27.693 acres; parcel 6, 25.240 acres). Some of this land belongs to the Stamford Water Company. There are also three parcels of tax-exempt land which is already protected from development (Town Tax Map, Section 2, parcel 139, 15.209 acres; parcel 191, 10.171 acres: Section 3, parcel 12, 20.366 acres). There are about 122 residences, and under current zoning regulations of R2A an additional 132 could be built.

Mutual Impact

A. This sector, lying at the edge of the watershed, is not affected environmentally by other areas. Its own conditions are transferred directly into the Mianus River.

B. Heavy traffic on Route 104 affects most of the properties lying along it. The remaining land has only local traffic. Even if development continues no other physical effects are anticipated.

Bedrock Formation

There are numerous bedrock-fracture-plane systems that crisscross this land, mostly in the part with steep topography. Two long systems run northwest to southeast to the point where the topography begins to slope toward the river. This pattern indicates abundant underground channels that distribute the drainage water in many directions.

Soils

There is a distinctive pattern of soil characteristics. The highest, flat portions of the land (26.7%) have soils suitable for development (type 6). Sporadic areas (3.4%), mostly on the Connecticut border, are wet soils subject to ponding (type 2). The rest of the land (69.5%), which comprises the corridor along the highway, the entire northern part, and the steep topography, has rocky soils with shallow bedrock (type 4).

Hydrological Conditions

The flat, upland areas contain several medium-size lakes (Highland Lake and Robin Hood Lake) and small wetlands. There are also a few streams that rise in the lakes and form small tributaries to the Mianus River. All surface drainage and underground channels drain into the Mianus River. The EAA study locates this sector in its Connecticut 4-1-C and 4-1-D watersheds. The surface water quality is described as severely stressed in an area around Highland Lake, moderately stressed in an area northwest of Robin Hood Lake, and slightly stressed in the remaining part. Potential septic pollution was found near Highland Lake, where some houses were set beside poorly drained areas. This might result in odors or contamination of the lake. Steep slopes above Mianus River were not included in the EAA study.

WATERSHED 5

Vegetation

Most of the flatlands along the highway, where the development is most intensive, has old field vegetation and young successional forests that cover 33.5% and 16.1% respectively. The steeper topography has hemlock and mixed hardwood forest of exceptional quality covering 31.4% of the land. At the river's edge are exceptional hemlock woods that occupy 5.6% of the area. Mature mixed hardwood forest is concentrated around a small lake and wetlands on the Connecticut border (7.1%). An old dairy-farm complex is a gently rolling area with mowed fields, hedgerows, and young successional forest, constituting an excellent bird habitat. Along the river a hemlock stand, which is superb in some places, lines the gorge. On the Bedford side it is heavily used as a nature education area. On the Pound Ridge side it is used much less because of the lack of a trail system and an educational program. There is an exceptional stand of hemlock overlooking the Mianus River and along a stream. From the stand it is possible to gaze down at the Mianus River and also hear the rushing water of the stream. Red trillium is abundant there. To the east of this is a stand of hardwoods mixed in with hemlock, including beech, yellow birch, red and chestnut oak, tulip poplar, sugar maple, and white ash.

Population

1. 1974	427
2. Max. under current zoning, excluding tax-exempt land	745
3. Max. excluding C zone	684

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 1 will continue to develop along present lines. In time this intensive growth may threaten the exceptional quality of the forest along the steep banks of the river. Affected water conditions around Highland Lake may be either man-made or have a natural origin. EAA study lists one well in this area as approaching the nitrate tolerance level. Flat topography and excellent soils should minimize the possibility of pollution, but there could be problems with faulty septic systems.

Recommendations

1. Town should check on all septic fields in the Highland Lake area.
2. Include entire hemlock-hardwood forest area in REP zone. This would cover about 194 acres above Mianus River Gorge.
3. Include entire hemlock forest from the water's edge to contour line on elevation 350 feet in C zone. This would cover about 35 acres.

Sector 2
147.0 acres

Location and General Characteristics

Sector 2 is located on a narrow strip of land between Mianus River and Long Ridge Road, south of the Bedford town line. It has a varied topography sloping gradually from the road toward the river. Elevation varies from 570 to 350 feet.

Existing Roads and Accessibility

Long Ridge Road (Route 104) provides all access. There are no internal roads, other than private driveways.

Present Stage of Development

This sector is very sparsely populated. It has several medium-size properties and two large ones (Town Tax Map, Section 1, parcel 166, 29.48 acres; parcel 170, 48.047 acres). All land on the edge of the river is tax-exempt (Town Tax Map, Section 1, parcels 167, 168, 173 and 195; totaling 23.1 acres). There are about 4 residences, and under current zoning regulations of R2A and R3A an additional 41 could be built.

Mutual Impact

A. Sector 2 forms a self-contained environ-

WATERSHED 5

mental area. Development on this land would affect the Mianus River. Its central part may be affected by developments in Sector 4.

B. Most of the land is well protected from the adverse effects of future development. Heavy traffic on Route 104 affects only properties located near the highway.

Bedrock Formation

There are no bedrock-fracture-plane systems recorded on the geological map of this area.

Soils

Small areas (28.4%) in the southern and northern part of the sector contain soils suitable for development (types 5 and 6). The remaining 71.6% consist of rocky soils and shallow bedrock (type 4).

Hydrological Conditions

In the southern part, there are four small ponds with streams draining into the Mianus River. All surface drainage follows the slopes into the river. The EAA study locates this sector in its Connecticut 4-1-F and 4-2 watersheds. The surface quality is described as severely stressed in the southern part of this sector, in the area of small ponds, moderately stressed in the central part and slightly stressed in the northern part.

Vegetation

The southern part of the sector and a 40-foot-wide strip along Long Ridge Road have old field vegetation. This covers 50.5% of the land. The remaining parts have young successional forest (42.9%), with sparse hemlock and mixed hardwood forest (3.9%) and hemlock forest (1.1%).

Population

1. 1974	14
2. Max. under current zoning, excluding tax-exempt land	131
3. Max. including upzoned parcels (R4A)	109

Under No. 3 there would be 1.3 acres per person.

Conclusions

Sector 2 may be developed more intensively in the future, although the soil and topographical conditions should preclude high population density.

Recommendations

All areas having rocky soils with shallow bedrock (type 4) should be recommended for upzoning (R4A) to reduce possible density in this area and contamination of the Mianus River with sewage effluent. This will be 77.4 acres of land.

Sector 3
122.1 acres

Location and General Characteristics

Sector 3 is in the northern part of the watershed. It stretches along the Bedford town line. Its western portion is a gently sloping hill, its central part a wetlands with small ponds and connecting streams, and the eastern portion has richly sculptured topography and dense forest cover. The elevation varies from 550 to 430 feet.

Existing Roads and Accessibility

In the west the sector borders on a short stretch of Long Ridge Road, but few properties are accessible from this side. The main access is from Pine Brook Road, which runs parallel to the town line at the foot of the hills. All parts of the land can be reached from this road.

Present Stage of Development

This sector is well subdivided and developed, but 52.6% of the land is considered undeveloped. There are several medium-size properties (8 to 15 acres) that could be further divided. There are about 25 residences, and under current

WATERSHED 5

zoning regulations of R3A, an additional 14 could be built.

Mutual Impact

A. This land lies below that of Sector 4. It is therefore environmentally dependent on conditions existing on the higher land. The cumulative affect is in turn transported directly into the town of Bedford in the area of Twin Lakes.

B. All properties along Long Ridge Road are affected by heavy traffic. Pine Brook Road at present has a low volume of traffic, but with the potential development in Sector 4 this may change.

Bedrock Formation

There are two distinctive bedrock-fracture-plane systems running perpendicular to Pine Brook Road, pointing toward the Twin Lakes area in Bedford. The longer one parallels Long Ridge Road along a shallow gully. It begins at the edge of the watershed in Sector 4 and crosses the town line past Pine Brook Road. The shorter one parallels the central wetland valley. Both of them indicate underground drainage toward Twin Lakes.

Soils

Gentle western slopes have 60.9% soils suitable for development (type 6). Central valley and eastern hill (39.0%) have difficult soils for septic systems, wet, subject to ponding and with shallow bedrock (types 3 and 4). Most of the developed land is in these areas of poor soils.

Hydrological Conditions

This sector has a complex network of surface water. The main drainage basin runs from Sector 4 through the middle of the land. A long wetlands and several ponds interconnect in the valley. They feed their waters into Twin Lakes in Bedford. Several small ponds and streams join this system, flowing from the eastern part of the sector. Eventually this water reaches the Mianus River. The EAA study locates this sector in its Connecticut 4-2 watershed. The surface-water quality is described as slightly stressed in the western part of the sector and moderately stressed in the eastern part.

Vegetation

Most of the western and central areas have young successional forest (45.8%), with large clearings of old fields (27.6%). Eastern hills have solid cover of mature mixed hardwood forest (16.8%). There is an unusual ten-foot-high bower of arching shadbush forming a path on an old estate.

Population

1. 1974	87
2. Max. under current zoning	136
3. Max. excluding open water, wetlands and C zone	111

Under No. 3 there would be 1.0 acre per person.

Conclusions

Sector 3 will continue to develop slowly for some time, but change may be brought about by more intensive development in Sector 4.

Recommendations

1. Establish protective buffer of 100 feet on each side of the lake and wetlands and include it in C zone. This will take about 11 acres.

2. Resist attempts to provide for future through roads to Sector 4 and Long Ridge Road. This would destroy the character of Pine Brook Road and probably call for its enlargement.

3. See figure 3 on pg. 191.

Sector 4
252.0 acres

Location and General Characteristics

Sector 4 is in the northern part of the watershed. It stretches along the watershed boundary

WATERSHED 5

over a variety of topographical features. The elevation varies from 680 to 440 feet. Its western part is atop of a hill gently sloping northward toward Sector 3 and dropping more steeply in the southerly direction. Center portion is a cul-de-sac shaped ravine with a wetlands floor and a small lake. The eastern part has richly sculptured topography and dense forest cover.

Existing Roads and Accessibility

In the west, the sector borders on a stretch of Long Ridge Road. Few residences situated in that area are accessible from a local road. Central and eastern parts of this sector do not have any roads and access is difficult because of the topography.

Present Stage of Development

This sector is subdivided into eight parcels, the smallest being 11.2 acres. 92.8% of this land is considered to be undeveloped. There are four large properties (Town Tax Map, Section 4 Parcel 49, 61.498 acres; Parcel 50, 60.448 acres; Parcel 55, 40.00 acres; Parcel 52, 31.00 acres. There are about 6 residences and under current zoning regulations of R3A an additional 75 could be built.

Mutual Impact

A. This land lies along the boundary of the watershed and forms, therefore, a self-contained environmental area. Because of its elevated location, the developments in this sector will affect all areas in Sector 3 and the wetlands in its central part.

B. Most of the land is well protected from the adverse effects of future developments in the adjacent areas. Heavy traffic on Long Ridge Road (Route 104) affects only properties located near the highway.

Bedrock Formation

There are two distinctive bedrock-fracture-plane systems running in the northwesterly direction. They point toward the Twin Lakes area in Bedford. One parallels Long Ridge Road and the other the central wetlands valley. They indicate an underground drainage system for Sectors 3 and 4.

Soils

Most of the soils suitable for development (types 5 and 6) are in the western part of the sector. Together with a relatively small area in the eastern part they constitute only 25.4% of the sector. The remaining soils are rocky with shallow bedrock (type 4) 73.0% and wet, subject to ponding, (type 2) 1.5%.

Hydrological Conditions

This sector has simple hydrology. A main drainage feature is the ravine running in its central part. It begins at the boundary of the watershed and continues through Sector 3 in a northwestern direction until it reaches Twin Lakes. The wetlands at the bottom of the ravine collects practically all surface water from the sector. The EAA study locates this sector in its Connecticut 4-2 watershed. The surface water quality is described as slightly stressed in the western part of the sector and moderately stressed in the eastern part. This designation is based on natural conditions of this undeveloped land.

Vegetation

Entire eastern part of the sector and parts of the center are covered with mature mixed hardwood forest (49.8%) with some spots of oak areas (0.8%). The western part has a mix of young successional forest (20.5%), old fields (12.9%) and conifer plantations (9.5%). There are four natural areas of special interest in the western part, a fascinating complex of mixed conifers, partially mowed fields and paths which form an excellent wildlife habitat, and a Norway spruce grove that seeded in from a few large planted specimens. Adjacent to the area is a grove of white pine. In the eastern part there is one of the first agricultural areas abandoned in town, as evidenced by stone walls and large trees (up to two feet) of beech, sugar maple, black gum, tulip poplar, black birch, and a boulder strewn slope of an almost solid stand of sugar maple.

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Population

1. 1974	21
2. Max. under current zoning	283
3. Max. excluding open water, wetlands and C zone	202

Under No. 3 there would 1.2 acres per person.

Conclusions

Sector 4 will continue to develop slowly and only if large properties are subdivided. This may occur first in the western part where access by road and topography is suitable for more intensive development. The eastern wooded regions are less susceptible to rapid change.

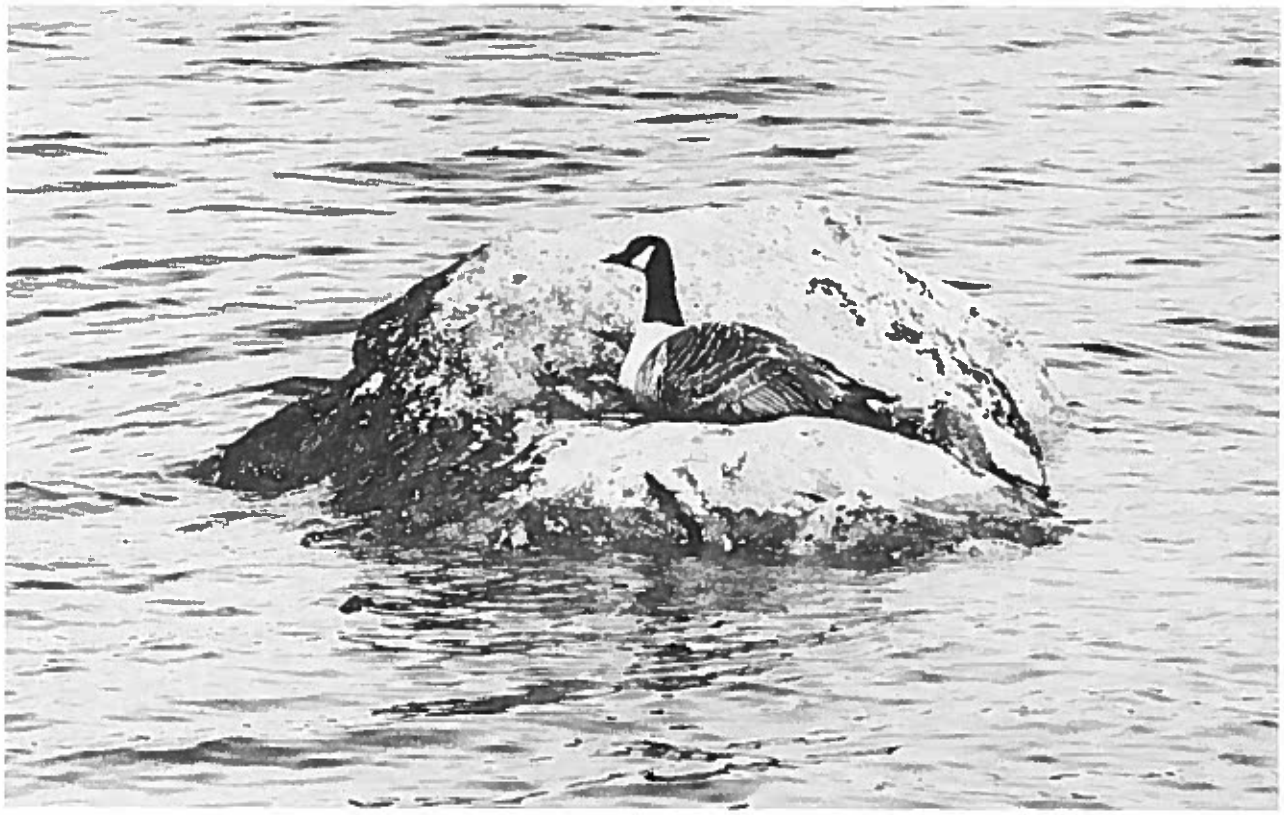
Recommendations

1. Establish protective buffer of 100 feet on each side of the lake and wetlands and include it in the C zone. This will take about 20 acres.

2. Establish protective zone in three natural areas of special interest and include these in the C zone. This will take about 3 acres. These areas are:
South of the ravine — sugar maple slope.
North of the ravine — Norway spruce grove and hardwood and hemlock forest.

3. Resist attempts to provide for future through roads between Sectors 3 and 4 linking Pine Brook Road with Long Ridge Road (see recommendations for Sector 3).

4. All areas in the eastern part and in the center of the sector which have rocky soils with shallow bedrock (type 4) should be recommended for upzoning (R4A) to reduce possible density in this area and eventual contamination of Twin Lakes with sewage effluent. This will be 181 acres of land.

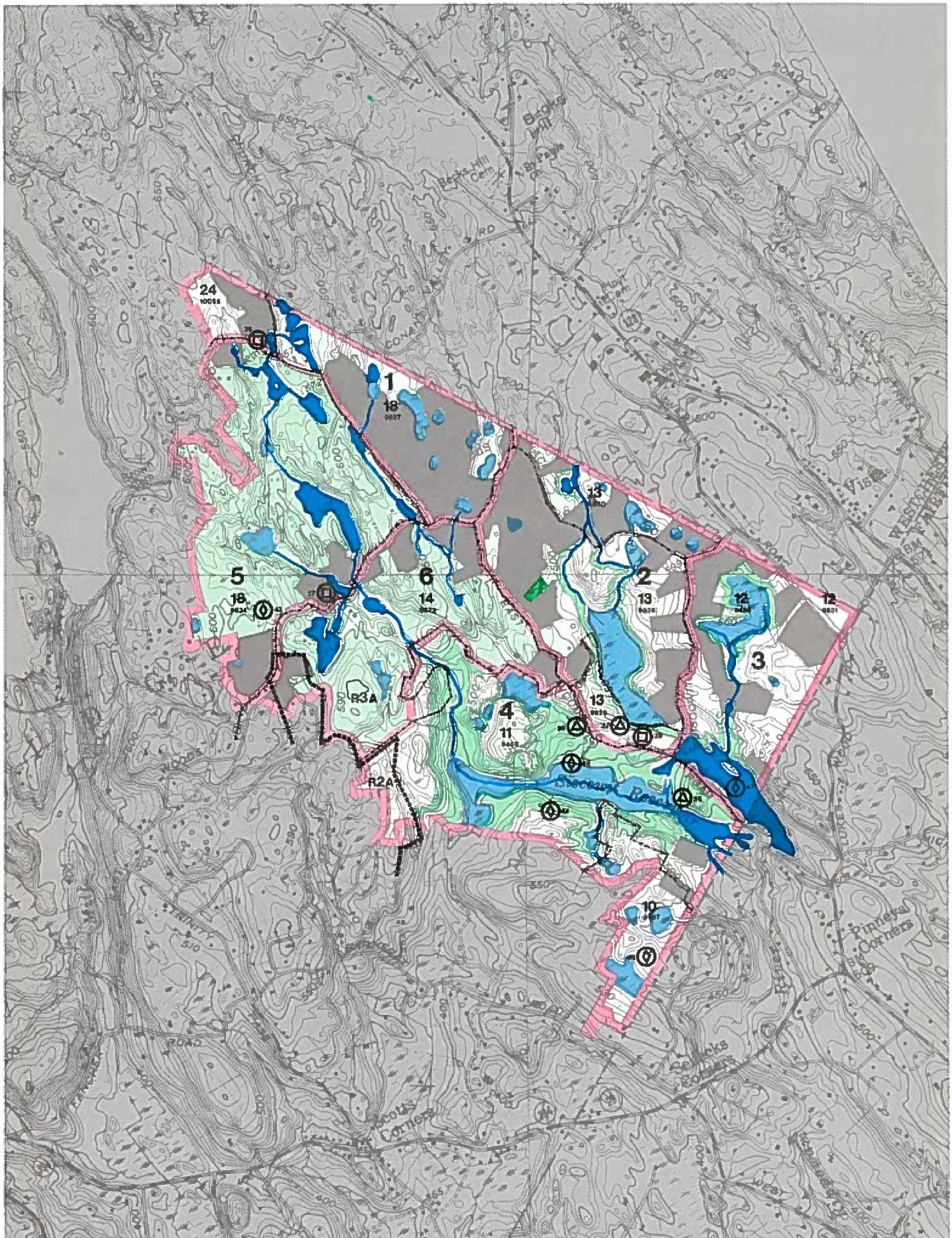


Trinity Lake — Lisl Steiner

Watershed 6

Siscowit

An Analysis With The Map
and Inventory Chart


24
1
18
5
18
6
14
2
13
12
12
3
13
4
11
10
R3A
R2A
Scotts Corners
Pinneys Corners
Vista
ROAD

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 6

land status - aug. 1974 / physical characteristics / types of vegetation in sector's percentage / soils for septic tanks / surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted	ACRES FOR CONSERV.
1	13 1982 24 10005	139.9	64.4	46.0	3	35	14			6.2	4.5	4.4	3.1	E				43.6	32.8	16.0		61.5	16.2	22.3	•			
2	13 9829 13 9829 9830	220.0	110.0	50.0	3	56	28	.3	.1			22.1	10.0	E				54.4	24.1	11.5		79.0	13.6	7.4	•			30.0
3	12 9969 12 9971 9832	154.4	101.8	65.9	3	23	27			8.9	5.8	18.6	12.0	E	3.8			58.2	4.1	16.0		74.8	7.4	17.8	•			24.0
4	10 9827 11 9828 9822	314.3	299.7	95.3	3	7	93			8.0	2.5	46.5	14.8	D	1.9			51.7	20.8	7.5	.8	62.6	29.9	7.4		•		60.0
5	18 9974	250.0	199.1	79.6	3	17	56			8.5	3.4	8.5	3.4	E				65.9	21.1	6.1		45.4	48.4	6.2	•			
6	14 9822 2	180.5	154.1	85.3	2 3	11	56			10.2	5.6	3.5	2.0	E				77.0	13.4		2.0	43.4	54.0	2.5	•			
7																												
8																												
9																												
10																												
11																												
12																												
13																												
14																												
15																												
16																												
TOTALS		12594	929.1			149	274	.3		41.8		103.6																114.0

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1																	129.3
2																	164.9
3		●															102.9
4	●	●	●		●	●											199.8
5																	133.0
6	●				●												166.8
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
		26
27		29
	47	
26, 28	44, 45, 46	
	43	27

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
population	168	294	210	350	255	234											1511
roads	+	+	+	+	−	−											
sewage pl.	−	−	−	−	−	−											
water	+	+	+	o	+	+											
vegetation	+	+	−	−	−	−											
rural char.	−	−	−	+	−	−											

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- \+ pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
population											234	255	217	136	231	168	1241
roads											−	−	+	+	+	+	
sewage pl.											−	−	−	−	−	−	
water											+	+	+	+	+	+	
vegetation											+	+	+	+	+	+	
rural char.											+	+	+	+	+	−	

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING

WATERSHED 6

Siscowit

The Siscowit watershed is located in the extreme eastern section of Pound Ridge. Forty percent of its area extends northward into Lewisboro. The most notable geological feature of the watershed is an oak-forested spine of pink micaceous granite extending from the northernmost border of the watershed in Lewisboro almost to the Pound Ridge-Connecticut border. The spine has inhibited development in Lewisboro, but in Pound Ridge much of it has been developed and is continuing to be developed.

One of the focal points of the watershed, the Siscowit Reservoir, is drained at present and contains a beautiful but ephemeral sawgrass meadow. There are plans to enlarge the reservoir somewhat and refill it. To the west of the reservoir is an old-age mixed hardwood forest. To the north is a wonderful pond dominated by water lilies, with buttonbush growing along the sides. The pond is a continuation of an extensive wetlands running northwest of it.

Critical Areas in the Planning Process—1973

Environmental Problem Sites — **Map Symbol**

26. House lot dug into a stream bank where the stream has been ecologically disrupted.
27. Scalped area along water course.
28. Scalped area along Siscowit Reservoir.

Natural Areas of Special Interest — **Map Symbol**

43. An *overgrown old field* with spirea, cherry, blueberry, and red maple has excellent food and cover for wildlife and its value as a wildlife habitat is enhanced by the fact that it is near a wetlands.
44. An *attractive old-age mixed forest* on Stamford Water Company land.
45. The drained *Siscowit Reservoir* now has the aspect of a large meadow of sawgrass with mounds of smartweed. This habitat will disappear when the reservoir is again flooded.
46. A *magnificent tulip-poplar stand.*
47. *Siscowit Pond*: a 20 acre pond dominated by pond lilies and buttonbush. These two vegetation types are intermingled with areas of open water forming an ideal wildlife habitat. The water is shallow, probably not more than 6-feet maximum, with a peat substratum. This area was probably at one time a red maple swamp, until a road which serves as a dam was constructed. The water is distrophic and flows into the Siscowit Reservoir.

Historic Sites — **Map Symbol**

26. Cemetery
27. Cemetery
28. Hoyt Cemetery
29. Indian Site

WATERSHED 6

Siscowit
Sector 1
139.9 acres

Location and General Characteristics

Sector 1 is on the northern border of the watershed along the Lewisboro town line. Its southern and eastern boundaries are defined by Church Lane and East Woods Road, respectively. It occupies a part of Pound Ridge commonly known as East Woods. With the exception of steep slopes off Church Lane, it has a gently rolling topography with extensive forest coverage.

Existing Roads and Accessibility

The boundary roads provide the main access to the site. In addition to these a long dead-end road serves the southern portion off East Woods Road.

Present Stage of Development

This sector is almost fully subdivided and 46.0% of the land is considered undeveloped. There are about 35 residences and under current zoning regulations of R3A an additional 13 could be built.

Mutual Impact

A. Sector 1 is the southern extension of the part of the watershed that extends into Lewisboro. Environmentally, therefore, this land is affected by the development in the neighboring town. Environmental conditions in Sector 1 could affect Sectors 4 and 6.

B. All areas of Sector 1 are fairly well protected from physical effects of traffic and development on adjacent sites.

Bedrock Formation

There are numerous bedrock-fracture-plane systems, typical of the complex composition of the underlying rock formation. The most significant is the long fracture plane running north-south beginning in the area of Conant Valley Road and reaching almost to Siscowit Reservoir in Sector 4. This fracture connects a fairly well developed area with the immediate vicinity of the reservoir.

Soils

61.5% of the land has soils suitable for development (type 5) but with limitations for septic systems because of rocky conditions. Wetland areas (22.3%) have soils that are not suitable for development (types 1 and 2). The remaining 16.2% of the soils have severe limitations because of shallow bedrock which can create ponding (types 3 and 4).

Hydrological Conditions

The northern part of the sector has several medium-size ponds that are connected by a network of channels draining into Sector 5. The central part has several medium and small wetlands with only one visible drainage toward Sectors 5 and 6. In the southern part two small ponds drain into Sector 6. The EAA study locates this sector in its Connecticut 9 watershed. The surface water quality throughout this area is described as slightly stressed.

Vegetation

This sector is heavily wooded, with mature mixed hardwood forests (43.6%) and large sections of oak forest (32.8%) located along the town line. In two areas in the northern and southern portion the woods were cleared and 16% of the land is now occupied by old fields.

Population

1. 1974	122
2. Max. under current zoning	168

Under No. 2 there would be 0.8 acre per person.

Conclusions

Sector 1 is already extensively developed and no major change in its present character is envisioned. Some change could occur if the

WATERSHED 6

neighboring areas in Lewisboro were further developed.

Recommendations

None.

Sector 2
220.0 acres

Location and General Characteristics

Sector 2 is located at the Lewisboro town line. Its southern boundary reaches Siscowit Reservoir. Its main characteristic is a bowl-shaped topography with a large wetlands area in the lower parts. Elevation varies from 660 feet on the town line to 450 feet at the edge of the wetlands.

Existing Roads and Accessibility

East Woods Road and Siscowit Road form the southern and eastern boundaries, respectively. A local connector, Hack Green Road, runs parallel to the town line and provides all access to the interior uplands. All properties are accessible from these three roads.

Present Stage of Development

The Stamford Water Company owns extensive properties in the southern tip of this sector, including the large wetlands. Apart from these large parcels, all land is well subdivided, and 50.0% of the area is considered to be still undeveloped. There are about 56 residences, and under current zoning regulations of R3A an additional 28 could be built.

Mutual Impact

A. Sector 2 is the southern extension of an uplands area in the town of Lewisboro. Therefore this land is affected by the development in the neighboring town, and environmental conditions existing in Sector 2 could affect Sector 4 and the lake in Sector 3.

B. Most of the residences in the eastern and southern parts are located fairly close to main roads, but since these are not through-traffic roads, environmental impact is limited.

Bedrock Formation

There are numerous bedrock-fracture-plane systems typical of the complex composition of the underlying rock formation. The most significant is a long fracture crossing the site along the northern boundaries of the large wetlands pointing toward Sector 3.

Soils

79.0% of the land has soils suitable for development (type 5), but with limitations for septic systems because of rock conditions. Large wetlands (7.4%) have soils unsuitable for development (types 1 and 2). In several small areas, mostly along the Lewisboro town line, there are soils with poor drainage and shallow bedrock (types 3 and 4). Together they constitute 13.6% of the area.

Hydrological Conditions

Sector 2 is a self-contained drainage basin with a big wetlands being the collector. The EAA study locates this sector in its Connecticut 7 watershed. The surface water quality in the developed northern and western parts is slightly stressed.

Vegetation

This sector is heavily wooded. 54.4% is mature mixed hardwood forest, with large segments of oak forest located mostly along Hack Green Road. The oaks constitute 24.1% of the land cover. In scattered locations along the main access roads the forest has been cleared and 11.5% of the land is now old fields.

Population

1. 1974	196
2. Max. under current zoning	294
3. Max. excluding wetlands and C zone.	231

Under No. 3 there would be 1.3 acres per person.

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Conclusions

Sector 2 is already extensively developed in its northern part. In addition, development activity is occurring in the adjacent land in Lewisboro, which is part of the same watershed. The water analysis shows signs of deterioration of surface water in the area of the future Siscowit Reservoir. Summer field studies in 1973 indicated a number of environmental problems related to new construction. All problem sites are located upstream from Sector 2 in the town of Lewisboro. These include several dumps, a scalped area along a watercourse, and a house lot dug into a stream bank where the stream has been ecologically disrupted. It is possible that the land belonging to the Stamford Water Company is already affected by existing developments in Sector 2.

Recommendations

1. Establish a 100-foot-wide C zone around large wetlands and along both sides of the two streams feeding into it. This will take about 33 acres.
2. Town should maintain water-sampling service to determine the extent of water pollution coming from Lewisboro in locations indicated on the hydrology map.
3. Notify the water company of these conditions.

Sector 3
154.4 acres

Location and General Characteristics

Sector 3 is located in the corner of Pound Ridge where Lewisboro and New Canaan adjoin. Siscowit Pond is the southern boundary. The topography is fairly flat but drops off rather steeply at the edge of the pond. The plateau elevation is 600 feet, and the elevation at the edge of the pond is 448.

Existing Roads and Accessibility

Main access roads to this sector lead from New Canaan. They are Luke's Wood Road and East Woods Road. Siscowit Road provides the only access to certain properties from the Pound Ridge side. All properties are easily accessible.

Present Stage of Development

Sector 3 is fairly well subdivided, with only a few properties that could be further divided. The Siscowit Pond area is owned by the Stamford Water Company and is the extension of the large wetlands in Sector 2. 65.9% of the land is considered undeveloped. There are about 23 residences, and under current zoning regulations of R3A an additional 27 could be built.

Mutual Impact

A. Sector 3 is a self-contained drainage basin. No other land is affecting this area environmentally. Development could affect Siscowit Pond and, eventually, the area of the proposed Siscowit Reservoir in Sector 4.

B. Sector 3 is in a fairly isolated location that is not affected by through traffic. The Vista commercial area may affect this sector if Siscowit Road is extended to join Route 123 in Vista.

Bedrock Formation

Numerous bedrock-fracture-plane systems are located in this sector, all running northwest to southeast and connecting the other elevations of Sector 3 to large wetlands in Sector 2.

Soils

74.8% of the land has soils suitable for development but with limitations for septic systems because of rocky conditions (type 5). In the northern and southern part there are two areas (7.4%) of bad soils subject to ponding (type 3). The remaining 17.8% has soils unsuitable for development (types 1 and 2), located around Siscowit Pond in the south and around large wetlands in the north.

Hydrological Conditions

Sector 3 has a simple surface drainage sys-

WATERSHED 6

tem beginning with the large wetlands in the northern part and draining the entire uplands area through a system directly into Siscowit Pond at the lowest elevation. Siscowit Pond connects with extensive wetlands that are the site of the future Siscowit Reservoir. The EAA study locates this sector in its Connecticut 9 watershed. The surface water quality throughout this area is described as moderately stressed.

Vegetation

Some areas adjacent to the access roads have been cleared of forest cover, and 16.0% of the sector constitutes old fields. The remaining dry land is covered by mature mixed hardwood forest (58.2%) with spots of oak forest (4.1%).

Population

1. 1974	80
2. Max. under current zoning	210
3. Max. excluding open water, wetlands, and C zone	136

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 3 is not an intensely developed area, but its topography, soils and proximity to a main highway (Route 123) make it a choice site for future growth. There are already signs of environmental problems, as evidenced by water quality.

Recommendations

1. Establish 100-foot-wide C zone around the wetlands, along the stream draining the wet soils and flowing into the Siscowit Pond, and around the pond itself. This will include about 24.0 acres.

2. Town should maintain water-sampling service in locations indicated by the Water Commission to determine the extent of water pollution draining into Siscowit Pond (see hydrology map page 29).

Sector 4
314.4 acres

Location and General Characteristics

Sector 4 lies in the lower part of the watershed. Its southeastern boundary is the New Canaan town line. The main characteristic of this land is a large wetlands that is the site of the proposed Siscowit Reservoir. It has a varied topography forming several steep hills surrounding the wetlands area. Elevations vary from 560 to 450 feet.

Existing Roads and Accessibility

East Woods Road forms the northern boundary of this sector. This local road originates in Connecticut and provides the only access to the site. Most of the upland area lies south and west of Siscowit Reservoir and has no access roads.

Present Stage of Development

With the exception of a few properties accessible from the town of New Canaan, 95.3% of the land is considered to be undeveloped. Most of the area is owned by the Stamford Water Company (Town Tax Map, Section 11, parcel 31, 136.470 acres). There is also one large private property along the Connecticut border accessible from Barnegat Road (Town Tax Map, Section 10, parcel 3, 40.753 acres). There are about 7 residences, and under current zoning regulations of R3A an additional 93 could be built.

Mutual Impact

A. Sector 4 is the recipient of all drainage waters flowing through the watershed. In this way it is subject to environmental conditions in every other part of the watershed. The cumulative effect is then transmitted into the Rippowam River which flows through future Siscowit Reservoir and out into Connecticut.

B. Because of its secluded location Sector 4 is not subject to physical effects of traffic and development.

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Bedrock Formation

There are numerous bedrock-fracture-plane systems in the hills around the reservoir, the largest of which occurs on the Connecticut border south of the reservoir. This pattern is typical of the complex composition of the underlying rock formation, which points to the possibility that the site of the proposed reservoir is connected through these rock fractures with the underground water drainage in the surrounding uplands.

Soils

62.6% of the area underlying the future reservoir has good but rocky soils (type 5). The hills on the west and north are covered with thin layers of soils with exposed bedrock (type 4) and cover 29.9% of the area. The remaining 7.4% of the area is wetlands and open water.

Hydrological Conditions

The topography of this sector forms a large drainage basin to be filled by the water of the proposed reservoir. The hydrological system of the watershed collects in Sector 4, creating the headwaters of the Rippowam River, which flows into Long Island Sound. The EAA study locates this sector in its Connecticut 9 watershed, and the surface water quality throughout the area is described as slightly stressed. Two areas of surface water pollution were located during the 1973 field study, one where a house lot dug into a stream bank has caused ecological disruption of the stream, and one a scalped area along the Siscowit Reservoir.

Vegetation

The sector is heavily wooded. At the bottom of the valley is a large meadow of sawgrass. The edges of the meadow contain old field vegetation (6.1%). The rest of the land is covered by mature mixed hardwood forests (51.7%), with large segments of oak (20.8%). The forest in the highlands on the southern shore of the wetlands on the Cole property is of exceptional quality. It surrounds a magnificent tulip-poplar stand. On the northern shore, a PRUP wildlife-study team discovered a unique grove of American chestnut trees. There is also an attractive old-age mixed forest on Stamford Water Company land. The drained Siscowit Reservoir now has the aspect of a large meadow of sawgrass with mounds of smartweed. This habitat will disappear when the reservoir is again flooded.

Population

1. 1974	24
2. Max. under current zoning	305
3. Max. excluding open water, wetlands, and C zone	217

Under No. 3 there would be 1.0 acre per person.

Conclusions

Most of the land in Sector 4 is destined to be filled with water for the new reservoir. Therefore no development is foreseen. Siscowit Reservoir will receive the drainage from Sectors 2 and 3. These areas were classified as having water already moderately stressed, a fact which should not be overlooked during the planning and construction of the reservoir.

Recommendations

1. Include all land around Siscowit Reservoir and below contour line at elevation 500 feet in C zone. This will include about 600 acres.
2. Protect the grove of American chestnut trees by establishing a small C zone containing it.
3. The town should maintain water-sampling service to determine the condition of water draining from Sectors 2 and 3.

Sector 5
250.0 acres

Location and General Characteristics

Sector 5 is on the western edge of the watershed. Its southern portion has fairly flat topography, but there are several lakes and areas of steep slopes in the north. The prevailing elevation is 600 feet.

WATERSHED 6

Existing Roads and Accessibility

From the southeast the sector is defined by East Woods Road and from the northeast by Old Church Lane and a portion of Old Mill River Road. With the exception of one driveway off Old Church Lane there are no interior roads and all properties are easily accesssible from the perimeter.

Present Stage of Development

This sector is lightly developed, mostly along East Woods Road and Old Mill River Road. There are several large private properties that could be further subdivided (Town Tax Map, Section 18, parcel 24, 25.235 acres; parcel 25, 53.96 acres; parcel 28, 32.575 acres; parcel 37, 28.460 acres). In addition, there are some parcels between 10 and 25 acres. There are about 17 residences, and under current zoning regulations of R3A an additional 56 could be built.

Mutual Impact

A. Sector 5 is connected to the area located at the head of the watershed in Lewisboro. The environmental conditions on this land due to development will affect Sectors 6 and 4.

B. Sector 5 is in a very isolated location that is not affected by through traffic. This condition may be changed, however, if large properties are intensively developed.

Bedrock Formation

Numerous bedrock-fracture-plane systems are located in this sector. The most characteristic part shows radial configuration of four systems running from the vicinity of the largest pond in a northwest direction and reaching into Watershed 4. This underground drainage pattern may explain the existence of the lake into which they converge.

Soils

The western and eastern parts of the sector (48.4%) have soils difficult for development (type 4). Through the center runs a wide belt of rocky soil (44.5%) that is generally suitable for development (type 5). The remaining soils (6.2%) are wet and unsuitable for development (types 1 and 2).

Hydrological Conditions

Sector 5 has a simple surface drainage system consisting of several medium-size ponds connected by streams that flow from the north in a southeasterly direction. The study of the bedrock-fracture-plane systems indicates a similar underground drainage pattern. All waterways point toward the future Siscowit Reservoir. The EAA study locates this sector in its Connecticut 9 watershed. The water quality throughout this area is described as having no stress at all. This is the only area in Pound Ridge with such water quality.

Vegetation

Sector 5 is heavily wooded, and only 6.1% of its area has old field vegetation. The remaining land is covered by a mature mixed hardwood forest (65.9%) with large segments of oak (21.1%). An overgrown old field with spirea, cherry, blueberry and red maple has excellent food and cover for wildlife, and its value as a wildlife habitat is enhanced by its being near a wetlands.

Population

1. 1974	59
2. Max. under current zoning	255

Under No. 2 there would be 0.9 acre per person.

Conclusions

Sector 5 offers very good opportunities for development. Good access, generally good soil, and fairly flat topography enchance the possibilities of development. Environmentally, however, this land plays an important role as headwaters of the Rippowam River and the source of water for the future reservoir. Excellent water quality, exceptional in Pound Ridge, may be due to very good drainage capacity.

Recommendations

Include all undeveloped land in this sector

WATERSHED 6

in the REP zone. This will take about 182.0 acres, excluding open water and wetlands.

Sector 6
180.6 acres

Location and General Characteristics

Sector 6 is located on the southwestern boundary of the watershed. It has a richly sculptured topography, with a stream valley passing through the middle. Elevation varies from 600 to 500 feet along the stream bed.

Existing Roads and Accessibility

East Woods Road marks the boundary of this sector from east to west. All properties are accessible from this road. There are no driveways or local roads to the interior.

Present Stage of Development

There are a few properties developed along the road. One large private property occupies most of the southern and central part (Town Tax Map, Section 14, parcel 20, 67.540 acres). In the northern part there are several properties between 10 and 25 acres. All of these could be further subdivided. There are about 11 residences, and under current zoning regulations of R3A an additional 56 could be built.

Mutual Impact

A. Sector 6 is a link between the area of the Siscowit Reservoir and the headwaters of the Rippowam River. It could therefore be affected by the conditions in Sectors 1 and 5 and transfer the joint effect to Sector 4.

B. Because of secluded location, Sector 6 is not subject to physical effects of traffic and development.

Bedrock Formation

There are numerous bedrock fracture planes in this sector. They are typical of the complex composition of underlying rock formation and point to an extensive underground drainage system.

Soils

There is a great variety of soil types in this sector. The two stream valleys and the western part of the sector (54%) have difficult soils for development, either subject to ponding or with shallow bedrock (types 3 and 4). 43.4% of the remaining land has soils suitable for development (types 5 and 6). Only 2.5% is not suitable for development (types 1 and 2).

Hydrological Conditions

The main hydrological characteristics are two stream valleys through which water flows into the Siscowit area. A few medium and small ponds belong to the same drainage pattern. The EAA study locates this sector in its Connecticut 9 watershed. The water quality throughout this area is described as slightly stressed, with one part qualified as not stressed, the extension of the conditions in Sector 5.

Vegetation

This sector is very heavily wooded. Mature mixed hardwood forests cover 77% of the area, and an oak forest, which constitutes 13.7% of the area, covers the steep slopes of the valleys.

Population

1. 1974	38
2. Max. under current zoning	234

Under No. 2 there would be 0.7 acre per person.

Conclusions

Sector 6 offers fairly good opportunities for development. It has good access and availability of land, but soil conditions are good in only half of its area. This is not usually a deterrent to development. Environmentally, however, this land plays an important role as a drainage area for the reservoir.

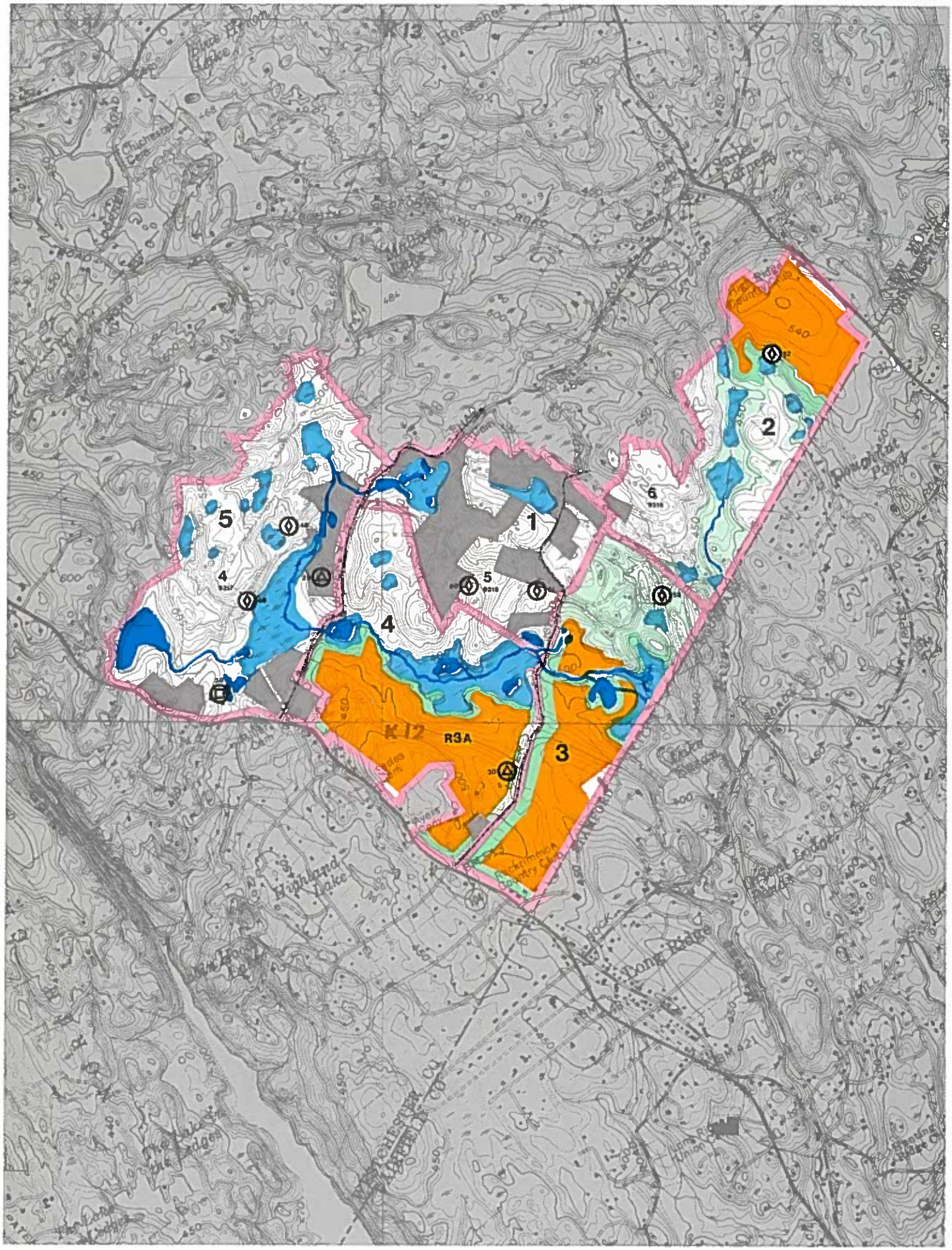
Recommendations

Include all undeveloped land in the REP zone. This will take about 140.0 acres, excluding open water and wetlands.

Watershed 7

Shad Roads

An Analysis With The Map
and Inventory Chart


K12
R3A
1
2
3
4
5
6
Highland Lake
Long Pond

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 7

land status - aug. 1974

physical characteristics

types of vegetation in sector's percentage

soils for septic tanks

surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted
1	5 9818 6 9316	152.1	62.8	41.3	3	36	16			2.8	1.8	14.5	9.5	E	5.3			48.4	10.5	17.8	6.7	13.5	75.1	11.4	•		
2	16 9316	238.1	226.1	95.0	3	4	73			2.5	1.1	12.3	5.2	E				45.8	16.2	30.1	1.5	31.9	59.3	8.8	•		
3	16 9316	193.9	191.1	98.5	3	1	62			5.8	3.0	12.7	6.5	E	2.3			13.6	10.0	58.9	5.7	59.3	28.6	12.0	•		
4	5 9818	253.1	250.9	99.1	3	3	79	.1		5.5	2.2	32.4	12.8	E	.3			51.1	5.5	25.6	2.5	48.4	37.6	13.9		•	
5	4 9317	303.0	271.2	89.5	3	12	82			2.9	1.0	35.5	11.7	D	.6			45.6	1.1	29.8	10.2	42.5	44.4	13.1	•		
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
16																											
TOTALS		1140.4	1002.1			54	315	.1		19.5		107.4															

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

ACRES FOR CONSERV.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	134.8	1															
18.2	209.1	2															
25.0	174.4	3	●			●	●										
28.0	215.2	4	●				●										
	264.6	5	●														
		6															
		7															
		8															
		9															
		10															
		11															
		12															
		13															
		14															
		15															
		16															
71.2	998.1	TOTAL ACREAGE															

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
	50,51	
	52	
	53	
30		
29	48,49,56a	30

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
population	182	220	220	227	329											
roads	+	−	−	−	−											
sewage pl.	−	+	+	+	+											
water	+	−	o	−	o											
vegetation	−	−	+	+	−											
rural char.	−	−	−	−	−											

1178

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- \+ pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

1046

CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
population												284	183	220	197	162
roads												−	−	−	−	+
sewage pl.												−	−	−	−	−
water												+	+	+	+	+
vegeta ion												+	+	+	+	−
rural char.												+	+	+	+	+

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING

WATERSHED 7

Shad Roads

Right now Shad Roads is rather a sleepy watershed. There is no current active development. Large tracts of undeveloped land surround two wetlands in the western third. Much of the northern part bordering Stamford is taken up by two large country clubs, Rockrimmon (northwest) and White Birch (northeast). This apparently dormant situation could, however, change rapidly with the new ownership of the White Birch Country Club; 167 acres of which lie in Pound Ridge.

Critical Areas in the Planning Process—1973

Environmental Problem Sites: Map Symbol

29. Automobile graveyard.
30. Dump.

Natural Areas of Special Interest: Map Symbol

48. At one point an attractive *rock knob* rises up from a wetlands.
49. Magnificent, *large swamp forest,* with large red maple, black ash, and a thick shrub layer. From the path to the west there is a beautiful view of this wetlands.
50. *Mature beech slope* bordering a wetlands.
51. Excellent *grove of hemlock* with stems that range up to three feet in diameter.
52. A large, magnificent *tulip-poplar grove* lies at the edge of a wetlands.
53. *The present Sulzburger property, an old estate with closely folded topography,* has park-like forests with rhododendron bushes, through which there are many meandering roads now used by bicycles and snowmobiles.

Historic Sites: Map Symbol

30. Cemetery.

WATERSHED 7

Shad Roads
Sector 1
152.1 acres

Location and General Characteristics

Sector 1 is in the northern part of the watershed, bordered by Upper and Lower Shad roads. It has varied topography, with elevations ranging from 550 to 480 feet at the edge of wetlands.

Existing Roads and Accessibility

Upper and Lower Shad roads provide the main access to this sector, and several dead-end roads connect Upper Shad Road with the interior.

Present State of Development

This sector is fairly well subdivided but 41.3% of the land is considered undeveloped. There are about 36 residences, and under current zoning regulations of R3A an additional 16 could be built.

Mutual Impact

A. This sector, lying on the edge of the watershed, is not affected environmentally by any other land. Its own environmental conditions may affect Sectors 3, 4 and 5.

B. Most of the property on this land is serviced by local roads and therefore is not affected by through traffic.

Bedrock Formation

There are numerous bedrock-fracture-plane systems crisscrossing the area in every direction. The longest crosses the sector in an east-west direction, extending into Sectors 3 and 4. Hence there is a possibility of underground seepage from more developed areas to the main stream valley draining the entire watershed.

Soils

In spite of active development, 75.1% of this land has rocky soils with shallow bedrock (types 3 and 4). Two areas, one in the western corner near Upper Shad Road and the other in the eastern part (11.4%), have extremely wet soil that is unsuitable for development (types 1 and 2). The remaining 13.5% of the land, located on the northern edge of the site, has soils generally suitable for development (types 5 and 6).

Hydrological Conditions

Because of its topography this sector has a very complicated surface drainage system. Two medium-size wetlands are located on the northern boundary and collect substantial amounts of surface rain. The southern part drains into large wetlands in Sector 4. The EAA study locates this sector in its Connecticut 5 watershed. The surface water quality in the northern half is described as moderately stressed and in the southern part as slightly stressed.

Vegetation

The northern part near the wetlands area has old field vegetation (17.8%) and successional forest (6.7%). The remaining upland areas are covered by mature mixed hardwood forest (48.4%), with the highest elevations overgrown with oak (10.5%). There is a slope covered with mature beech bordering a wetlands, and an excellent grove of hemlock with stems that range up to three feet in diameter.

Population

1. 1974	126
2. Max. under current zoning	182
3. Max. excluding open water and wetlands	162

Under No. 3 there would be 0.9 acre per person.

Conclusions

It can be anticipated that this sector will soon be fully developed. Most of the development thus far has occurred despite poor soil conditons, and further development may cause environmental problems. The surface and

WATERSHED 7

underground drainage patterns point to areas that are presently undeveloped, and so the potential for pollution goes unnoticed.

Recommendations

Town should maintain water-sampling services at locations indicated on hydrology map.

Sector 2
238.1 acres

Location and General Characteristics

Sector 2 is in the northeastern part of the watershed. It borders on the Stamford city line and High Ridge Road. The area has two distinctive topographical characteristics: in the northeast gently hilly land contains the source of a branch of the Mianus River, while the southwest part rises steeply from the river and forms a highland plateau. Elevations in this sector range from 560 to 430 feet.

Existing Roads and Accessibility

There are two access roads to the site, with High Ridge Road bordering the plateau from the north and Lower Shad Road providing entry into the uplands and the valley. There are no interior roads, and a road connection between the two topographical features would be difficult.

Present Stage of Development

This sector is almost undeveloped. A few residences are located in its southern part. The largest private property belongs to the White Birch Country Club and was recently sold (Town Tax Map, Section 6, parcel 18, 162.660 acres). Other large properties are located in the southern part (Town Tax Map, Section 6, parcel 10, 39.1 acres; parcel 15, 19.494 acres). These large holdings offer potential sites for intensive future construction. There are about 4 residences, and under current zoning regulations of R3A an additional 73 could be built.

Mutual Impact

A. This sector, lying on the edge of the watershed, is not affected environmentally by any other land. Its own environmental conditions, should more intensive development occur, could affect residential areas of Long Ridge Road in Stamford.

B. Except for the land bordering High Ridge Road, no part of the sector is affected by traffic noise or air pollution, but this condition could change substantially in the near future. With further development, other parts of Pound Ridge, along Route 137 and Upper Shad Road, will be affected.

Bedrock Formation

Several short bedrock-fracture-plane systems exist in the western uplands and in the gentle hills near the Stamford city line. Two long and clearly defined fractures underlie the upper course of the Branch Mianus River. These indicate the existence of a well-developed underground drainage system paralleling the surface run of the river, which should influence development decisions in this sector.

Soils

Upland areas in the north (presently used as a golf course) have soils suitable for development (type 6). The southwestern highlands also have good soils (type 5), but with limitations for septic tanks. Together these two soil types constitute 31.9% of the area. In the valley, wet soils (type 2) occupy 8.8%. The rest of the land (59.3%) has difficult soils with shallow bedrock (type 4) or unsuitable for development (type 2).

Hydrological Conditions

This sector has a simple drainage system. Both surface and underground conduits point toward the river valley. The Branch Mianus River flows southward through Stamford and joins the Mianus River. The EAA study locates this sector in its Connecticut 6 watershed. The sur-

WATERSHED 7

face water quality throughout this area is described as moderately stressed.

Vegetation

With the exception of the golf course, which occupies 30.1% of this land, this sector is heavily wooded. Much of the central and southern area (45.8%) is covered with mature mixed hardwood forest. Higher portions of the hills have oak forest (16.2%). Mixed hardwood forest at the southern edge of the golf course is considered to be of exceptional quality. A large, magnificent tulip-poplar grove lies at the edge of the wetlands.

Population

1. 1974	14
2. Max. under current zoning	220
3. Max. excluding open water, wetlands, and C zone	197

Under No. 3 there would be 1.2 acres per person.

Conclusions

This sector will probably be subject to intensive development in the near future. 162 acres have currently been sold. The proximity to a main highway, gentle topography, some good soils, and open fields make this area a choice location.

Recommendations

1. Include all areas having soils of types 2 and 4 up to the contour line at elevation 460 feet in REP zone. This will constitute 159 acres of the sector area.

2. Include all areas having type 6 soils and old field vegetation in SARD zone. This will be about 76 acres along High Ridge Road (Route 137).

3. Establish a 200-foot green buffer along the highway. This buffer should be included in C zone. This would take about 4 acres.

4. Include exceptional forest in C zone. This will include about 14.2 acres.

Sector 3
193.9 acres

Location and General Characteristics

Sector 3 is in the southeastern part of the watershed. It borders the Stamford city line and Long Ridge Road in the south. The area has two distinctive topographical characteristics; the northern part is richly sculptured with many small, steep hills, and the southern part forms a flat plateau. These two areas are divided by wetlands and a stream which joins the Branch Mianus River in Stamford.

Existing Roads and Accessibility

Lower Shad Road defines the western boundary of the sector and provides an easy access to all parts. There are no internal roads in the southern plateau, but the northern uplands have a network of winding driveways merging into similar roads in Stamford.

Present Stage of Development

This sector is not yet residentially developed, and its entire area is taken up by two large private properties (Town Tax Map, Section 6, parcel 2, 113.869 acres; parcel 4, 69.592 acres). The larger property is presently used as a golf course for the Rockrimmon Country Club. These large landholdings offer potential sites for extensive development. There is one residence, and under current zoning regulations of R3A an additional 62 could be built.

Mutual Impact

A. This sector lies at the bottom of the watershed drainage and is therefore affected by cumulative environmental factors in Sectors 1, 4 and 5.

B. Lack of residential development and low volume of traffic on Lower Shad Road makes this area relatively undisturbed by external conditions. If residential development occurs in the future, Lower Shad Road will accept most of

WATERSHED 7

the traffic, necessitating major improvements of this narrow and winding local road.

Bedrock Formation

There are two areas of sparse bedrock-fracture-plane systems. One is in the northern hills, having a predominately east-west orientation and pointing toward the Connecticut border. The other is located in the south, near Lower Shad Road, with a north-south orientation and extending into Sector 4. Their locations suggest possible underground channels draining away from the sector area.

Soils

This sector has a very distinctive distribution of soils. The southern and central parts (59.3%) have soils suitable for development (type 6). The northern hills (28.6%) have thin soils with shallow bedrock (type 4), and the topographical conditions of this area offer serious limitations for safe development of septic systems. The wet soils in the central part occupy the remaining 12% (types 1 and 2).

Hydrological Conditions

This sector has a simple drainage system. The surface water from the northern and southern parts drains directly into the east branch of the Mianus River. The underground drainage also is clearly indicated by the bedrock fracture systems. The EAA study locates this sector in its Connecticut 5 watershed. The surface water quality throughout is described as slightly stressed.

Vegetation

The southern part, where the golf course is located, has no tree cover. Open land occupies 58.9% of the sector. The northern hills are mostly covered with mature mixed hardwood forest, constituting 13.6% of the area, but the higher elevations of these hills have oak forests, covering 10% of the sector. Successional forest (5.7%) is found in two areas. The present Sulzburger property, an old estate with closely folded topography, has parklike forests with rhododendron bushes, through which there are many meandering roads now used by bicycles and snowmobiles.

Population

1. 1974	4
2. Max. under current zoning	220

Under No. 2 there would be 0.8 acre per person.

Conclusions

The southern part of the sector, currently used as a golf course, offers excellent conditions for development. The northern hills may also attract developers, but the natural conditions there should be a limiting factor.

Recommendations

1. Include entire area of northern hills up from contour line at elevation 400 feet in the REP zone. This will take 55 acres (28.5%) of the sector area.
2. Include areas having type 6 soils and old field vegetation in SARD zone. This will be about 115 acres along Lower Shad Road and Long Ridge Road.
3. Establish a 200-foot green buffer zone along these roads, and a 100-foot buffer along the edge of the stream and the wetlands. These buffer zones should be included in C zone. This would take about 25 acres.
4. In case of intensive development in the southern sector, design carefully new local road network to preserve the character of Lower Shad Road.

Sector 4
253.1 acres

Location and General Characteristics

This sector lies on the southern edge of the watershed. It has a distinctive topography,

WATERSHED 7

with a stream and large wetlands dividing it into northern and southern parts. The southern part is characterized by gentle slopes inclining toward the wetlands. The northern part is more irregular and has steeper slopes. Elevation varies from 550 feet in the highlands to 400 feet.

Existing Roads and Accessibility

This sector is bounded by three roads: Lower Shad to the east, Long Ridge (Route 104) to the south, and Upper Shad to the west. There are no interior roads.

Present Stage of Development

This sector is basically undeveloped. There are several large private properties (Town Tax Map, Section 5, parcel 1, 59.794 acres; parcel 4, 156.547 acres; parcel 33, 34.629 acres). There are about 3 existing residences, and under current zoning regulations of R3A an additional 79 could be built.

Mutual Impact

A. This sector lies in the center of the watershed drainage and could be affected by environmental conditions in Sector 1 and 5. The cumulative effect of these would be felt in Sector 3 and eventually in the Long Ridge district of Stamford.

B. Lack of residential development and low volume of traffic on Upper and Lower Shad roads make this area relatively undisturbed by external physical conditions. If residential development occurs in the future, Lower Shad Road and Long Ridge Road will receive most of the added traffic. With potential development on the other side of Lower Shad Road in Sector 3, major traffic problems could be expected.

Bedford Formation

There are few bedrock-fracture-plane systems. The longest fracture runs parallel to the stream on its northern bank, and smaller ones are located on the southern bank pointing in the same east-west direction. Their location suggests a possible underground drainage channel connecting with Sector 3.

Soils

This sector has a very distinctive distribution of soils. The southern part (48.4%) has soils suitable for development (type 5). The northern part (37.6%) has thin soils with shallow bedrock (type 4), which, when considered together with difficult topographical conditions, offer serious limitations for construction of septic systems. The remaining 13.9% of the land consists of alluvial and wet soils in the central wetlands area.

Hydrological Conditions

This sector has a simple drainage system. The surface water from the northern and southern parts drain directly into the wetland area. The underground drainage is also clearly indicated by bedrock fractures. The EAA study locates this sector in its Connecticut 5 watershed. The surface water quality in the area is classified in three categories. On a strip of land approximately 1,000 feet wide which runs along Upper Shad road it is severely stressed; on the northern hilly part it is moderately stressed; and on the remaining land it is slightly stressed.

Vegetation

In the southern part, along Long Ridge Road, vegetation is of the old-field type, constituting 25.6% of the sector. Some of the higher elevations in the northern part are covered with oak forest (5.5%). The rest is overgrown with mature mixed hardwood forest (51.1%), and a small area of conifers (0.3%).

Population

1. 1974	10
2. Max. under current zoning	227
3. Max. excluding open water and wetland	183

Under No. 3 there would be 1.3 acres per person.

Conclusions

The southern part of the land with direct access off Long Ridge Road and Upper Shad Road offers good conditions for development, but there are inherent limitations for construc-

WATERSHED 7

tion of septic fields in the soils (type 5). The northern hills create more difficult conditions for development, with poor soils combined with steep topography. Both of these areas in parts adjacent to Upper Shad Road have severely stressed water conditions.

Recommendations

1. Decisions regarding future development should take into account the severely stressed water conditions in areas adjacent to Upper Shad Road.
2. The town should investigate the connection that may exist between severely stressed water conditions in Sector 4 and the intensive development in the uplands of Sector 1.
3. Include all areas having type 5 soil in SARD zone. This will include about 123 acres along Long Ridge Road (Route 104) and Lower Shad Road.
4. Establish 200-foot green buffer along adjacent roads and 100-foot buffer along the wetlands. The buffer zones should be included in the C zone. This would require about 28 acres.

Sector 5
303.0 acres

Location and General Characteristics

This sector lies in the western edge of the watershed. It has a varied and richly sculptured topography. In its eastern part along Upper Shad Road there is a large wetlands.

Existing Roads and Accessibility

Long Ridge Road to the south and Upper Shad Road to the east offer the main access to this sector. There are no interior roads in the upland areas, and all presently existing properties are accessible directly from these main roads. If this land is developed in the future, access to the interior part will be difficult because of steep topography and abundant wetlands.

Present Stage of Development

This sector is developed only in areas bordering main roads. There are several large private properties (Town Tax Map, Section 4, parcel 8, 30.72 acres; parcel 82, 47.0 acres; parcel 38, 104.306 acres; parcel 17, 27.164 acres), and several medium-size properties averaging 10 acres each. There are about 12 residences, and under current zoning regulations of R3A an additional 82 could be built.

Mutual Impact

A. This sector lies at the headwaters of the watershed, but it is affected partially by Sector 1. In turn, adverse environmental conditions on this land could affect Sectors 3 and 4.

B. All properties lying along main roads are affected by the substantial amount of traffic on them. The undeveloped upland areas are secluded and not affected by external conditions.

Bedrock Formation

Most of this sector does not show the existence of bedrock-fracture-plane systems. The most prominent fracture system in Pound Ridge bedrock formation, running south of Mallard Lake in Watershed 8, passes through the northernmost portion of Sector 5. In the southwest corner a concentric formation of small fractures is evident in the area of a prominent hill, with elevations up to 530 feet. There is no evidence of any effect from these fractures.

Soils

All soils in this area have limitations for septic fields. The best suited for development (type 5) are found in the central part of the sector above large wetlands (42.4%). In the northeast and south of the sector (44.4%) soils either have shallow bedrock or poor drainage (types 3 and 4). Soils in other areas (13.1%) are wet and unsuitable for development (types 1 and 2).

Hydrological Conditions

The uplands in the western part of the sector contain all headwaters of Watershed 7. They

WATERSHED 7

flow from a medium-size lake in the southern corner and from numerous wetlands in the northern part. All these waters are first collected in the large wetlands west of Upper Shad Road and then drain down through Sectors 3 and 4 into the Branch Mianus River in Stamford. The EAA study locates this sector partly in its Connecticut 5 watershed and partly in Connecticut 4-1-3. The surface water quality throughout this area is classified as moderately stressed.

Vegetation

Old fields cover most of the area along Long Ridge and Upper Shad roads. They constitute 29.8% of the area. Adjacent to these are small sections of young successional forest (10.2%). The rest of the sector is covered with mixed mature forest (45.6%) in which is located an area of oaks (1.1%). At one point an attractive rock knob rises up from a wetlands. There is a magnificent large swamp forest with large red maple, black ash, and a thick shrub layer. From the path to the west there is a beautiful view of this wetlands. A white pine hillock with extensive white pine reproduction is a refreshing change of scene in a predominantly hardwood landscape.

Population

1. 1974	42
2. Max. under current zoning	329
3. Max. excluding open water and wetlands	284

Under No. 3 there would be 1.0 acre per person.

Conclusions

In spite of large landholdings and proximity of main roads, this land seems to be an unlikely place for extensive development owing to the combination of poor soils, difficult access, and the abundance of scattered wetlands.

Recommendations

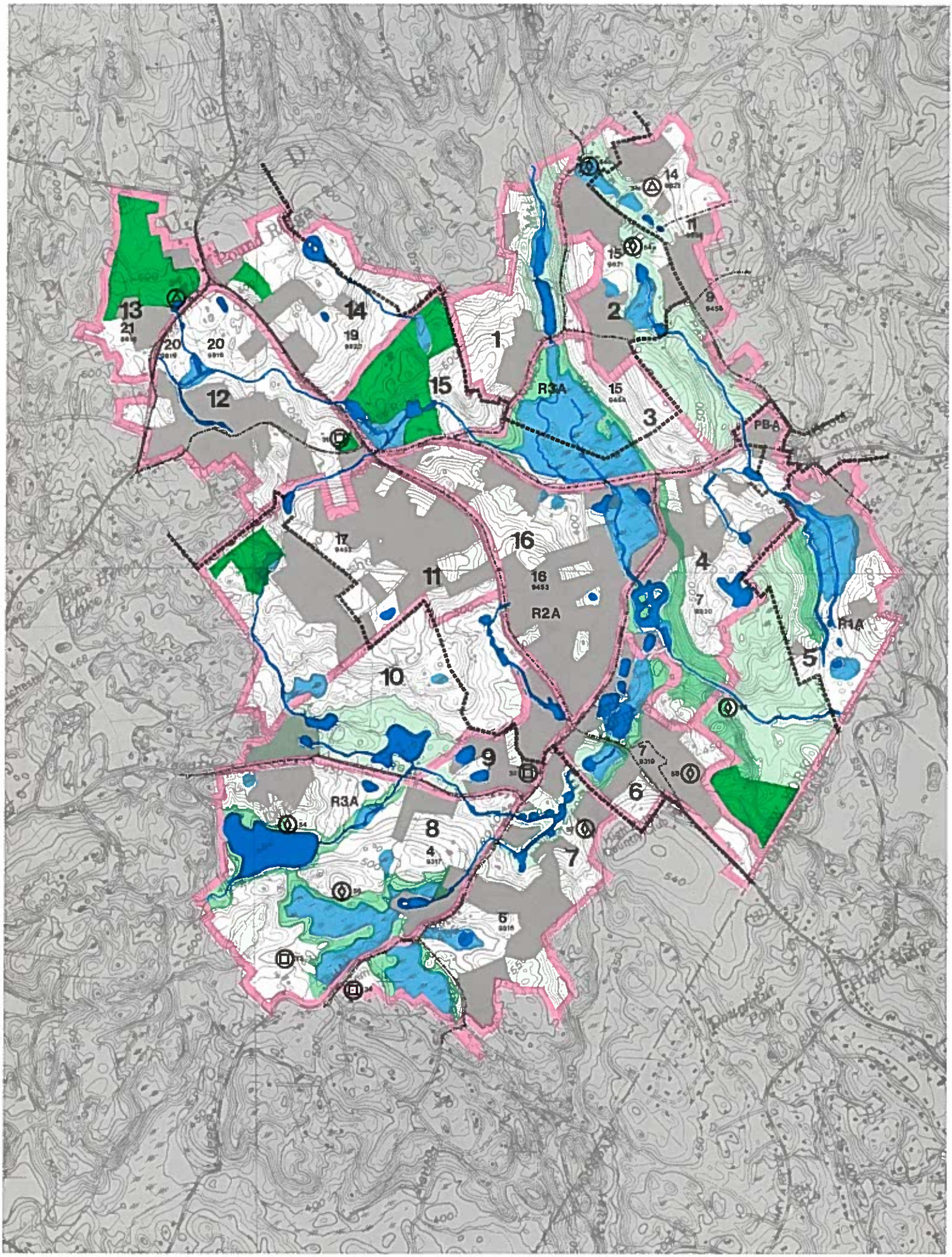
None.

PRUP Presentation at Hiram Halle Library 1975 — Lisl Steiner

Watershed 8

Mill River South

An Analysis With The Map
and Inventory Chart


R3A
R2A
R1A
PB-8
R3A

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 8

land status - aug. 1974 / physical characteristics / types of vegetation in sector's percentage / soils for septic tanks / surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted	ACRES FOR CONSERV.
1	15 9821	88.4	76.4	86.4	1	4	24			3.7	4.2	3.7	4.2	E				26.5		52.1	13.0	73.1	20.0	7.0	•			
2	9 9466 17 9452	192.7	128.4	66.6	2 3	28	42			1.6	.8	12.9	6.7	E				55.2		23.2	14.1	51.3	48.6			•		
3	15 9454	116.9	112.0	95.8	2 3	2	48			3.4	2.9	49.4	42.2	D				28.2		20.8	5.8	55.3	1.8	42.9	•			12.0
4	7 9300 9454	144.7	114.4	79.0		33	51	.4	.3	6.6	4.6	2.9	2.0	D		6.2	8.6	54.1	6.2	15.0	3.3	43.7	50.6	5.7	•			23.0
5	7 9300 9454	228.7	189.3	82.8	1 2	17	133	23.6	10.3	1.8	.8	22.8	10.0	D		2.1	37.6	41.6		5.4	2.5	32.4	55.7	11.9	•			17.5
6	5 9416 7 9319	77.7	48.7	62.6	2	16	15			5.3	6.8	5.3	6.8	E				56.7		26.8	2.9	12.6	67.3	20.0	•			
7	5 9418 5 9416	162.5	112.2	69.0	3	20	30			3.9	2.4	14.2	8.7	E				41.6	.7	21.5	15.0	64.5	28.2	7.2	•			12.5
8	4 9417	99.9	264.5	88.2	3	14	79			3.6	7.9	32.8	10.9	E				39.8	9.0	19.0	13.4	56.5	34.0	9.4		•		23.5
9	17 9452	40.3	21.3	52.8	2 3	0	6			2.6	6.3	2.3	5.8	E				37.0		48.9	6.9	86.4	13.6		•			
10	17 9452	157.6	145.7	92.4	2 3	4	52			9.5	6.1	4.9	3.1	E				35.7		21.6	33.5	83.4	15.9	.7		•		
11	17 9452	214.9	126.3	58.7	2 3	36	49	16.7	7.8			3.3	1.5	E				76.4		11.4	10.6	90.5	7.8	1.6		•		
12	17 9452 21 9816 20 9812 9816	139.5	94.5	67.7	2	22	37	2.4	1.7	6.2	2.3			E				42.7		55.0		97.0	3.0			•		
13	21 9816	69.3	14.2	20.5	2	7	5	41.8	60.3	1.1	1.6			E	8.7			29.2		60.6		88.6		11.4			•	
14	19 9820 9816	111.8	92.7	82.9	2 3	7	38	5.2	4.6	2.5	2.2	3.0	2.7	E				10.0	1.6	80.5	2.9	80.7	6.7	3.6	•			
15	19 9820	78.6	26.4	33.5	3	2	5	52.2	66.3	2.6	3.3	3.7	4.7	E				39.0		23.7	29.3	92.0		8.0	•			
16	16 9453	168.6	92.3	54.7	2	38	34			2.6	1.5	16.2	9.6	E		.8		26.8		20.3	40.4	82.8	1.4	15.7	•			
TOTALS		2292.9	1659.3			260	648	142.3		74.0		177.4																87.5

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		●														
2																
3	●	●													●	
4	●	●	●				●	●	●	●	●				●	●
5	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●
6							●	●	●	●	●					
7								●	●	●						
8																
9										●						●
10											●					
11																
12													●			
13																
14																
15													●	●	●	
16										●	●					

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
31a	54a,b	
	55	
32	58	
	57	34
	54,56	33
		32
		31
31		

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DEVELOPMENT UNDER CURRENT ZONING REGULATIONS: population	98	235	175	276	483	106	175	325	56	196	267	206	42	157	24	252	3073
roads	+	+	−	−	−	+	+	−	+	−	+	−	−	+	−	+	
sewage pl.	+	−	−	−	+	−	−	−	−	+	−	+	−	−	−	−	
water	+	o	+	+	−	o	+	o	+	o	+	o	o	+	+	+	
vegetation	+	+	+	−	−	+	−	−	−	−	+	+	−	−	+	+	
rural char.	+	+	+	−	−	+	+	−	−	−	−	−	−	−	+	+	

LEGEND

- NUMBERS
- + ADEQUATE / − INADEQUATE
- + NEEDED / − NOT NEEDED
- + pure / o affected / − polluted
- + PRESERVED / − ALTERED
- + PRESERVED / − ALTERED

CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING: population	186	24	157	42	202	261	171	47	245	144	88	396	223	53	228	91	2563
roads	+	−	+	+	−	+	−	−	−	+	+	−	−	−	+	+	
sewage pl.	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	
water	+	+	+	o	o	+	+	+	+	+	+	+	+	+	+	+	
vegetation	+	+	−	+	+	+	+	−	+	+	+	+	+	+	+	+	
rural char.	+	+	−	−	−	+	+	−	+	+	+	+	+	+	+	+	

WATERSHED 8

Mill River South

This watershed contains some of the most intensively developed areas in Pound Ridge — the Hamlet, Sarles Corners, the southern third of the currently developing Indian Hill area, and the 18-acre western stretch of the Scotts Corners business area, Planned Business District A (PB-A). There is also the prospect of the Fosella condominium to the west of Trinity Pass, south of Westchester Avenue.

The impact of man on this watershed is reflected in the large proportion of successional forest. Contrasting with present development is a section of old-growth hemlock in a gorge of the Mill River, within a larger area of hemlock and mixed hardwood forest perched on the southern edge of the watershed. This area will be increasingly disturbed by public use as development progresses.

The entire Scotts Corners area is hydrologically critical. As yet, the sewage and water-purity problems of the Watershed 8 section of the PB-A business area are unrelated to similar but more intense problems in the 35-acre Watershed 9 section of this area, PB-B, although drainage from both sections flows into the Laurel Reservoir, about one mile away. Construction of safe access roads in PB-B to service increasing commercial traffic could, however, diminish the self-containment of Watersheds 8 and 9 if grades fall below the water table.

Critical Areas in the Planning Process—1973

Environmental Problem Sites — **Map Symbol**

31. Polluted pond west of Pound Ridge Elementary School at head of watershed.

31a. Potential septic problems downstream of intensive development at, and in a large zone underlaid by well-drained sand and gravel soil that may not have sufficient inherent ability to purify septic-system effluents before they reach the water table.

32. Development on a mature mixed forest bordering a wetlands. CODA observed that test pits being dug for septic field were being filled with water at a depth of 3 feet.

Natural Areas of Special Interest — **Map Symbol**

54. Impressive *rock face:* with a 3 foot diameter beech.

54a. A mature *black gum forest:* a very unusual forest in town.

54b. A new *wetlands* which we identified.

5. Near *virgin climax hemlock* in a steep ravine of Mill River, one of the finest examples of the hemlock type in the northeast. Many hemlock stems are 2-3 feet equaling the Mianus hemlock stand. Thick hemlock reproduction underneath.

56. Magnificent *rock escarpment:* overlooking a large wetlands.

57. An expansive, mature *wet slope forest* with spicebush shrub layer.

58. A scenic, almost solid *sugar maple ravine* with steep sides and parklike atmosphere.

Historic Sites — **Map Symbol**

31. Pound Ridge Cemetery.
32. Cemetery.
33. Indian Site.
34. Cemetery.

WATERSHED 8

140 ## Mill River South

Sector 1

88.4 acres

Location and General Characteristics

Sector 1 is located along the northern boundary of the watershed. It is characterized by a narrow and steep valley along the Mill River. At the bottom of the valley are two dams which form two lakes (Twin Lakes) and their surrounding narrow wetlands. The slopes of the valley rise from an elevation of 380 feet to 560 on both the east and west banks.

Existing Roads and Accessibility

Every part of the sector is easily accessible. The southern edge is defined by Fancher Road. The east bank of the Mill River is served by East Woods Road, and the interior of the west bank upland plateau is reached by Fox Run Road and Beach Hill Lane.

Present Stage of Development

Sector 1 is fully subdivided into properties of approximately three acres. Most of the land belongs to a large subdivision. This area is in the process of change, with 86.4% of the land still undeveloped. There were 4 residences in 1974, and under current zoning regulations of R3A an additional 24 could be built.

Mutual Impact

A. The river valley in this sector acts as the main channel for environmental impacts carried by water flowing from Lewisboro and extending down through Watershed 4. The effects could be felt in Sectors 3, 4 and 5 and ultimately in the Laurel Reservoir in Connecticut.

B. Most of Sector 1 is isolated from through traffic. Fox Run, a new road, connects to Indian Hill Road, and in the future could become used as a shortcut from Trinity Pass to Westchester Avenue and Scotts Corners. This would have a marked impact on the Twin Lakes area.

Bedrock Formation

Sector 1 lies to the south of a concentric system of bedrock-fracture-plane systems around Indian Hill in Watershed 4. No major fractures are located in the developable land in this sector. A marble bedrock formation underlies the entire eastern half of the sector, which gives the area an abundance of underground water but also makes it vulnerable to pollution.

Soils

73.1% of the land has soils suitable for development (type 6). Another 20% has shallow bedrock (type 4) and only 7.0%, bordering the wetlands area, is classified as unsuitable for development. Currently undeveloped parts have the best soils for development.

Hydrological Conditions

The main hydrological features are the drainage valley of the Mill River and the large Indian Hill wetlands area on the northern boundary. The largest part of the sector, already subdivided but as yet undeveloped, is located on the gently sloping uplands above the western bank of the Mill River and drains directly into the Indian Hill marsh. The wetlands constitute only 4.2% of the sector's acreage. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality is described as slightly stressed.

Vegetation

The vegetation consists of old fields (52.1%), successional forest (13.0%), and mature mixed hardwood forest (26.5%). The latter occurs along the edge of the Indian Hill marsh and has some remarkable specimens of large trees.

Population

1. 1974	14
2. Max. under current zoning	98
3. Max. excluding open water and wetlands	91

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 1 offers very good conditions for development: accessibility by road, gentle topography for the most part, good soils and types of

WATERSHED 8

vegetation that can accommodate construction without loss of character and ecological function. The steep slopes along the Mill River constitute the only obstacle to easy development. Construction should be discouraged on the slopes above a 15% grade.

Recommendations

1. Town should maintain permanent water-sampling service on the Mill River at the part where it flows out of Twin Lakes (see hydrology map on pg. 29).
2. Because of steep topography and aesthetic values, include Twin Lake area and the stretch of the Mill River north of it in REP zone. This takes about 30 acres.

Sector 2
192.7 acres

Location and General Characteristics

Sector 2 is in the northeastern part of the watershed and is characterized by flat uplands and steepsided valleys. Elevations vary from 580 feet in the north to 400 feet along Westchester Ave.

Existing Roads and Accessibility

With the exception of the southern part, all land is easily accessible from Fancher Road and Trinity Pass.

Present Stage of Development

The sector is fully subdivided into properties of two to seven acres, and 33.3% of it is developed up to the zoning limit. There are about 28 residences, and under current zoning regulations of R2A and R3A an additional 42 could be built.

Mutual Impact

A. The environmental conditions in Sector 2 could affect Sectors 1, 3, 4 and 5. Of special significance is the downstream location of the PB-A commercial district of Scotts Corners, where the already poor condition of the drinking water could deteriorate further from careless development.

B. Trinity Pass runs through the center of the sector. All traffic between Watershed 4 and Scotts Corners uses this transportation corridor. In addition, the connection to Barnegat Road and the intersection with Fancher Road further increases traffic. Therefore Sector 2 is strongly affected by automobile movement originating outside its area.

Bedrock Formation

There are only a few bedrock fracture planes surveyed in this area. One group, located in the northern part, is directed toward Indian Hill in Watershed 4. The fractures in this area connect a site of observed water pollution with large wetlands. The other, covering the middle section, is directed toward Fancher meadow. The fractures connect an area of severely stressed surface water with the largest wetlands in the town. The scarcity of the fractures may create problems in obtaining sufficient yields from wells.

Soils

51.3% of the land has soils characterized as good for development (types 5 and 6), while 48.6% has either shallow bedrock (type 4), which is a limiting factor in locating septic systems, or soils subject to ponding and poor drainage (type 3). Currently undeveloped parts have soils of all these types.

Hydrological Conditions

One valley, running north-south, drains a small lake and several wetland areas. These constitute 7.5% of the sector. Potential septic problems were located that could affect the quality of underground water in environmentally connected areas in case of further development. These are downstream of intensive development at and in a large zone underlaid by well-drained sand and gravel soil that may not have sufficient inherent ability to purify septic-system effluents before they reach the water table. The EAA study locates this sector in its

WATERSHED 8

Connecticut 6 and 7 watersheds. One-third of Sector 2 has surface water classified as severely stressed (the fully developed area north of Fancher Road), one-third as moderately stressed (the undeveloped area south of Fancher Road), and one-third as slightly stressed (the northern part).

Vegetation

The vegetation in this sector consists of mixed hardwood forest (55.2%), old fields (23.2%), and successional forest (14.1%). In one part there is an example, rare in Pound Ridge, of a mature blackgum forest.

Population

1. 1974	88
2. Max. under current zoning	235
3. Max. excluding open water and wetlands	228

Under No. 3 there would be 0.8 acre per person.

Conclusions

Sector 2 offers a variety of good development areas in terms of accessibility by road and gentle topography. Narrow, winding country roads can carry only limited traffic safely. The most significant problem to contend with is the existence of several different types of soils distributed in an uneven pattern. They range from type 6 (suitable for development) to type 2 (unsuitable). This means that the selection of the sites for septic systems and their size and construction methods have to be carefully studied. Earlier surveys of the environmental problem site and of surface water already indicated the existence of environmental pollution. Further development under current methods of supervision may worsen the situation by decreasing the quality of the well water in all parcels south of Fancher Road and in the PB-A zone of Scotts Corners.

Recommendations

1. Town should make periodic tests on the quality of well water in the properties situated north of Fancher Road and Barnegat Road.

2. Town should maintain water sampling of surface water in locations indicated on the hydrology map.

3. Include southern part of the sector along with parcels accessible from Trinity Pass Road in the REP zone for reasons of steep topography, poor soils, and the stream valley. This will be about 40 acres of land.

4. Extend REP zone northward along the stream to encompass the lake and the wetlands in the central and northern parts of the sector. This will take about 30 acres.

5. Protect the area of black-gum forest by creating small C zone of about 1.0 acre.

Sector 3
116.9 acres

Location and General Characteristics

Sector 3 lies to the north of the center of the watershed. Its main characteristic is the largest wetlands in Pound Ridge (Town Tax Map, Section 15, parcel 1, 63.270 acres). Westchester Avenue forms the southern boundary of the sector and Fancher Road its northwestern edge. The eastern boundary runs over the crest of a hill overlooking the wetlands. The lowlands are at elevation 380 feet, and the hill on the east side rises to a height of 560 feet.

Existing Roads and Accessibility

Westchester Avenue and Fancher Road are the roads serving the site, but wetlands prevent access to most of the area. Development of the upland portion of the sector would require construction of new roads.

Present Stage of Development

More than 40.0% of the sector is wetlands with soils unsuitable for development and belongs to the Stamford Water Company. Because of the vital importance of this area for water storage, it is unlikely that it will be considered for other purposes. The upland portion of the sector is divided into several large properties that could be subdivided, but the lack of direct access by road is a limiting factor for the time being. There are about 2 residences in the sector, and under current zoning regulations of R2A and R3A an additional 48 could be built.

WATERSHED 8

Mutual Impact

A. Sector 3 receives the entire environmental impact of conditions existing in Watershed 4 and further upstream in Lewisboro. The carrier is the Mill River; the collector, the Fancher Meadow wetlands. Other areas affected directly are in Sectors 4, 5 and Laurel Reservoir.

B. Westchester Avenue carries the heaviest traffic load in Pound Ridge, resulting in noise and air pollution in that area. However, the land which could be available for development lies shielded from these conditions by higher elevations and lack of access.

Bedrock Formation

There are only a few bedrock-fracture-plane systems in this area. They run from east, south and west, pointing toward the Fancher Meadow wetlands. A marble bedrock formation underlies the center of the sector, ending where Westchester Avenue crosses the wetlands. This means that in certain parts of the sector there is an abundance of underground water, but at the same time there is vulnerability to pollution.

Soils

The land that is not wetlands constitutes 57.1% of the area. The soils in that portion are good for development (types 5 and 6).

Hydrological Conditions

Mill River, flowing through Fancher Meadow, creates large wetlands (42.2% of the sector's area). The land rising from the edge of the marsh on the eastern edge drains directly into the wetlands, as does the surface drainage from the main roads. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality is described as slightly stressed.

Vegetation

The vegetation in this sector consists of marsh and swamp forest in the lowlands and of mature mixed hardwood forest (28.2%) with clearings of old fields (20.8%) on the upland portion. Successional forests occupy 5.8%.

Population

1. 1974	7
2. Max. under current zoning	175
3. Max. excluding open water, wetlands and C zone	53

Under No. 3 there would be 0.7 acre per person.

Conclusions

The upland part of Sector 3 offers very good conditions for development in terms of slope, soil, and vegetation. These are enhanced by exceptional location, offering a sweeping view over the wetlands area. Lack of access may be only a temporary obstacle to development.

Recommendations

1. Include the land around the wetlands in Fancher Meadow up to elevation 400 feet contour line in the C zone. This will take about 12.0 acres.

2. For the upland areas, future access road off Fancher Road should have a special design, running on the crest of the hill and serving both Sectors 2 and 3.

Sector 4
144.7 acres

Location and General Characteristics

Sector 4 is situated south of Westchester Avenue and to the east of the center of the watershed. It has a varied land configuration. On the west side the Mill River flows out of wetlands of Fancher Meadow and spills throughout the lowlands. In the south the topography steepens, forming a gorge through which the river flows into the adjacent plain. The northern and central parts are characterized by steep hills and some upland lakes. The northwestern part includes Pound Ridge's PB-A commercial district. Elevations range from 520 to 380 feet.

WATERSHED 8

Existing Roads and Accessibility

Westchester Avenue and Upper Shad Road are the northern and western boundaries of this sector. Pine Drive and Hemlock Hill Road provide access to the interior uplands. Generally the access is difficult. Further development will require new roads and driveways on steep terrain over the river and wetlands, or through mature forests of exceptional quality.

Present Stage of Development

21% of this sector is developed. Scotts Corners and the edge of Upper Shad Road are intensively developed. Some homes are built on the uplands around Pine Drive. There are about 33 residences in the sector, and under current zoning regulations of R2A an additional 43 could be built.

Mutual Impact

A. Sector 4 receives the waters of the Mill River from the north and the drainage waters of the western and southern sectors of the watershed. Its lowlands are affected by environmental conditions in Sectors 6, 7, 8, 9, 10 and 11. The largest part of the land area, however, lies in the uplands probably not affected by the water quality in the Mill River. This river is a main carrier of environmental conditions to Sector 5 and Laurel Reservoir.

B. This sector is a self-contained land unit. It has its own system of dead-end roads and is not affected physically by any of the neighboring areas.

Bedrock Formation

There are several medium-size fracture-plane systems running perpendicular to steep slopes in an east-west direction.

Soils

43.7% of the northern and western parts, which are presently the most developed, have good soils for development (types 5 and 6). 50.6% is classified as land with shallow bedrock (type 4), a limiting factor for septic systems. These soils cover most of the uplands and steep slopes. Only 5.7% of soils are unsuitable for development (types 2 and 1).

Hydrological Conditions

Two main drainage systems intersect in the southwestern part of the sector. The Mill River flows from the north, and a series of streams and small lakes constitute the drainage system from Mallard Lake and large wetlands in that same area. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality throughout is described as moderately stressed.

Vegetation

Vegetation in this sector includes a variety of tree species providing it with great aesthetic value. 54.1% is mature mixed hardwood forest. In the corner between Upper Shad Road and Westchester Avenue an oak forest (6.2%) covers a 90-foot-high knoll. In the south, overgrowing the Mill River gorge, is part of a large, near-virgin hemlock and hemlock-hardwood forest (14.8%) of exceptional quality, which extends into Sector 5.

Population

1. 1974	115
2. Max. under current zoning	276
3. Max. exluding open water, wetlands, and C zone	223

Under No. 3 there would be 0.5 acre per person.

Conclusions

Sector 4, in its upland part, offers land for development, but with several serious constraints resulting from difficult topography, shallow bedrock, and forest land that should be protected. The lowlands have limited possibilities for new development because a large part of that area is open water and wetlands.

Recommendations

1. For the upland areas, special design for future driveways and roads to minimize surface runoff.

2. Mill River gorge and steep slope extend-

WATERSHED 8

ing northward between elevation 370 feet and 450 feet should be declared a C zone. This would take approximately 23 acres.

3. Town should maintain sampling service of surface water in the locations indicated to check the quality of the flow from Mallard Lake basin and Mill River (see hydrology map pg. 29).

Sector 5
228.7 acres

Location and General Characteristics

Sector 5 is located on the eastern edge of the watershed and along the Connecticut state line. The northern boundary reaches the PB-B commercial district. Trinity Pass defines the sector on the northeast. The main topographic characteristics are the steep slopes of its western hills which fall into fairly flat lowlands in the east. The elevations vary from 500 feet to 340 feet. The Mill River and another stream (Connecticut 7) discharge their waters through ravines in the hillsides and flow through this sector into the Laurel Reservoir in New Canaan.

Existing Roads and Accessibility

Trinity Pass intersects with two local roads leading into the lowlands part of the area. One road cuts across major wetlands. The upland areas and the lowlands south of the Mill River have no roads.

Present Stage of Development

About 17% of this sector is developed, mostly near Scotts Corners in R1A zone. Tax-exempt nature sanctuary is in the southern tip of the sector. The remaining land includes two large private properties (Town Tax Map, Section 7, parcel 13, 100.700 acres; parcel 28, 28.301 acres). There are about 17 residences in this sector, and under current zoning regulations of R1A and R2A an additional 133 could be built.

Mutual Impact

A. Sector 5 is the recipient of all drainage waters from Watershed 8 and 4 and the latter's extension into the town of Lewisboro. This sector is the most vulnerable of all areas in Pound Ridge to the adverse environmental consequences that may be transmitted by surface and underground water flow. The environmental conditions on this land will in turn directly affect the Laurel Reservoir. The reservoir's inlet is situated 1,000 feet beyond the state line.

B. This sector is a self-contained land unit. It has its own system of dead-end roads and is neither affected by any of the neighboring areas nor will it affect them.

Bedrock Formation

Most of the fracture-plane systems in this sector run in a uniform pattern from northwest to southeast and perpendicular to the sloping topography. At the foot of the steep terrain they are transversed by another system.

Soils

With the exception of wet soils stretching south from Scotts Corners and occupying 11.9% of the land, this sector has mostly soils with shallow bedrock (type 4). These cover the uplands and parts of the plain on the Connecticut border and constitute 55.7% of the land. The remaining 32.4% are classified as suitable for development (types 5 and 6).

Hydrological Conditions

Two important drainage basins intersect in this sector. They are the Mill River and the stream (Connecticut 7) that flows from Sector 2 through PB-A commercial zone and a large wetlands. Both waters discharge into Laurel Reservoir. The EAA study locates this sector in its Connecticut 6 and 7 watersheds. The surface water quality is described as moderately stressed throughout the sector, with the one exception of an area around the large wetlands which is described as slightly stressed.

Vegetation

The vegetation is of two main types. The uplands are overgrown with old hemlock-hardwood and hemlock forests, which together con-

stitue 39.7% of the land area. The Mill River gorge in that part is distinctive for one of the finest examples in the northeast U.S. of near-virgin climax hemlock forest, with thick hemlock reproduction underneath. The lowlands are covered by mature mixed hardwood forest, which constitutes 41.6% of the area. The remaining 7.9% consists of open fields or successional forest. These occur along the Connecticut border in the area of one-acre subdivision lots.

Population

1. 1974	60
2. Max. under current zoning, excluding tax-exempt land	483
3. Max. excluding open water, wetlands, and C zone	396

Under No. 3 there would be 0.4 acre per person.

Conclusions

Sector 5 will probably continue to develop in its eastern and northern portions. Because of one-acre zoning in this area, the density in the future may be the highest in Pound Ridge. Yet the environmental characteristics of this sector, such as very steep slopes west of the wetlands and proximity to the drainage system of Laurel Reservoir, would justify better land controls. Additional argument may be derived from the EAA water-analysis study. The headwaters of two drainage basins — Mallard Lake and the Connecticut 7 stream are already characterized as severely stressed. Overdevelopment in this sector may begin to show adverse results in Laurel Reservoir. The western and southern parts of the sector are hilly, with difficult access and no roads. Topographical and vegetation features make these areas an unlikely place for intensive development.

Recommendations

1. The upland areas in the southern and western parts of this sector, which are overgrown with exceptional forest, should be included in the REP zone. This will take approximately 86 acres.

2. The Mill River gorge and the southern steep bank up from elevation 360 feet and reaching the nature sanctuary on the Stamford town line should be declared a C zone. This would occupy approximately 10.5 acres.

3. The western edge of large wetlands in the northern part of the sector should be declared a C zone. This area would be defined by the edge of the wetlands, contour line at elevation 400 feet, and the driveway on the southern end. It would occupy approximately 7.0 acres.

4. Town should maintain sampling service of surface water in locations indicated, to check the quality of the flow into Laurel Reservoir (see hydrology map).

5. Special attention should be paid to the development in one-acre zoning below large wetlands. The soil is suitable for development but with limitations for septic fields. The proximity of Laurel Reservoir makes this constraint very important.

Sector 6
77.8 acres

Location and General Characteristics

Sector 6 is located in the southeastern part of the watershed in the area called Sarles Corners. It is bordered on the west by Upper Shad Road and crossed through the middle by High Ridge Road. The topography falls into two main categories; extensive wetlands and a network of streams in the west and richly sculptured uplands in the east. Elevations vary from 550 feet in the southeastern corner to 380 feet on the western boundary.

Existing Roads and Accessibility

This sector is most easily accessible from High Ridge Road (Route 137) and Upper Shad Road. The upland areas in the eastern part are serviced by Old Snake Hill Road, which is narrow and winding.

Present Stage of Development

The sector is fairly well subdivided into parcels ranging from two acres to over 10. Fur-

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ther subdivision seems unlikely, as the large parcels are those which include wetlands and lakes. There are about 16 residences in the sector, and under current zoning regulations of R2A an additional 15 could be built.

Mutual Impact

A. Sector 6 is the collection area of various drainage systems flowing from the southwestern portion of the watershed before they join the Mill River. This drainage covers Sectors 7, 8 (Mallard Lake), 9, 10 and 11. Environmental conditions in any or all of these areas could affect the water quality in the lowlands of Sectors 5 and 6, and eventually Laurel Reservoir.

B. Sector 6 is situated at the intersection of two very heavily used roads — High Ridge and Upper Shad. Traffic volume on these roads creates noise and air pollution which is affecting most of the land in this area. The entire physical impact on Sector 6 is generated externally.

Bedrock Formation

An extension of the fracture-plane systems in Sector 5 is found in the southeastern part of this sector.

Soils

Soils suitable for development (type 6) occur in three places: on the highest elevation near the White Birch Country Club, at Sarles Corners, and at the foot of the highlands. These areas constitute 12.6% of the sector's dry land. The highlands have shallow soils (type 4) which occupy 67.3% of the land. Unfortunately, a developed strip of land along Upper Shad Road has bad soils for development (20%). These are extremely wet and subject to flooding (type 2). In one development on a mature mixed-hardwood forest bordering a wetlands there was a septic problem in 1973 survey (test pits for a septic field filled with water at a depth of three feet).

Hydrological Conditions

There is a uniform pattern of drainage in this sector. Surface waters flow from the uplands in a northwesterly direction toward the wetlands. Wetlands, lakes, and ponds occupy most of the lowlands between the high ground and Upper Shad Road — in total more than 10 acres (13.6% of the area). The EAA study locates this sector in its Connecticut 6 watershed. Surface water quality throughout is described as moderately stressed.

Vegetation

The vegetation cover in this sector consists of mature mixed hardwood forest (56.7%) and of old fields and successional forest (29.7%). A scenic almost solid sugar-maple ravine with steep sides and parklike atmosphere is found in the upland areas near Old Snake Hill Road.

Population

1. 1974	56
2. Max. under current zoning	106
3. Max. excluding open water and wetlands	88

Under No. 3 there would be 0.7 acre per person.

Conclusions

Sector 6 is an area that is almost fully used, with little land available for future development with the exception of White Birch Country Club. Because of poor soil conditions along Upper Shad Road it is possible that there are some adverse effects on the water quality caused by improperly built septic fields.

Recommendations

1. All land adjacent to wetlands and open water should be included in REP zone. This will cover about 30 acres.
2. Town should maintain water-sampling service in locations indicated on the hydrology map.

Sector 7
162.5 acres

Location and General Characteristics

Sector 7 is located on the southern edge of the watershed. In the northwest it is bordered

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by the White Birch Country Club and other large properties along the Connecticut state line. Topography is varied, with steep slopes and wet flatlands. Elevations vary from 550 feet in the southern part to 390 feet in the north.

Existing Roads and Accessibility

Main access is from Upper Shad Road and a portion of Lower Shad Road. Long driveways branching off these roads serve all parts of the sector.

Present Stage of Development

The sector is well subdivided, with 31% of its land already developed, but there are several larger properties that could be further subdivided. There are about 20 residences in the sector, and under current zoning regulations of R3A an additional 30 could be built.

Mutual Impact

A. Sector 7 is part of the drainage system of the Mallard Lake area. Environmental impact of conditions existing there could affect Sectors 4, 5 and 6 and ultimately the Laurel Reservoir.

B. Upper Shad Road, running along the northern boundary of the sector, is used by both local and through traffic. The interior of the sector has several dead-end driveways. All properties in the interior enjoy a secluded condition not likely to be changed in the near future.

Bedrock Formation

Sector 7 has a random pattern of small fracture-plane systems. One fairly long fracture runs from its southern boundary to the northern corner. In the same area ends another fracture-plane system, that originates in Sector 8, south of Mallard Lake. All these fractures underlie areas of severely or moderately stressed surface water conditions.

Soils

Soils suitable for development (types 5 and 6) cover 64.5% of the area. The southeast boundary of the sector is characterized by steep slopes and rock outcroppings (28.2%). The soils in this part are thin on shallow bedrock (type 4). The remaining 7.2% is not suitable for development, constituting wetlands and stream beds in the lowlands.

Hydrological Conditions

The topography of this sector provides a uniform drainage pattern from the uplands toward Upper Shad Road. One stream runs parallel to the road and collects most of the water draining the land. A large wetlands is situated in the south of the sector. It is connected to the stream near the intersection of Upper and Lower Shad roads. The wetland and open water constitute 11.1% of the land area. The EAA study locates this sector in their Connecticut 6 watershed. The surface water quality throughout the sector is described as moderately stressed.

Vegetation

The vegetation cover in Sector 7 consists of mature mixed hardwood forest (41.6%), old fields (21.5%), and successional forest (15.0%) overgrowing the highlands in the southern part. An expansive wet-slope forest with a spicebush shrub layer is located on the northeast boundary of the sector on the steep terrain near the country club.

Population

1. 1974	70
2. Max. under current zoning	175
3. Max. excluding open water, wetlands, and C zone	144

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 7 is an area that is rather intensively developed. However, most of the land that could be further subdivided has soils suitable for development. Since the entire sector is indicated as moderately stressed in the surface water analysis, some preventive action should be taken against further deterioration.

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Recommendations

1. Large wetlands area including the marsh and its shores up to contour line at 400 feet elevation off Upper Shad Road should be included in C zone. This would occupy about 12.5 acres.

2. 200-foot-wide corridor along main drainage stream running parallel to Upper Shad Road should be included in REP zone. This would include about 15 acres.

Sector 8
299.9 acres

Location and General Characteristics

Sector 8 is located in the southwestern part of the watershed. It is bounded on the north by South Bedford Road and on the east by Upper Shad Road. Its main characteristics are gently rolling topography, Mallard Lake, and an extensive wetlands area. The elevations range from 400 feet in the lowlands to 560 feet on the crests of three knolls surrounding the lake.

Existing Roads and Accessibility

This sector is well served by South Bedford Road and Upper Shad Road. With the exception of the wetlands there is easy access to all parts. Several private roads and driveways lead to the interior parts.

Present Stage of Development

This sector is developed in only 11.8% of its area, mostly along the main roads. A substantial part of this land is in one large private property dominated by wetlands (Town Tax Map, Section 4, parcel 21, 80.455 acres). There are about 14 residences in this sector, and under current zoning regulations of R3A an additional 79 could be built.

Mutual Impact

A. Sector 8 includes the headwaters of a complex drainage system flowing into Sectors 4, 5, 6 and 7 and ultimately into the Laurel Reservoir.

B. Sector 8 lies in the fork between two roads of moderate to heavy traffic — Upper Shad and South Bedford roads. Both carry through traffic from western Pound Ridge and the town of Bedford toward Scotts Corners. Properties along these roads are affected by noise and air pollution. The interior of the sector has no access and at present is not affected by these external conditions.

Bedrock Formation

This sector has a great number of fracture-plane systems running in an east-west direction. One of the longest fracture-plane systems in Pound Ridge is located in the southern part, joining Watershed 5 in the west to Sector 7 in the east. Areas of severely and moderately stressed water conditions overlay these fractures.

Soils

With the exception of the wetlands area and stream belts, 56.5% of this sector has soils suitable for development (types 5 and 6). The knoll areas constitute 34% of the soils and are classified as overlaying shallow bedrock (type 4). Most of the undeveloped area has soils suitable for development.

Hydrological Conditions

Mallard Lake and several smaller ponds are connected by a network of streams and wetlands in a complex drainage system. The waters that drain this sector, after receiving several tributaries from adjacent sectors, flow into the Mill River in Sector 4. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality around Mallard Lake is described as severely stressed. This condition occurs in about half of the sector. The other half is described as moderately stressed.

Vegetation

The vegetation consists of mature mixed hardwood forest (39.8%) and of open fields and young successional forests (32.4%). Among these are dispersed areas of oak forests covering 9.0% of the upper elevations of knolls sur-

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rounding Mallard Lake. Large wetlands are overgrown with mixed hardwood mature forest of exceptional quality.

Population

1. 1974	49
2. Max. under current zoning	325
3. Max. excluding open water, wetlands, and C zone	245

Under No. 3 there would be 0.9 acre per person.

Conclusions

Sector 8 is sparsely populated in spite of suitable terrain and soils for development. The upper parts of the sector are considered to be environmentally self-contained, that is, not influenced in any significant manner by conditions occurring elsewhere. Therefore the severely stressed conditions of the surface waters could be attributed to the natural processes taking place in the ecological cycle of that area.

Recommendations

1. The upland areas surrounding Mallard Lake, the wetlands up to contour line at elevation 500 feet, and stream belts 200 feet wide should be included in the C zone. This would occupy about 23.5 acres.
2. Special performance standards for septic systems should be designed for use in severely stressed areas.
3. Town should maintain sampling service of surface water in locations indicated on the hydrology map.
4. Recommend eventually, lake improvement work.

Sector 9
40.4 acres

Location and General Characteristics

Sector 9 is south of the center of the watershed. It is bounded on three sides by major roads: High Ridge, Upper Shad, and South Bedford. The fourth side runs along the foot of Horseshoe Hill. Its topography is characterized by one prominent knoll rising 60 feet above lowlands containing small ponds and streams.

Existing Roads and Accessibility

This sector forms a strip of land enclosed by three main roads, from which all properties are easily accessible.

Present Stage of Development

This sector is almost fully subdivided and already developed in 47.2% of its area, but a few larger holdings remain. There are about 10 residences in this sector, and under current zoning regulations of R3A and R2A an additional 6 could be built.

Mutual Impact

A. Sector 9 is located at the base of sloping land on a large undeveloped property in Sector 10. Surface drainage from this highland runs directly into streams and ponds of the area. Environmentally the sector is connected with Sectors 4, 5, 6 and 7.

B. The proximity of major roads make Sector 9 less isolated than other parts of Pound Ridge, and it is affected by noise and air pollution caused by external conditions.

Bedrock Formation

There are no significant bedrock fracture planes in this area.

Soils

Soils suitable for development constitute 86.4% of the area (types 5 and 6). Only 13.6% are classified as difficult, with poor drainage and ponding (type 3).

Hydrological Conditions

Two streams flowing along Upper Shad Road and High Ridge Road form a hydrological network in this sector. Several small ponds in the lowlands are the recipients of drainage from Horseshoe Hill. This sector is in the drainage

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basin of Mallard Lake. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality is described as moderately stressed.

Vegetation

This sector has lost most of its former forest cover, and 43.9% of the land is listed as old fields, 37% as mixed hardwood forest, and 6.9% as new successional forest.

Population

1. 1974	35
2. Max. under current zoning	56
3. Max. excluding open water and wetlands	47

Under No. 3 there would be 0.7 acre per person.

Conclusions

Because of proximity to main roads, good soils, and lack of wetlands, Sector 9 is nearly fully developed.

Recommendations

The stream valley parallel to South Bedford Road and High Ridge Road should be included in the REP zone. It is part of the Mallard Lake drainage basin. This will take about two acres of land.

Sector 10
157.6 acres

Location and General Characteristics

Sector 10 is in the western part of the watershed. It is bordered on the south by Upper Shad Road and on the northwest by High Ridge Road. Topographically this land constitutes the southern slope of Horseshoe Hill and two lowland areas near High Ridge Road and Upper Shad Road. Elevations range from 580 feet in the northern part to 420 feet in the south.

Existing Roads and Accessibility

This sector is accessible from the two sides bordering on main roads. Except for a few long driveways the interior has no roads, but because of the gentle topography road construction would pose no problems.

Present Stage of Development

This sector is largely undeveloped except for a small section (7.6% of the total area) in its western corner. There are two large private properties that occupy most of the open land (Town Tax Map, Section 17, parcel 32, 39.050 acres; parcel 12, 56.738 acres). There are about 4 residences and under current zoning regulation of R2A and R3A an additional 52 could be built.

Mutual Impact

A. Sector 10 is where some of the headwaters of Mallard Lake drainage basin originate. If environmental conditions should affect these waters the impact would be felt in Sectors 4, 5, 6, 7, 9 and ultimately in the Laurel Reservoir.

B. South Bedford Road, which runs through this area, carries a moderate traffic volume that affects only a small residential development on the western end.

Bedrock Formation

There are no significant bedrock-fracture-plane systems in this area.

Soils

Most of the soils in this sector are suitable for development, with 83.4% classified as good (types 5 and 6). Only 15.9%, mostly along the stream belts, are wet, with poor drainage and subject to flooding (type 3). However, most of the already developed parcels are in the areas with poor soils.

Hydrological Conditions

The land of Sector 10 slopes in two directions, creating a two-way drainage system. Several ponds and streams in the lowlands accept the surface water runoff. They are part of the Mallard Lake drainage basin. The EAA study locates this sector in its Connecticut 6 water-

shed. The surface water quality in the western half of the sector is listed as severely stressed and in the eastern half as moderately stressed.

Vegetation

The vegetation cover consists mainly of mixed hardwood forest (35.7%), old fields (21.6%), and successional forests (33.5%).

Population

1. 1974	14
2. Max. under current zoning	196
3. Max. excluding open water and wetlands	171

Under No. 3 there would be 0.8 acre per person.

Conclusions

Sector 10 is almost entirely undeveloped despite suitable terrain and good soils. Lack of interior roads and subdivisions is the main reason for this. With the continuing development of Horseshoe Hill in the adjacent Sector 11, one can expect Sector 10 to change in character in the future. The main source of potential environmental pollution is the subdivision north of South Bedford Road, which is located on wet, poorly drained soils not suitable for development.

Recommendations

1. The stream valleys parallel to South Bedford Road and High Ridge Road, together with lakes and small ponds up to contour line at 450 feet elevation, should be included in the REP zone. This will take about 60 acres.

2. Town should maintain sampling service of surface water in locations indicated on the hydrology map.

Sector 11
214.9 acres

Location and General Characteristics

Sector 11 is in the western part of the watershed and is bordered on the east by High Ridge Road. Topographically the land is the upper part of Horseshoe Hill, sloping in all directions from its peak of 640 feet.

Existing Roads and Accessibility

High Ridge Road provides the only access to this sector. Horseshoe Hill Road and several dead-end roads constitute an interior network. All properties are serviced by this system.

Present Stage of Development

This sector is fully subdivided as the Horseshoe Hill community. It is developed in 41.3% of its total area. The latest subdivision in the western part includes a common open land with a wetlands area of 16.731 acres. This land, originally located in a R3A zone, is subdivided into two-acre lots plus common land, according to State Law, Section 281. There are about 36 residences in this sector, and under current zoning regulations of R2A an additional 49 could be built.

Mutual Impact

A. This sector, even if fully developed, may not exert environmental impact on other sectors. Gentle topography, excellent soil conditions, and large wooded tracts offer good environmental protection.

B. Sector 11 has an internal road system and is not affected by traffic conditions other than those generated by its own residents.

Bedrock Formation

This sector has an extensive pattern of bedrock-fracture-plane systems crisscrossing the area but running predominantly in an east-west direction. The fractures are mostly short and probably offer good conditions for well drilling and construction of septic fields.

Soils

Suitable soils for development constitute 90.5% of the area (types 5 and 6). Only 7.8% are classified as difficult (type 3) and 1.6% as unsuitable (type 2).

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Hydrological Conditions

Owing to its hilltop location Sector 11 drains its surface water in all directions. Two drainage basins originate on the site. In the northern part a pond and a stream begin the flow of water which passes through the Town Park (Sector 15) joining the wetlands of Fancher Meadow (Sector 3). In the western part, richly formed topography creates several wetlands and a stream valley. These flow southward and join the Mallard Lake drainage basin in Sector 10. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality in the western part, where new subdivision has been done, is described as severely stressed. On the northern slope of Horseshoe Hill, where the Town Park drainage begins, the survey shows water slightly stressed. The remaining parts are moderately stressed.

Vegetation

Of the vegetation in this sector 76.4% consists of mature mixed forest, 11.4% of old fields and 10.6% of successional forest.

Population

1. 1974	126
2. Max. under current zoning, excluding common open land	267
3. Max. excluding open water and wetlands	261

Under No. 3 there would be 0.8 acre per person.

Conclusions

Sector 11 is one of the best development areas in Pound Ridge. Although fully subdivided, it maintains safe traffic conditions because of a self-contained road network not affected by through traffic. This condition, however, may be only temporary. Future developments, which may occur by subdivision of large private properties in Sector 10 and in adjacent Watershed 3, would probably lead to connections between local streets. The western part of the sector has soils suitable for development, but with limitations for septic tanks. This is most likely due to shallow bedrock conditions.

Recommendations

1. Special performance standards for septic systems should be designed for use in severely stressed areas.
2. Town should maintain the sampling service of surface water in locations indicated on the hydrology map.

Sector 12
139.5 acres

Location and General Characteristics

Sector 12 is south of the hamlet of Pound Ridge in a triangle between High Ridge Road and Pound Ridge-Bedford Road. Its northern apex is at elevation 610 feet, from which the land slopes gently southward toward a network of small streams. The southern part is very varied in its topographical forms. A short local road, West Lane, cuts through this section.

Existing Roads and Accessibility

Two major highways define the boundaries of the sector. West Lane provides easy access to the southern section. The northern part has no internal roads.

Present Stage of Development

This sector is developed in 32.3% of its area, concentrated in the southern part along both sides of West Lane. Most of the northern part is taken up by the Pound Ridge Nurseries Town Tax Map, Section 20, parcel 43, 40.516 acres). There are about 22 residences, and under current zoning regulations of R2A an additional 37 could be built.

Mutual Impact

A. A network of small streams originates in this sector. To the north drainage from this network extends into Sector 13. Cumulative effects of environmental conditions are transmitted through the water flow of Sector 15 (Town Park area) eventually to Fancher Meadow wetlands (Sector 3).

B. The entire area of this sector is affected

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by external conditions. Two major highways and one local road connecting these two highways are the source of considerable noise and air pollution.

Bedrock Formation

Extensive bedrock fracture-plane systems occur in the southern part of the sector. Their direction is random, but one of the longest fractures in Pound Ridge runs from West Lane and stretches westward into Watershed 3 toward the Bedford town line. This fracture is overlaid by areas of severely and moderately stressed surface water.

Soils

97.0% of the soils in the area are suitable for development (type 5), but with some limitations for septic fields. Only 3.0% constitute difficult soils (type 3).

Hydrological Conditions

This sector has a well-branched network of streams that drain every part of its area. The main steam valley runs from west to east through the middle of the sector. The waters flow into the pond and the wetlands areas in the Town Park (Sector 15). The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality in the northern part is described as severely stressed. The center is classified as having water moderately stressed and the southern part slightly stressed.

Vegetation

Vegetation in this sector consists mainly of open fields (55%). The southern part has mixed hardwood forests (42.7%).

Population

1. 1974	77
2. Max. under current zoning	206
3. Max. excluding open water and wetlands	202

Under No. 3 there would be 0.6 acre per person.

Conclusions

Sector 12 is an area rather fully developed in its southern part but with abundant land available where Pound Ridge Nurseries is located. The surface water analysis indicates the nursery area is severely stressed, probably because of intensive use of artificial fertilizers.

Recommendations

1. Recommend that the nursery limit the use of artificial fertilizers.
2. Town should establish sampling services for surface water where the stream crosses under High Ridge Road.
3. For the sake of the rural character of the hamlet area, include the nursery in the Historic District zone, allowing no new residential or commercial development at any time in the future.

Sector 13
69.3 acres

Location and General Characteristics

Sector 13 is in the northwestern corner of the watershed. It is bordered on the east by the Pound Ridge-Bedford Road and on the north by Old Stone Hill Road. Most of the buildings of the Pound Ridge hamlet are located in this area.

Existing Roads and Accessibility

This sector lies in the main intersection of major highways in Pound Ridge. All properties are accessible from three highways.

Present Stage of Development

This sector is fully developed. Much of the land is tax-exempt as a nature conservancy (Lawther property), the Community Church grounds, and the Pound Ridge Elementary School. Several parcels could be further subdivided. There are about 7 residences, and under current zoning regulations of R2A an additional 5 could be built.

Mutual Impact

A. This sector is located on the boundary

of the watershed and is not affected by any other area. Its terrain slopes southward toward the Pound Ridge-Bedford Road. Environmental conditions in this sector may have an impact on Sector 12.

B. All physical conditions in this area are generated by exterior causes. Heavy traffic, noise, and air pollution are the result of activity occurring in the hamlet of Pound Ridge. The restaurant, school, supermarket, Town Hall, Community Church, nursery, Library attract comparatively large numbers of people.

Bedrock Formation

This sector has several fracture-plane systems running in a north-south direction.

Soils

88.6% of the area has soils suitable for development (types 5 and 6). On the western boundary of this sector (11.4%) there are soils that are subject to flooding and are extremely wet, but these are on tax-exempt land.

Hydrological Conditions

With the exception of small ponds near the school, there are no wetlands in this sector. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality throughout the area is described as severely stressed. There is a polluted pond west of Pound Ridge Elementary School.

Vegetation

This sector is part of the oldest development area in Pound Ridge. Therefore the vegetation cover is mainly old fields. These open lands constitute 60.6% of the area, with 29.2% having mature mixed hardwood forest.

Population

1. 1974	24
2. Max. under current zoning, excluding tax-exempt land	42

Under No. 2 there would be 1.6 acres per person.

Conclusions

This sector is fully developed, and no further subdivision or construction is anticipated. With 60.3% of land tax-exempt and with the number of residences small, it is interesting that the surface water is classified as severely stressed. This condition may result from faulty septic systems in the school, Emily Shaw's Inn, or any of the residences.

Recommendations

1. The town should check all septic systems in the sector.
2. Include the hamlet area of this sector in the Town Historic District zone.

Sector 14
111.8 acres

Location and General Characteristics

Sector 14 is in the northern part of the watershed. On the southwest it borders Westchester Avenue and contains part of the Pound Ridge hamlet. On the southeast it faces the Town Park. The topography of the land is very uniform, sloping gently eastward from an elevation of 640 feet in the vicinity of the Town Hall to 450 feet near the Town Park.

Existing Roads and Accessibility

Westchester Avenue provides the main access to this sector. Old Pound Road, a dead-end, services a number of homes situated in the interior. All properties are accessible from these roads.

Present Stage of Development

This sector is only partially subdivided. There are a number of large properties that offer opportunities for development, and 82.9% of the land is still undeveloped. There are about 7 residences in this sector, and under current zoning regulations of R2A and R3A an additional 38 could be built.

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Mutual Impact

A. This sector, located at the boundary of the watershed, is not affected by any other area. It is environmentally connected to Sector 15, which lies at a lower elevation below the flow of drainage water.

B. A main highway (Westchester Avenue) runs on the western edge of the sector, but the rest of the land is not affected by through traffic. The internal dead-end road is not likely to be connected with other roads, creating a permanently secluded condition for all properties in that area.

Bedrock Formation

There are no significant bedrock-fracture-plane systems in this area.

Soils

This sector has soils very suitable for development (type 6), found in 89.7% of the area. There are difficult soils (types 3 and 4) in 6.7% and wet soils (type 2) in 3.6%.

Hydrological Conditions

In one of the higher parts of the site, there is a small lake and a stream flowing from it that make the principal drainage channel. The stream flows through the Town Park lowlands and into the wetlands of Indian Hill. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality is described as moderately stressed.

Vegetation

This sector is part of the oldest development area in Pound Ridge. Therefore the vegetation cover is mainly old fields. These open lands constitute 80.5% of the area. The remaining portions are overgrown with mature mixed hardwood forest and successional forest. North of the small lake there is an area of oak forest that is part of the large oak concentration in Watershed 4.

Population

1. 1974	24
2. Max. under current zoning excluding tax-exempt land	157

Under No. 2 there would be 0.7 acre per person.

Conclusions

This sector offers excellent opportunities for development, with few environmental constraints.

Recommendations

None.

Sector 15
78.7 acres

Location and General Characteristics

Sector 15 is located north of the center of the watershed. It is bordered on the south by Westchester Avenue and Fancher Road and on the west by the continuation of Westchester Avenue. The Town House and municipal offices are located here.

Existing Roads and Accessibility

There are no internal roads or driveways in this sector. Access is possible only from the peripheral highways.

Present Stage of Development

Sector 15 is almost undeveloped with 66.3% of its area tax-exempt (the Town Park and the Town House grounds). The only part still available for development lies on very steep slopes north of Fancher Road. There are about 2 residences in this sector, and under current zoning regulations of R2A an additional 5 could be built.

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Mutual Impact

A. The topography of this sector forms two stream valleys. Through the northern one flows the drainage water from Sector 14. Through the southern one flows the stream originating in Sector 12 and discharging into Fancher Meadow wetlands in Sector 3. In this manner the lowlands of this area are affected by the environmental conditions in Sectors 12, 13 and 14 and transmit these conditions into Sectors 3, 4 and 5.

B. This sector is severely affected by external physical conditions. The intersection of two major highways and the Town Park and Town House make this sector one of the most heavily used in Pound Ridge.

Bedrock Formation

Sector 15 has several bedrock-fracture-plane systems of medium length running in several directions.

Soils

92% of the area has soils suitable for development (types 5 and 6), and 8.0% is wet (type 2).

Hydrological Conditions

Sector 15 acts as a drainage basin for water flowing from Sectors 12, 13 and 14. These waters collect into wetlands and ponds that are part of the Town Park. The overflow of this water drains into Fancher Meadow and Indian Hill wetlands. The EAA study locates this sector in its Connecticut 6 watershed. The surface water quality throughout the area is classified as slightly stressed.

Vegetation

Vegetation in this sector is a mixture of old fields, successional forest and mixed hardwood forest.

Population

1. 1974 7
2. Max. under current zoning excluding tax-exempt land 24

Under No. 2 there would be 3 acres per person.

Conclusions

Sector 15, having mostly tax-exempt land, is not subject to any changes in its land use. Because of its location, in the northwestern segment of the watershed, this sector could have a monitoring station for water quality and environmental conditions.

Recommendations

Establish monitoring station for water and environmental quality at a site selected by the Water Control Commission. A good location would be next to the Town House.

Sector 16
168.6 acres

Location and General Characteristics

Sector 16 is in the center of the watershed and is bordered by three major roads; Westchester Avenue, High Ridge Road, and Upper Shad Road. Topographically it constitutes the extension of the eastern slope of Horseshoe Hill. The terrain drops from an elevation of 530 feet along High Ridge Road to 380 feet at the edge of a large wetlands area.

Existing Roads and Accessibility

This sector is easily accessible from each of its three sides. Two dead-end roads provide access to the interior properties.

Present Stage of Development

Sector 16 is almost fully subdivided into two-acre lots, but several larger properties could be further divided. 45.3% of the land is

WATERSHED 8

developed. There are about 38 residences, and under current zoning regulations of R2A an additional 34 could be built.

Mutual Impact

A. Sector 16 gets most of the surface drainage from Horseshoe Hill and from the corresponding segment of High Ridge Road. Its own surface drainage flows in an easterly direction, discharging into the bottom wetlands area. These wetlands in turn merge into streams and lakes in Sectors 4 and 5 and eventually into Laurel Reservoir.

B. Sector 16 is a self contained land unit with interior parts fairly unaffected by exterior conditions. However, the three sides of this sector are defined by roads of high traffic volume. All properties along these roads are affected to some degree by noise and air pollution.

Bedrock Formation

This sector has a great number of fracture plane systems, running mostly in an east-west direction. The fractures are mostly short and probably offer good conditions for well drilling and construction of septic fields.

Soils

82.8% of this land has soils suitable for development (types 5 and 6), including most currently undeveloped areas. The lowest parts near the wetlands (15.7%) have poor wet soils (type 2) and a small area (1.4%) has difficult soils (type 3).

Hydrological Conditions

The terrain of Sector 16 slopes rather steeply, draining all water to the bottom of the site. The large wetlands formed there is actually the extension of Fancher Meadow, cut off by the landfill of Westchester Avenue. Through this wetlands flows the Mill River on its way to Sectors 4 and 5 and Laurel Reservoir. Several small ponds are located along Westchester Avenue. They were probably formed by drainage water flowing from Horseshoe Hill and then blocked by the highway. The EAA study locates this Sector in its Connecticut 6 watershed. The quality of the surface water throughout is described as moderately stressed.

Vegetation

The vegetation cover in this sector consists of old fields (20.8%), successional forest (40.4%) and mature mixed hardwood forest (26.8%). The rest is wetlands.

Population

1. 1974	133
2. Max. under current zoning	252
3. Max. excluding open water and wetlands	186

Under No. 3 there would be 0.6 acre per person.

Conclusions

Because of its excellent location within the town and its good soils, Sector 16 will probably continue to undergo change until it is fully developed. With similar conditions existing on higher elevations on Horseshoe Hill, there may be a need to check the cumulative effects these developments will have on the water quality in the Mill River and in the wetlands below.

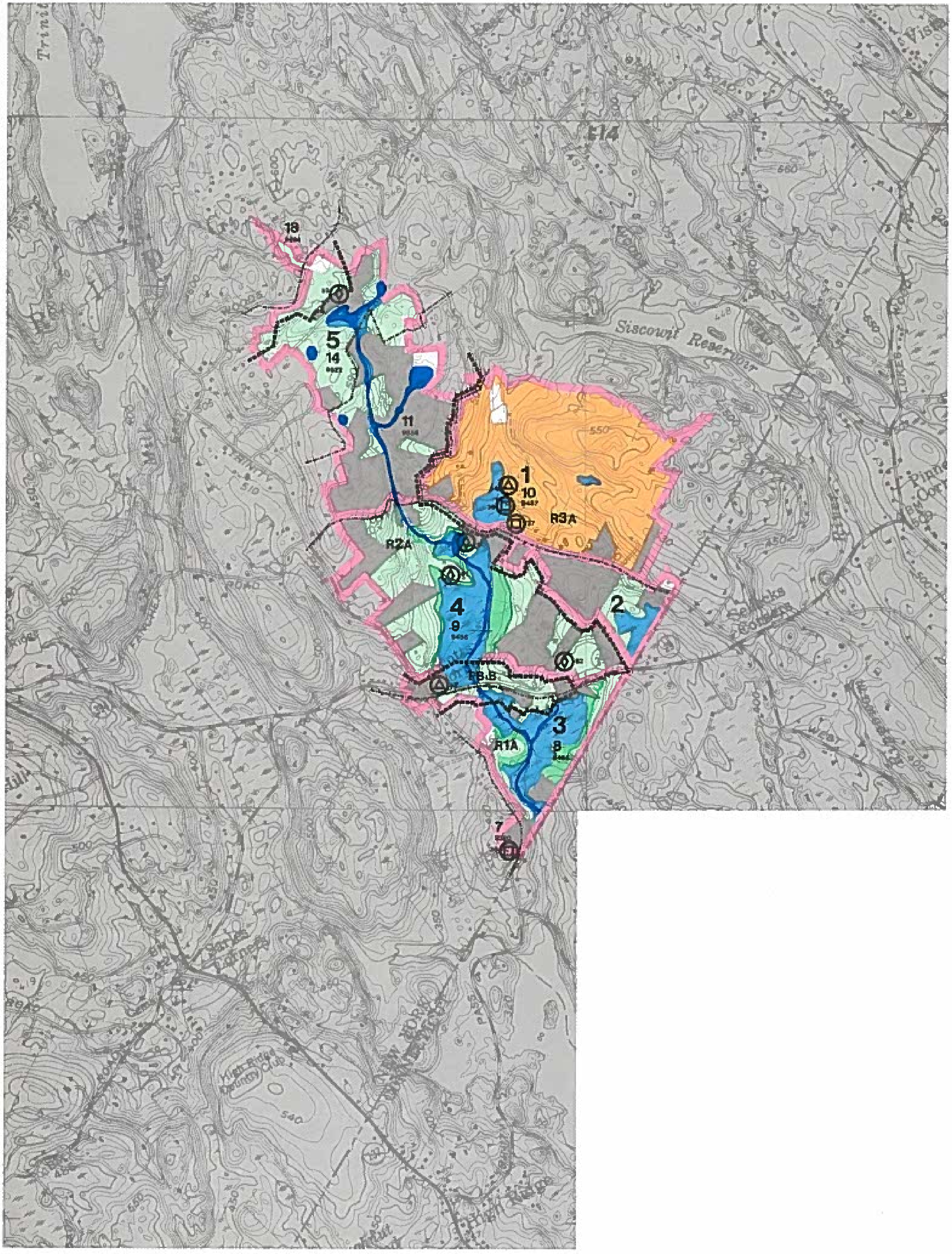
Recommendations

Town should maintain water sampling service in location indicated on the hydrology map.

Watershed 9

Barnegat

An Analysis With The Map
and Inventory Chart


Siscowit Reservoir
E14
1
10
R3A
2
3
8
4
9
5
14
11
18
R2A
R1A
7
550
540
High Ridge Country Club

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 9

land status - aug. 1974 / physical characteristics / types of vegetation in sector's percentage / soils for septic tanks / surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted	ACRES FOR CONSERV.
1	10 9457	184.2	171.0	92.8	3	5	54			.8	.4	7.4	4.0	E				68.4	14.4	5.2	7.6	58.0	21.3	20.7	•			
2	9 9456	44.0	20.7	47.0	3	8	4					2.3	5.3	E	4.2			19.5		54.7	16.3	27.9	64.7	7.4	•			
3	7 8920 9455 9 9456	104.5	84.7	81.0	1,$^{rp}/_{B}$	24	70			2.0	1.9	36.9	35.3	D				47.0		14.0	1.9	23.3	25.9	50.7			•	20.0
4	9 9456	150.0	113.5	75.6	2	19	44			2.3	1.5	31.1	20.7	E				55.5	1.5	7.1	13.5	30.2	35.2	34.6	•			23.0
5	11 9458 14 9456 9822 18 9824	155.0	85.1	54.9	2	31	32	7.9	5.1	4.1	2.6	5.0	3.2	E				45.8	45.1	3.2		59.7	33.1	7.2	•			
6																												
7																												
8																												
9																												
10																												
11																												
12																												
13																												
14																												
15																												
16																												
TOTALS		638.0	475.0			87	204	7.9		9.2		82.7																43.0

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2	●															
3	●	●		●	●											
4	●				●											
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																

	ACRES FOR CONSERV.	
1		176.0
2		41.7
3	20.0	45 6
4	23.0	93.6
5		138.0
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
TOTAL ACREAGE	43.0	494.9

critical areas in the planning process

CODA SECTORS	ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
1	34		36,37
2			
3	33		38
4		60,61,62	
5		59	
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DEVELOPMENT UNDER CURRENT ZONING REGULATIONS																	
population	209	42	329	220	220												1020
roads	−	+	+	+	+												
sewage pl.	−	−	+	−	−												
water	+	+	−	o	+												
vegetation	−	−	−	−	−												
rural char.	−	−	−	+	−												

LEGEND

- NUMBERS
- \+ ADEQUATE / − INADEQUATE
- \+ NEEDED / − NOT NEEDED
- \+ pure / o affected / − polluted
- \+ PRESERVED / − ALTERED
- \+ PRESERVED / − ALTERED

CODA SECTORS	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
population												220	122	123	42	129	636
roads												+	+	+	+	−	
sewage pl.												−	−	+	−	−	
water												+	+	+	+	+	
vegetation												+	+	+	+	+	
rural char.												+	+	−	−	+	

DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING

WATERSHED 9

Barnegat

This is a heavily developed watershed, the locale of the 35-acre eastern stretch — Planned Business District A (PB-A) — of the 53-acre Scotts Corners business area. Development is continuing, in some cases without regard to environmental constraints. One focus of expansion is an area of oak-covered hills underlaid by thin soils. Another is the Scotts Corners commercial district.

Scotts Corners has always been a hydrologically critical area. It was zoned as the town's business center without reference to environmental analyses. Ecologically it is one of the worst locations in Pound Ridge for intensive development. The area sits on or near a complex of wetlands that drains into Laurel Reservoir, about one mile away. Sewage disposal and water quality are potentially serious health hazards, aggravated by shallow soils and a ground-level water table. In 1973 a development for a shopping center involved filling in four acres of an extensive wetlands. In 1979 the work was still not finished. The construction of safe access roads and parking facilities, inadequate at present for commercial traffic, will further endanger the fragile ecology of the area.

Future development of Scotts Corners (PB-A and PB-B) may necessitate a sewage-treatment plant. One suitable location includes property adjacent to the shopping center (Town Tax Map, Section 9, parcel 3, Block 9456) and property south of Westchester Avenue (Town Tax Map, Section 8, parcel 26, Block 9455). Another possible location is behind the south stretch of Westchester Avenue in PB-A (Town Tax Map, Section 7, parcel 56, Block 9320).

Critical Areas in the Planning Process

Environmental Problem Sites — **Map Symbol**

33. Filled-in wetlands for commercial development of a shopping center.

34. A dump in the historic site of Danville, on Barnegat Road.

Natural Areas of Special Interest — **Map Symbol**

59. Pleasant small *beech grove* at the base of a rock face.

60. An impressive rockface and a pleasant *tulip-poplar grove* overlook the wetlands north of the Scotts Corners PB-B district.

61. A beautiful *Norway spruce grove* north of this wetlands.

62. A *red maple swamp* that has now been flooded is an excellent wildlife habitat.

Historic Sites — **Map Symbol**

36. Danville, a small abandoned old village on the Cole property. Mr. Cole claimed it once included 3 houses, a sawmill and a well dating back to the early 1800s. Some of the foundations are now filled by dumps.

37. Near the Cole house and spring was formerly an Indian feast site. Mr. Cole found clam shells here and other artifacts (pottery, arrowheads).

38. Cemetery.

WATERSHED 9

Barnegat
Sector 1
184.2 acres

Location and General Characteristics

Sector 1 is in the northeastern part of the watershed. Its southern border is defined by Barnegat Road, and the northern border follows large properties, parts of which extend into Watershed 6. This sector has a richly sculptured topography, with elevations varying from 570 to 500 feet (near Barnegat Road).

Existing Roads and Accessibility

Barnegat Road is the main access to this land. With the exception of the peripheral areas, there are no roads leading to the interior highlands.

Present Stage of Development

There are a few developed properties, most of them off Barnegat Road; 92.8% of the land is considered undeveloped. There are several large private properties that could be subdivided (Town Tax Map, Section 10, parcel 8, 23.067 acres; parcel 9, 35.0 acres; parcel 11, 74.461 acres; parcel 12, 28.0 acres). There are about 5 residences, and under current zoning regulations of R3A an additional 54 could be built.

Mutual Impact

A. This sector is not affected environmentally by adjoining lands. Environmental changes from future development could affect Sectors 3 and 4.

B. All areas of Sector 1 above Barnegat Road are fairly well protected from physical effects of traffic and development. However, future development would necessitate road building, and the secluded conditions of this land would be changed.

Bedrock Formation

There are numerous bedrock-fracture-plane systems, owing to the complex composition of the underlying rock formation. The longest of these fractures crosses the watershed boundary and connects the area of the future Siscowit Reservoir with the wetlands area near Barnegat Road.

Soils

This sector has a very distinctive configuration of different types of soils. A north-south valley connecting to the large wetlands in Sector 4 has soils not suitable for development (type 2). The same type of soil stretches in a narrow band perpendicular to the valley toward the Connecticut border. These poor soils occupy 20.7% of the sector. In the western part fairly steep slopes above the valley have thin soils over shallow bedrock (type 4), constituting 21.3% of the land. The remaining areas (68%), one along Barnegat Road and another located in the highlands on the watershed boundary, have soils suitable for development (types 5 and 6).

Hydrological Conditions

The topography of this sector indicates a simple drainage system toward one wetlands area located near Barnegat Road. This drainage basin constitutes part of the headwaters of the watershed. There are no streams or significant ponds in this sector. The EAA study locates this sector in its Connecticut 8 watershed. The surface water quality throughout is moderately stressed.

Vegetation

This sector is heavily wooded, mostly with mature mixed hardwood forest (68.4%). The highest elevations have oak forest (14.4%). In some areas along Barnegat Road, where the forest was cleared for development, there are old fields (5.2%) and successional forest (7.6%).

Population

1. 1974	117
2. Max. under current zoning	209

WATERSHED 9

3. Max. under new zoning (R5A) 129
Under No. 3 there would be 1.4 acres per person.

Conclusions

Sector 1 offers possibilities for intensive development, but with the construction of Siscowit Reservoir to the north it will be difficult to build access roads. Barnegat Road would become the main traffic artery for the entire area and probably require widening.

Recommendations

Upzone the entire undeveloped area to R5A to reduce density and road congestion in the future and to preserve the rural character of Barnegat Road. This will require 139 acres of land, including Parcels #6, 8, 9, 11 and 12 of Section 10.

Sector 2
44.0 acres

Location and General Characteristics

Sector 2 lies between Barnegat Road and the Connecticut line. Its main topographical characteristics are a 70-foot-high hill and a wetlands.

Existing Roads and Accessibility

Barnegat Road is the northern boundary of the sector and provides access to all properties.

Present Stage of Development

Sector 2 is fully subdivided, with the exception of one property containing the wetlands area. There are about 8 residences, and under current zoning regulations of R3A an additional 4 could be built.

Mutual Impact

A. This sector is not affected environmentally by any other land. Its own environmental conditions may affect Sector 4.

B. Most houses are built along Barnegat Road. With the potential development in Sector 1, these residences could be affected by increased traffic.

Bedrock Formation

There are several bedrock-fracture-plane systems crisscrossing this area. Their predominant direction is south to west, indicating an underground drainage link between Sector 2 and the wetlands area in Sector 3 near Scotts Corners.

Soils

Although this sector is almost fully developed, soils are generally of poor quality, except for a narrow strip along Barnegat Road. It has soils suitable for development (type 6) which occupy 27.9% of the land. The remaining soils (64.7%) are difficult for development (types 3 and 4) or wetlands area 7.4% (type 2).

Hydrological Conditions

The surface drainage flows in two directions: eastward into the wetlands area in this sector and westward toward the large wetlands in Sector 4. The EAA study locates this sector in its Connecticut 8 watershed. The surface water quality throughout the sector is moderately stressed.

Vegetation

Intensive development in Sector 2 has eliminated most old forest. 54.7% of the land has old-field vegetation while 16.3% has new successional forest. Mature mixed hardwood forest remains only around the wetlands area, which is not subdivided. This forest covers 19.5% of the area.

Population

1. 1974 28

WATERSHED 9

2. Max. under current zoning 42
Under No. 2 there would be 1.0 acre per person.

Conclusions

Sector 2 offers little possibility for further development. The only parcel not already developed has wet soils and is unlikely to be extensively built upon.

Recommendations

Include the eastern part of the property around the wetlands area in REP zone. This will take about 13.0 acres.

Sector 3
104.5 acres

Location and General Characteristics

Sector 3 is in the southern corner of the watershed. On the east it is bordered by the Connecticut state line and on the north by the commercial area of Scotts Corners. Its main topographical characteristic is the big wetlands area, covering 35.3% of the sector, on the northern edge of which is the commercial district.

Existing Roads and Accessibility

Westchester Avenue runs along the northern boundary of this sector. It is one of the main highways serving Pound Ridge. Access to Scotts Corners is directly off this road. Large wetlands occupying the center of the land make access to several small developments in the southern part rather difficult. However, these areas are accessible from Connecticut.

Present Stage of Development

This is an area of intensive development in small lots, both in commercial and residential parts. Because of the wetlands, 81.0% of the area is undeveloped. There are about 24 residences and commercial buildings, and under current zoning regulations of PB-A and R1A an additional 70 could be built.

Mutual Impact

A. Sector 3 is an area that is environmentally connected to all other sectors in the watershed. The cumulative effect of environmental conditions in the watershed are transmitted from Sector 3 directly into the Laurel Reservoir in Connecticut.

B. The northern part of the sector, where the commercial area of Scotts Corners is located, is severely affected by traffic coming from Pound Ridge as well as New Canaan and other municipalities in the area. The residential part located at the edge of the wetlands is secluded and well protected from the activities in the commericial zone.

Bedrock Formation

There are few bedrock-fracture-plane systems in this area, but they indicate underground drainage linking the developed areas along Barnegat Road with wetlands north of Westchester Avenue and Scotts Corners with the wetlands south of Westchester Avenue. These fractures in the bedrock extend even further across the watershed boundary, and reach another wetlands in Sector 5 of Watershed 8.

Soils

Soils in Sector 3 are generally unsuitable for development: 50.7% of the area has alluvial and organic soils which are extremely wet (types 1 and 2). 25.9% (along the Connecticut border) has difficult and rocky soils (type 4); and only 23.6% has soils suitable for development (type 6), located in the north-central part of the sector, forming a narrow strip along Westchester Avenue, and in one small area in the western part.

Hydrological Conditions

The large wetlands is the recipient of all surface drainage from Scotts Corners and small developments situated on higher ground above

WATERSHED 9

it. The study of bedrock formation indicates that underground drainage in that sector is also connected to the wetlands. Large parts of the wetlands were filled in preparation for the construction of the shopping center. The EAA study locates this sector in its Connecticut 8 watershed. The surface water quality throughout is moderately stressed. The study does not mention the quality of well water in Scotts Corners. CODA noted the complaints made by some residents and users about the bad-tasting drinking water.

Vegetation

Most of the area is covered with wetlands vegetation, but mature mixed hardwood forest occupies the western and eastern corners of the wetlands. This constitutes 47% of the area. At the edges of the commercial area there is mostly old field vegetation (14.0%) and, in spots, young successional forests (1.9%).

Population

1. 1974	84
2. Max. under current zoning	329
3. Max. excluding open water, wetlands, and C zone	123

Under No. 3 there would be 0.8 acre per person.

Conclusions

Sector 3 may continue to develop in the commercial area and on both sides of the wetlands. Because of one-acre zoning, this development would create higher density than in any other part of Pound Ridge. The proximity of high-density development to the already affected wetlands area should be considered undesirable. The bad tasting drinking water in Scotts Corners could be traced to developments on poor soils north of Barnegat Road (see Sector 5).

Recommendations

1. Establish a C zone from the edge of the wetlands to the contour line at elevation 380 feet. This will include about 20 acres.
2. The remaining dry land in the sector should be declared a REP zone.
3. Municipal sewage and drainage should be built for the commercial area and adjacent to high-density residential areas.

Sector 4
150.0 acres

Location and General Characteristics

Sector 4 lies in the west-central part of the watershed. In the south it is bordered by Westchester Avenue and the Scotts Corners commercial area. Its northern boundary follows Barnegat Road. Its main topographical feature is a wide stream valley with large wetlands running north-south. Elevation varies from 370 to 580 feet in the northwest and 400 feet in the southeast.

Existing Roads and Accessibility

Westchester Avenue and Barnegat Road provide access to all parcels from south and north. A few properties are accessible from Trinity Pass, which runs near the western boundary of this sector. One long driveway (Woodland Road) provides access to the interior of the eastern part.

Present Stage of Development

With the exception of a few medium-size parcels, this sector is fully subdivided and fairly well developed. Because of the large wetlands area, 34.6% of the land is undevelopable. There are about 19 residences, and under current zoning regulation of R2A an additional 44 could be built.

Mutual Impact

A. Sector 4 is an area in which there is linkage between drainage basins in Sectors 1 and 5 and the wetlands of Sector 3. It is a transfer

WATERSHED 9

zone for all environmental conditions in the surrounding lands.

B. This sector is surrounded by roads that carry a large volume of traffic leading into Scotts Corners. All properties located on the perimeter of this area are affected by traffic, noise, and air pollution.

Bedrock Formation

There are numerous bedrock fracture planes crisscrossing this sector. The largest concentration is under the wetlands. The system of the fractures reaches the upper elevation of dry land on both sides of the lowlands. This indicates a strong underground drainage system complementing the surface drainage from the highlands into the wet area and probably explains the existence of this wetlands.

Soils

Sector 4 is divided into three distinctive categories of soils: the western highlands, occupying 30.2% of the area, have soils suitable for development (types 5 and 6); the central part, where the wetlands are 35.2%, has alluvial and organic soils that are extremely wet (types 1 and 2); and the eastern uplands (34.6%) have soils difficult for development, with poor drainage and ponding (type 3). Despite the poor soils, the eastern part is the most subdivided and is almost fully developed.

Hydrological Conditions

Sector 4 offers simple drainage conditions where the stream valley and large wetlands are the recipient of all surface and underground water. The stream running through the wetlands originates in Sector 5 and continues its course through Scotts Corners into Sector 3 and, eventually, into Laurel Reservoir. The wetlands extends northward along Barnegat Road into the lowest portion of Sector 1. The EAA study locates this sector in its Connecticut 8 watershed. The surface water quality throughout the sector is moderately stressed.

Vegetation

Large parts of the sector are covered with wetlands vegetation, but mature mixed hardwood forest occupies the western highlands and the eastern edge of the wetlands. This constitues 55.5% of the land. The eastern area, where there is intensive development, has mostly open field vegetation and young successional forest. These together occupy 20.6% of the area. An impressive rockface and a pleasant tulip-poplar grove overlook the large wetlands north of the Scotts Corners PB-B district. There is a beautiful Norway spruce grove north of this wetlands. A red maple swamp that has now been flooded is an excellent wildlife habitat. For example, surveyors saw a bittern and a pileated woodpecker fly up from the swamp.

Population

1. 1974	66
2. Max. under current zoning	220
3. Max. excluding open water, wetlands, and C zone	122

Under No. 3 there would be 1.2 acres per person.

Conclusions

This sector has limited potential for further development. The best areas are located off Trinity Pass. Additional properties can be expected to be developed off Woodland Road, although the poor soils in that area will make intensive development difficult. The surface and underground drainage from the Woodland Road area finds its way into the wetlands at Scotts Corners. The bad taste of well water reported in Scotts Corners could be the result of the seepage of polluted waters.

Recommendations

1. Establish C zone from the edge of the wetlands to contour line at elevation 400 feet. This will include about 23.0 acres.

2. The remaining dry land in this sector should be declared a REP zone. This would include about 93.0 acres.

WATERSHED 9

Sector 5
155.0 acres

Location and General Characteristics

Sector 5 lies in the northern part of the watershed. Its main topographical characteristic is a narrow stream valley surrounded by flat plateaus on its western, northern, and eastern sides.

Existing Roads and Accessibility

Barnegat Road in the south and East Woods Road in the north offer the main access to the sector. A network of dead-end streets extends from these parallel roads, providing service to interior areas. However, these two systems are not connected.

Present Stage of Development

This sector is fully subdivided, and 50% of its area is developed. There are about 31 residences, and under current zoning regulations of R2A an additional 32 could be built.

Mutual Impact

A. Sector 5 constitutes the headwaters of the watershed, and it is not affected environmentally by other sectors. Its environmental conditions are affecting Sectors 3 and 4.

B. Most of the properties in Sector 5 are away from major road arteries and are served by local streets without serious problems of traffic pollution.

Bedrock Formation

There are several small bedrock-fracture-plane systems underlying the northern part of the sector that connect the upland areas with Watershed 4 and 6 in the more intensively developed region of East Woods Road. This system may create underground seepage across watershed boundaries. One long fracture runs in a north-south direction. It parallels the stream valley and reaches the wetlands area. This indicates a strong underground drainage system linking the intensive development of Barnegat Road with Scotts Corners.

Soils

The northeastern part of the sector and the western bank of the stream (59.7% of the land) have soils suitable for development (types 5 and 6). On the eastern uplands near Kinnicutt and Davids Lane is an area of alluvial and organic soil (7.2%) unsuitable for development (type 2). This is a part of the watershed that is already intensively developed. The remaining 33.1% consists of soils difficult for development, with poor drainage and shallow bedrock (types 3 and 4).

Hydrological Conditions

Sector 5 has simple drainage conditions, with a stream valley that is a recipient of all surface water. The stream continues to flow through Sectors 3 and 4 and ends eventually at Laurel Reservoir. The EAA study locates this sector in its Connecticut 8 watershed. The surface water quality throughout is described as slightly stressed.

Vegetation

This sector is heavily wooded, with only two areas (3.2%) covered by old field vegetation in the vicinity of two ponds in the northern and western part. The remaining wooded land is composed of mature mixed hardwood forest (45.8%) and of the largest oak forest found in Pound Ridge (45.1%), located on the eastern uplands.

Population

1. 1974	108
2. Max. under current zoning	220

Under No. 2 there would be 0.7 acre per person.

Conclusions

It is to be expected that this sector will become fully developed in the future, despite having some soils unsuitable for development and a large percentage of difficult soils creating prob-

WATERSHED 9

lems for the location of septic fields. The configuration of bedrock fracture planes suggests the possibility of underground drainage of some polluted water into the areas near Scotts Corners or into Watersheds 4 and 6. This would include parts directly related to fresh water reservoirs. It is conceivable that the condition of bad-tasting water in Scotts Corners is related to the developments north of Barnegat Road.

Recommendations

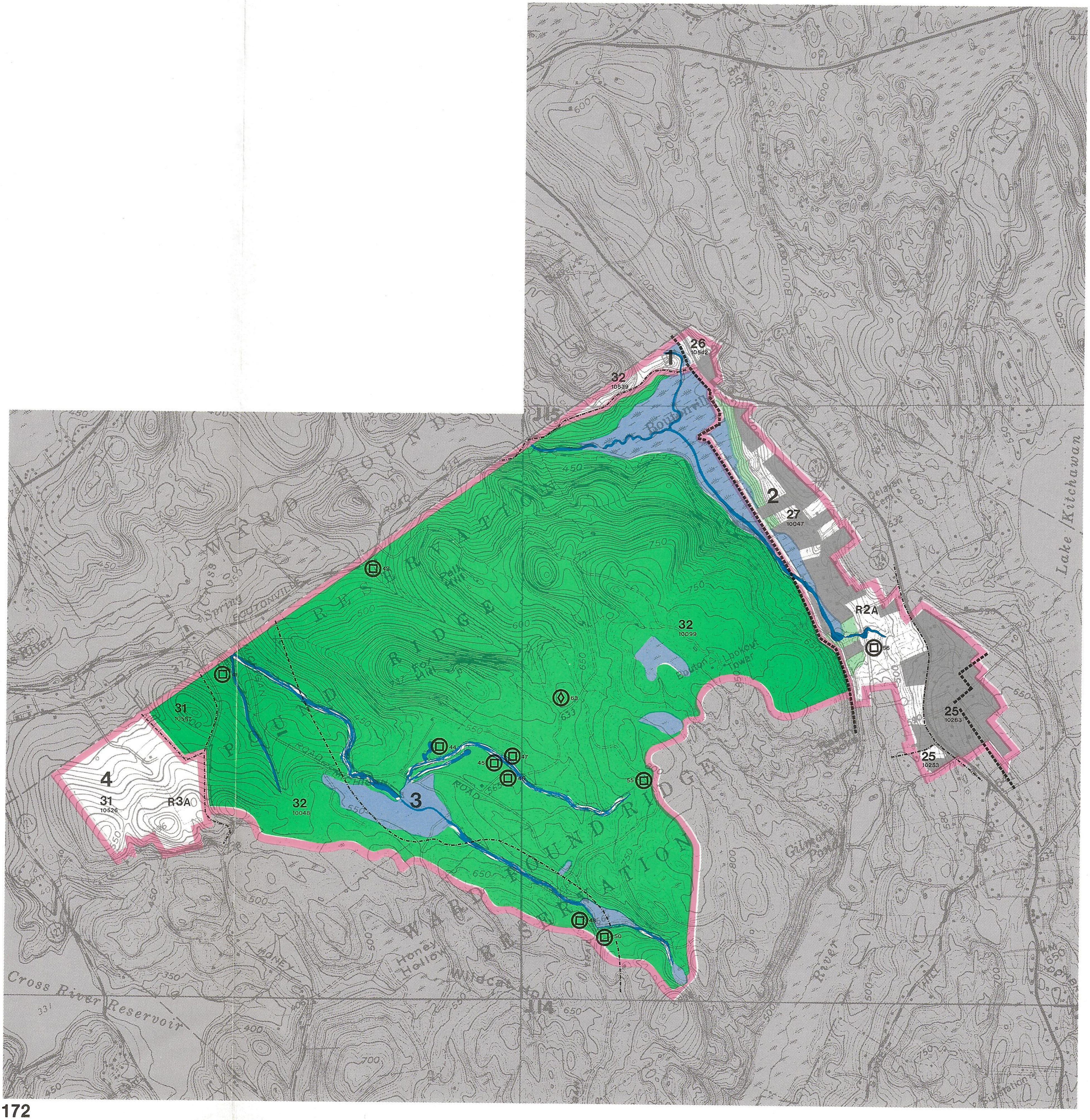
1. Include entire area of this sector in REP zone. This will include (excluding wetlands and open water) about 145 acres.
2. The town should maintain water sampling service in location indicated on the hydrology map.

PRUP Fund Raising Events

Watershed 10

Ward Pound Ridge Reservation

An Analysis With The Map
and Inventory Chart



1
26
10542
32
10539
2
27
10047
R2A
56
32
10099
Bouton Lookout Tower
63
25
10263
25
10253
55
3
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50
43
41
31
10537
4
31
10526
R3A
32
10048
WARD POUND RIDGE RESERVATION
WARD POUND RIDGE RESERVATION
Cross River Reservoir
Lake Kitchawan
Honey Hollow
Gilmore Pond
River

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 10

land status - aug. 1974 / physical characteristics / types of vegetation in sector's percentage / soils for septic tanks / surface water

CODA SECTORS	TAX MAP REFERENCES section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted
1	26: 10526, 10527, 10538	20.5	15.2	73.9	2 3	4	7					1.6	8.0	E	14.7					10.0	67.3	72.0	28 0		•		
2	25: 10283, 10047	205.2	110.4	53.8	2 3	48	41					20.6	10.0	E				31.4		54.0	4.6	82.0	5.7	12.3	•		
3	32: 10048, 10049	1432.0			–			1432.0	100.0			93.0	6.5	D	1.0		29.8	29.8	29.8	.7	2.1	33.3	33.3	33.3	•		
4	31: 10528, 10537	115.1	93.2	80.9	3	1	30	19.0	16.5					E	7.9					49.7	42.4	60.8	39.2		•		
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
16																											
TOTALS		1773.0	218.8			53	78	1451.0				115.2															

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

ACRES FOR CONSERV.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	●															
22.0	2																
	3																
	4																
	5																
	6																
	7																
	8																
	9																
	10																
	11																
	12																
	13																
	14																
	15																
	16																

CODA SECTORS	ACRES FOR CONSERV.	TOTAL ACREAGE
1		18.9
2	22.0	162.6
3		–
4		96.1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
	22.0	277.6 TOTAL ACREAGE

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
		56
	63	41, 43, 44, 45, 46, 47, 48, 50, 55

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

DEVELOPMENT UNDER CURRENT ZONING REGULATIONS	CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	population	38	311	–	86													435
	roads	+	+	–	–													
	sewage pl.	–	–	–	–													
	water	+	+	+	+													
	vegetation	+	–	+	+													
	rural char.	+	–	+	–													

LEGEND

- NUMBERS
- \+ ADEQUATE / – INADEQUATE
- \+ NEEDED / – NOT NEEDED
- \+ pure / o affected / – polluted
- \+ PRESERVED / – ALTERED
- \+ PRESERVED / – ALTERED

361	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CODA SECTORS	DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING
													86	–	237	38	population	
													–	–	+	+	roads	
													–	–	–	–	sewage pl.	
													+	+	+	+	water	
													+	+	+	+	vegetation	
													+	+	+	+	rural char.	

WATERSHED 10

Ward Pound Ridge Reservation

This watershed in 80% of its area contains a portion of Ward Pound Ridge Reservation. On its eastern flank there is a strip of land containing most of the development in the watershed. This is the Boutonville section of Pound Ridge. On the western tip there is an undeveloped area of potential residential subdivision.

The Ward Pound Ridge Reservation is a 4,700 acre conservation area managed by the Westchester County Department of Parks, Recreation and Conservation. Some 3,500 acres fall in Pound Ridge.

Drainage from the Ward Pound Ridge Reservation flows in all directions from Dancing Rock (836 feet) in the south central part an escarpment that begins at the southern corner near the Bedford town line. Drainage to the southeast falls in Watershed 2. Drainage flowing off the escarpment to the northeast borders Watershed 1 and joins the drainage from this watershed at its exit. Drainage to the north joins with the drainage from Watershed 1 and the Cross River and flows southwest into the Cross River Reservoir. The westerly drainage flows west, primarily from the Honey Hollow wetlands, into the eastern end of the Cross River Reservoir in Watershed 11.

The importance of the reservation as a local and regional water source is well known. The rugged natural topography, vegetation, and wildlife of this area have also been primary factors in designating it as county parkland. Be cause of the difficult accessibility to much of it, it has also remained a significant archaeological preserve.

Critical Areas in the Planning Process—1973

Natural Areas of Special Interest **Map Symbol**

63. Ward Pound Ridge Reservation — County Park.

Historic Sites **Map Symbol**

41. Cemetery.
43. Trailside Nature Museum.
44. Old colonial foundations.
45., 46., 47. Unique geological sites, outcroppings.
48. Archaeological site, rock mounds.
50. Archaeological site, rock mounds.
55. Archaeological site, Spy Rock Shelter. Major Shelton, American Revolutionary War.
56. Archaeological site, rock mounds bordered by rock wall.

The following sites can be most easily located from the orientation points of sites listed previously in Watersheds 1 and 2:

Historic Site #1 (Watershed 1, Lake Kitchawan) — About 1600 feet west of this site is an archaeological sand pit indicating occupation by humans from Paleo-Indian times, 10,000 years ago.

Historic Site #11 (Watershed 2, Stone Hill River) — About 800 feet north of this site is the Bear Rock Petroglyph. Here Indian carvings of black bear and other probable animals and birds exemplify magico-religious ceremonialism as practiced by aboriginal inhabitants of Westchester County.

WATERSHED 10

176

Ward Pound Ridge Reservation

Sector 1

20.558 acres

Location and General Characteristics

Sector 1 is in the northernmost part of the watershed. It is a narrow strip of land between the large wetlands of Boutonville and the northern town line.

Existing Roads and Accessibility

Salem Road intersects with Boutonville Road on this land, and they provide access to all properties.

Present Stage of Development

There are about 4 residences, and under current zoning regulations of R2A and R3A an additional 7 could be built.

Mutual Impact

A. This land is environmentally connected to the large wetlands in the Boutonville section of Pound Ridge in Sector 3.

B. Lying at the crossing of two roads, all properties of this sector are affected by traffic generated from other locations.

Bedrock Formation

No surveys of bedrock-fracture-plane systems in this area have been made.

Soils

72.0% of the undeveloped land has soils suitable for development (types 5 and 6). The eastern and western parts of the sector have poor soils with shallow bedrock (type 4) and occupy 28.0% of the land.

Hydrological Conditions

There are no surface bodies of water in this sector. Rainwater is drained directly into the wetlands of Boutonville, which is part of the Cross River Watershed area. The EAA study locates this sector in its watershed HR 31-P44-35-P109-6-7. The surface water quality throughout this area is described as moderately stressed.

Vegetation

Young successional forest covers 67.3% of the land. Some old fields lie along Boutonville Road (10.0%), and one area of conifers (14.7%) is located on the town boundary line.

Population

1. 1974	14
2. Max. under current zoning regulations	38

Under No. 2 there would be 0.5 acre per person.

Conclusions

Sector 1 has little potential for further development. In terms of its location it is related to Lewisboro rather than to Pound Ridge.

Recommendations

None.

Sector 2

205.281 acres

Location and General Characteristics

Sector 2 is on the eastern boundary of the watershed. It is bounded on the west by the large wetlands of Boutonville and the escarpment of the Pound Ridge Reservation. The site has a sloping topography from Salem Road in the east toward the wetlands. Elevation ranges from 570 to 420 feet.

Existing Roads and Accessibility

Park View Road forms a spine through the center of the sector and provides direct access

WATERSHED 10

to properties located on both sides. This road connects with Salem Road in two locations.

Present Stage of Development

Sector 2 is totally subdivided and already well developed. There are about 48 residences, and under current zoning regulations of R2A an additional 41 could be built.

Mutual Impact

A. This sector, lying at the edge of the watershed, is not affected by other areas. Its own environmental conditions are transmitted directly into the wetlands on the border of Sector 3. These wetlands drain into Cross River, which enters Cross River Reservoir.

B. All properties in this area are adjacent to the local distributor road, which carries mainly local traffic and has severe problems of air and noise pollution.

Bedrock Formation

There are two bedrock fracture planes in this area; one is located in the southern part and the other in the middle, both running in a generally north-south direction with a slight declination toward the wetlands. This indicates the possibility of underground channels connecting the wetlands area with surface water draining off Park View Road. Underlying this sector is a narrow stratum of marble. This is waterbearing rock offering high yields in the wells but at the same time vulnerable to pollution.

Soils

82.0% of the sector has soils suitable for development (types 5 and 6). In the southwestern corner, east of Salem Road, there are rocky soils with shallow bedrock (type 4) that occupy 5.7%. This site is already fully developed. The remaining 12.3% is wetlands.

Hydrological Conditions

The large wetlands of Boutonville located at the lowest elevation of the western boundary is the recipient of all drainage in the sector. Hydrologically it is connected with Cross River and the Cross River Reservoir. The EAA study locates this sector in its watershed HR 31-P44-36-14. The surface water quality throughout is slightly stressed.

Vegetation

The southwestern part of the sector and the narrow strip along the wetlands in the northwestern part are covered by mixed hardwood forest (31.4%). The remaining land contains old fields (54.0%) and successional forest (4.6%).

Population

1. 1974	168
2. Max. under current zoning	311
3. Max. excluding wetlands and C zone	237

Under No. 3 there would be 0.8 acre per person.

Conclusions

This sector is already well developed, and no major changes in its physical character are expected. It has good soils for development, and the vegetation cover does not call for special protection. The wetlands, however, are considered one of the largest aquifer recharge areas in Pound Ridge. They overlay a marble bedrock formation that is the main waterbearing stratum.

Recommendations

1. Maintain existing forest cover at the edge of the wetlands and encourage tree planting in the central part where there are now open fields.

2. Include the entire edge of the wetlands in C zone. This zone should be 200 feet wide or reach the contour line at elevation 450 feet. It would stretch from Boutonville at the intersection of Salem Road and Park View Road approximately one mile south. It would be approximately 22 acres.

WATERSHED 10

Sector 3
1,430.0 acres

Location and General Characteristics

This sector occupies the heart of the Ward Pound Ridge Reservation. It is a county park and conservation area.

Existing Roads and Accessibility

The one access to the reservation from Pound Ridge leads from Stone Hill Road through Honey Hollow Road and Michigan Trail. Other entrances are from Salem Road and from Route 121 in Bedford. There is a network of trails leading to various scenic areas in the reservation.

Present Stage of Development

This parkland is tax-exempt and the property of Westchester County.

Mutual Impact

A. This area is connected to Cross River and the Cross River Reservoir.
B. None.

Bedrock Formation

The geological surveys indicate numerous bedrock fracture planes in the eastern part of the sector running predominantly in a northeast direction parallel to the Boutonville wetlands. This indicates underground channels draining into Cross River valley.

Soils

There is a rather even distribution of suitable (type 5), difficult (types 3 and 4), and bad (types 1 and 2) soils for development (33.3% each). However, the classification is not relevant in this sector.

Hydrological Conditions

Surface water drains in a northwestern direction, forming the watershed of Cross River. The EAA study does not include the reservation area.

Vegetation

This sector was not included in the vegetation study.

Population

Not applicable.

Conclusions

None.

Recommendations

None.

Sector 4
115.1 acres

Location and General Characteristics

This sector is in the western corner of the watershed, lying on the Lewisboro town line. Its eastern boundary runs along School House Road and the Ward Pound Ridge Reservation.

Existing Roads and Accessibility

Honey Hollow Road and School House Road provide the main access. There is also one driveway from Salem Road leading into the center.

Present Stage of Development

Several medium-size properties are located off the two roads serving this area. Most of the land is held in a large private property (Town Tax Map, Section 31, parcel 11, 62.275 acres). There is also one parcel of tax-exempt land (Town Tax Map, Section 31, parcel 1, 19 acres). There is one residence, and under current zoning regulations of R3A an additional 30 could be built.

WATERSHED 10

Mutual Impact

A. This area is connected with Cross River and the Cross River Reservoir.

B. This land is well secluded and is not affected by external conditions.

Bedrock Formation

No surveys or bedrock-fracture-plane systems have been made in this area.

Soils

62.8% of Sector 4 has soils suitable for development (types 5 and 6). The remaining 39.2% of the land has soils with shallow bedrock and poor drainage (types 3 and 4).

Hydrological Conditions

There is no open water or wetlands in this sector. The land has a gently sloping topography and drainage pattern in a northerly direction toward Cross River. The EAA study does not include this area.

Vegetation

Sector 4 has mostly old field vegetation (49.7%) and successional forest (42.4%). The tax-exempt land in the northeastern corner is mostly covered with conifers (7.9%).

Population

1. 1974	3
2. Max. under current zoning, excluding tax-exempt land	86

Under No. 2 there would be 1.3 acres per person.

Conclusions

This sector has good potential for future development. The effects of increased population will be felt mostly in Cross River.

Recommendations

None.

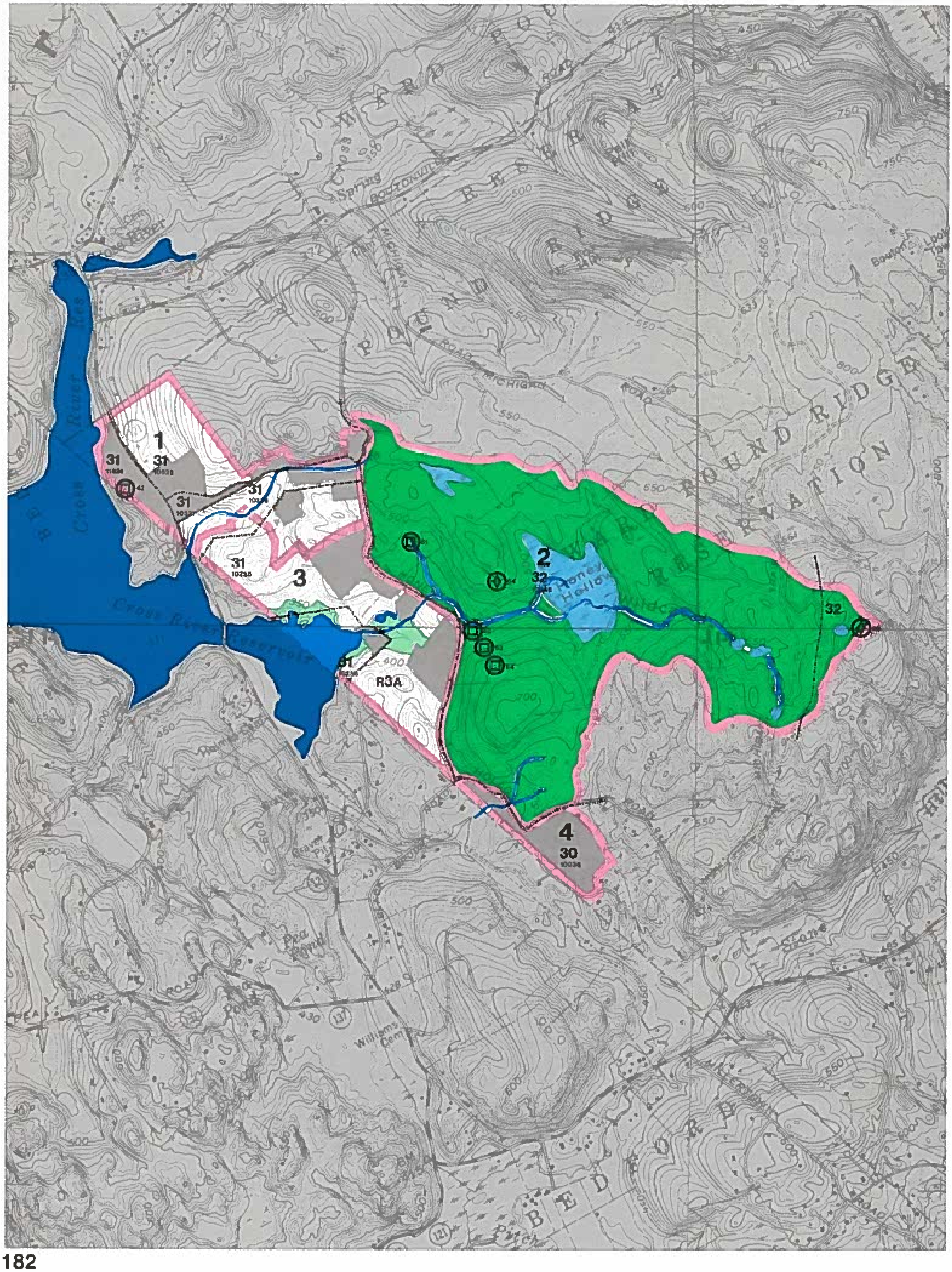
Townspeople Attend PRUP Presentation

Mountain Laurel Under Forest Cover — A.E. Bye

Watershed 11

Honey Hollow

An Analysis With The Map
and Inventory Chart



1
2
3
4
R3A
31
32
30
Cross River Reservoir
Cross River
Honey Hollow
WARD POUND RIDGE RESERVATION
POUND RIDGE
BEDFORD
Pea Pond
Williams Cem
Stone

INVENTORY OF CODA ECOLOGICAL LAND SECTORS IN WATERSHED # 11

land status - aug. 1974 / physical characteristics / types of vegetation in sector's percentage / soils for septic tanks / surface water

CODA SECTORS	TAX MAP REFERENCE section & block	SECTOR ACREAGE	UNDEVELOPED land acreage	UNDEVELOPED land sector %	zoning district	RESIDENT'L UNITS present	RESIDENT'L UNITS additional	TAX EXEMPT LAND acreage	TAX EXEMPT LAND sector %	OPEN WATER acreage	OPEN WATER sector %	WETLANDS acreage	WETLANDS sector %	ACCESS BY ROADS	conifer plantation	hemlock	hemlock hardwood	mixed	oak	old field	succession forest	GOOD %	DIFFICULT %	BAD %	TESTED CONDITIONS pure	TESTED CONDITIONS affected	TESTED CONDITIONS polluted
1	11 10265 31 10516 31 10526 31 10527 31 11824	114.8	86.1	75.0	3	14	24			2.1	1.8			E	1.8				14.1	39.9	42.4	67.6	32.4		•		
2	32 10048 31 10526	450.0			–			450.0	100.0			24.0	5.3	D				94.6				6.6	87.7	5.5	•		
3	31 10255 31 10526	140.5	78.5	55.8	3	24	23			11.3	8.0	1.0	.7	E				4.7	5.7	13.7	67.2	22.5	77.5		•		
4	32 10036	29.0	3.7	12.7	3	11	1			.5	1.8	.9	3.4	E				60.8		37.8		74.4	22.2	3.4	•		
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
16																											
TOTALS		734.4	168.3			49	48	450.0		13.9		25.9															

MUTUAL ENVIRONMENTAL IMPACT OF CODA SECTORS WHEN FULLY DEVELOPED

acreage suitable for development excluding conservation (C), open water and wetland areas

ACRES FOR CONSERV.			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	112.7	1		●														
	–	2																
11.0	117.2	3		●														
	27.6	4		●														
		5																
		6																
		7																
		8																
		9																
		10																
		11																
		12																
		13																
		14																
		15																
		16																
11.0	257.5	TOTAL ACREAGE																

critical areas in the planning process

ENVIRONMENTAL PROBLEM SITES	NATURAL AREAS OF SPECIAL INTEREST	HISTORIC SITES
		42
	64,65	51,52,53,54

SUMMARY: OVERALL IMPACT ON THE WATERSHED AREA

	CODA SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DEVELOPMENT UNDER CURRENT ZONING REGULATIONS	population	133	–	164	42												
	roads	+	+	+	+												
	sewage pl.	–	–	–	–												
	water	+	+	+	+												
	vegetation	+	+	+	+												
	rural char.	+	+	+	+												

339

LEGEND

- NUMBERS
- \+ ADEQUATE / – INADEQUATE
- \+ NEEDED / – NOT NEEDED
- \+ pure / o affected / – polluted
- \+ PRESERVED / – ALTERED
- \+ PRESERVED / – ALTERED

312

	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CODA SECTORS
DEVELOPMENT UNDER FUTURE ENVIRONMENTAL ZONING													42	137	–	133	population
													+	+	–	+	roads
													–	–	–	–	sewage pl.
													+	+	+	+	water
													+	+	+	+	vegetation
													+	+	+	+	rural char.

WATERSHED 11

Honey Hollow

This watershed is wedged between Watershed 10 and Watershed 2. Its headwaters originate in the southern part of Ward Pound Ridge Reservation and its low point is the shore of the Cross River Reservoir. The watershed's triangular form rests its base on the Bedford-Pound Ridge town line. 61% of the land belongs to the reservation with a large wetlands of Honey Hollow in the center of that area.

The strip of land along the town line is divided into three land sectors with varying density of residential developments.

Since the habitable area is in proximity to a public water supply, its development should be carefully monitored to prevent environmental pollution of the reservoir.

Critical Areas in the Planning Process—1973

Natural Areas of Special Interest **Map Symbol**

64. Caves in rock knolls. *Leatherman's* Cave.

65. *Dancing Rock.* Elevation 836 feet. Observation point. High point of Ward Pound Ridge Reservation drainage routes.

Rock outcroppings from this point and extending southwest to Honey Hollow Road, near where the power line follows Michigan Trail and crosses Honey Hollow Road, is an ancestral denning area of the Northern Copperhead (Agkistrodon mokeson mokeson).

Historic Sites **Map Symbol**

42. Cemetery.
51. Waterfall.
52., 53., 54. Old Foundations.

WATERSHED 11

Honey Hollow
Sector 1
114.8 acres

Location and General Characteristics

This sector lies in the northwestern corner of the watershed; in the west it touches Cross River Reservoir and forms a corner with the town line.

Existing Roads and Accessibility

Cross River Road (Route 121) and Honey Hollow Road provide access to all parts of this sector.

Present Stage of Development

Sector 1 is composed of several medium-size properties. There are about 14 residences, and under current zoning regulations of R3A an additional 24 could be built.

Mutual Impact

A. This sector lies at one of the exits of Watershed 11 and is connected with Sector 2, which is a part of Ward Pound Ridge Reservation. Therefore there are no adverse environmental effects from outside the sector. If the sector is fully developed, its adverse conditions would affect the Cross River Reservoir.

B. Most of the properties in this sector are adjacent to the roads. Route 121 is heavily traveled and subject to some noise and air pollution.

Bedrock Formation

There has been no survey of bedrock-fracture-plane systems in this area.

Soils

67.6% of the soils in this area are suitable for development (types 5 and 6). The remaining 32.4% has soils with either shallow bedrock or poor drainage (types 3 and 4). Most of the developed area is located on soils with shallow bedrock.

Hydrological Conditions

One stream flowing from Ward Pound Ridge Reservation (Sector 2) crosses the southern part of this sector and enters Cross River Reservoir near Route 121. This stream is the main drainage channel for surface waters in this sector. The northern part of the sector drains directly into the reservoir. The EAA study did not include this area.

Vegetation

This sector is mostly covered by successional forest (42.4%) and old fields (39.9%). In the western part, adjacent to the Ward Pound Ridge Reservation, there are oak forests (14.1%), and some conifers grow at the Bedford town line (1.8%).

Population

1. 1974	49
2. Max. under current zoning	133

Under No. 2 there would be 0.8 acre per person.

Conclusions

This sector has some potential for future development.

Recommendations

None.

Sector 2
450 acres

Location and General Characteristics

This sector occupies the southern part of Ward Pound Ridge Reservation. It is a county park conservation area.

Existing Roads and Accessibility

Honey Hollow Road runs along the western edge of this sector. There are several trails that lead into the interior.

Present Stage of Development

This is tax-exempt land, property of Westchester County.

WATERSHED 11

Mutual Impact

A. This area is connected to Cross River Reservoir, with environmental impact affecting Sectors 1, 3 and 4.

B. None.

Bedrock Formation

No survey has been made of bedrock-fracture-plane systems in this area.

Soils

Most of this sector (87.7%) has soils with shallow bedrock (type 4). A few areas (6.6%) have soils suitable for development (type 5), and some areas (5.5%) have soils that are unsuitable (types 1 and 2).

Hydrological Conditions

A large wetlands occupies the center of this sector (Honey Hollow Marsh). A stream flows from the eastern part of the sector through the wetlands and into Sector 3 to the west. The stream and the wetlands form the main hydrological system of this sector. The EAA study did not include this area.

Vegetation

This sector was not included in the vegetation studies.

Population

Not applicable.

Conclusions and Recommendations

None.

Sector 3
140.5 acres

Location and General Characteristics

Sector 3 lies in the western part of the watershed between the Bedford town line and Honey Hollow Road. Cross River Reservoir protrudes into the central part of the sector.

Existing Roads and Accessibility

Honey Hollow Road offers the only access to this land. Two properties are accessible from the town of Bedford.

Present Stage of Development

This sector has a variety of properties, from one-acre lots to medium and large parcels. Most of the properties could be further subdivided. There is one large property (Town Tax Map, Section 31, parcel 10, 36.5 acres). There are about 24 residences, and under current zoning regulations of R3A an additional 23 could be built.

Mutual Impact

A. This area is connected to Ward Pound Ridge Reservation (Sector 2). There are no adverse environmental effects other than the ones created in the sector itself. If adverse conditions were to exist the direct recipient would be the Cross River Reservoir.

B. This sector is well secluded and the effect of traffic on Honey Hollow Road is minimal.

Bedrock Formation

No survey of bedrock-fracture-plane systems was made in this area.

Soils

A narrow strip of land along Honey Hollow Road and one area of the northern edge of the Reservoir (22.5%) have soils suitable for development (types 5 and 6). The remaining 77.5% of the land has soils difficult for development (types 3 and 4).

Hydrological Conditions

This is a crescent shaped land around a part of the Reservoir. Through the middle flows a stream which originates in Ward Pound Ridge Reservation, Sector 2. This stream and the shape of the land provide a drainage basin leading directly to the reservoir. The EAA study does not include this area.

WATERSHED 11

Vegetation

Successional forest covers 67.2% of the land. Areas adjacent to Honey Hollow Road have old fields (13.7%). One small area near Sector 2 has oak forest (5.7%), and the highest elevation in the northern part has mature mixed hardwood forest (4.7%).

Population

1. 1974	84
2. Max. under current zoning	164
3. Max. excluding open water, wetlands, and C zone	137

Under No. 3 there would be 1.0 acre per person.

Conclusions

This sector has good potential for development. Lake shore and easy access make it a choice location.

Recommendations

The proximity of the reservoir as a public water supply will play a decisive role in deciding the form of future development. A C zone should be established along the shore of Cross River Reservoir. This zone should extend from the water's edge to the contour line at elevation 350 feet. This will require about 11 acres.

Sector 4
29.0 acres

Location and General Characteristics

Sector 4 is in the southern part of the watershed and borders the town of Bedford.

Existing Roads and Accessibility

Honey Hollow Road and one long driveway provide access to all properties in this sector.

Present Stage of Development

This sector is fully subdivided and almost completely developed. There are about 11 residences, and under current zoning regulations of R3A possibly one more could be built.

Mutual Impact

A. This land is connected to Sector 2 in Ward Pound Ridge Reservation. The environmental conditions in Sector 4 could affect areas in Bedford.

B. Most of the properties are adjacent to local roads and do not experience adverse effects of traffic or development in other areas.

Bedrock Formation

No survey of bedrock-fracture-plane systems has been made in this area.

Soils

Most of Sector 4 (74.3%) has soils suitable for development (type 5). In the southern part near the edge of Watershed 2 (22.3%) are soils with poor drainage (type 3). A small stream valley flowing from Sector 2 (3.4%) has wet soils (type 2).

Hydrological Conditions

There is no clear hydrological pattern on this site except for a small stream passing through its narrowest part. This stream flows from Sector 2 and continues into Bedford and Cross River Reservoir. The EAA study did not include this area.

Vegetation

There are two types of vegetation in this sector; mature mixed hardwood forest covers 60.8%, and the remaining 34.0% is open fields.

Population

1. 1974	38
2. Max. under current zoning	42

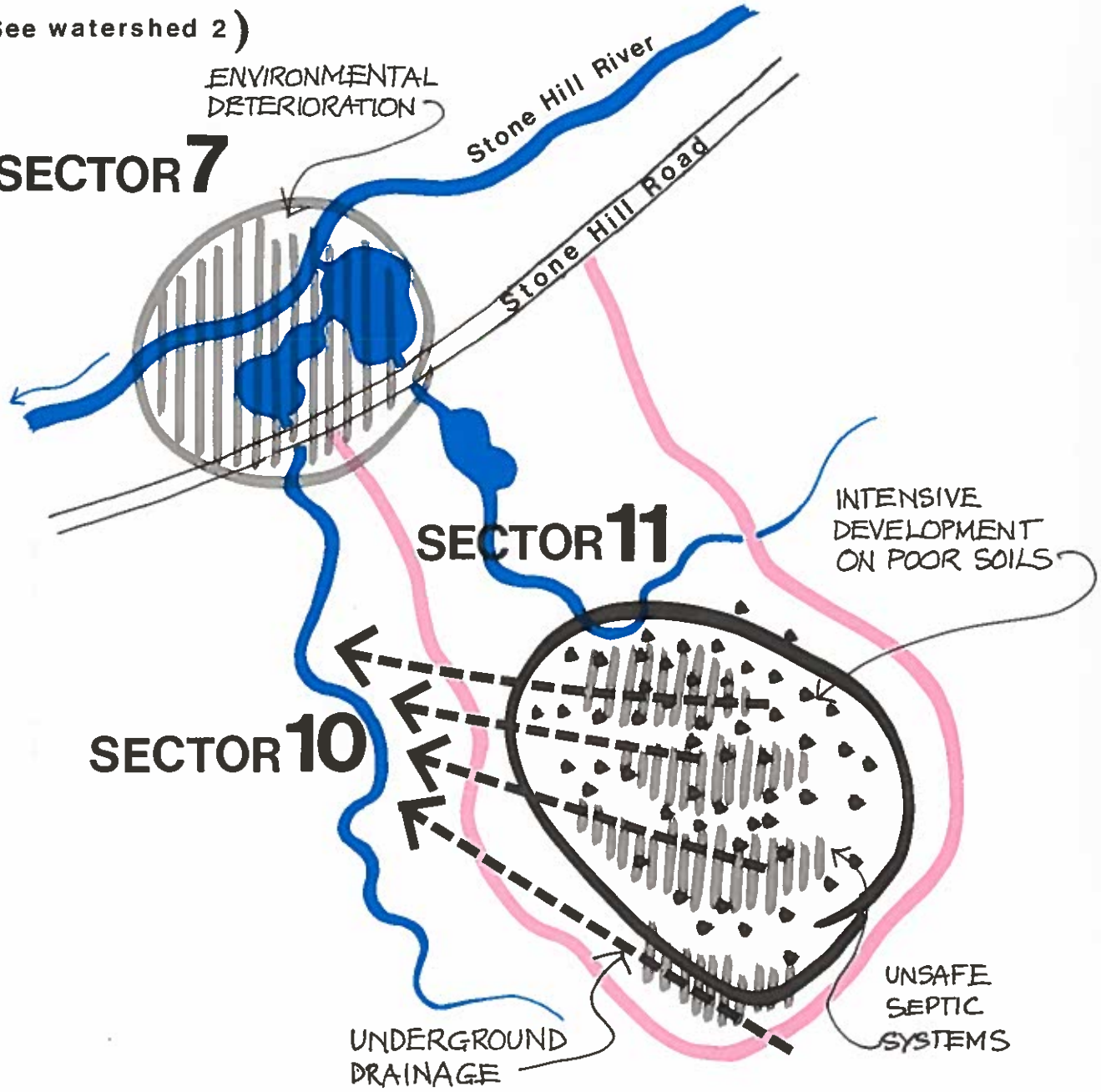
Under No. 2 there would be 0.6 acre per person.

Conclusions and Recommendations

None.

Negative environmental effect carried to adjacent areas through bedrock fractures

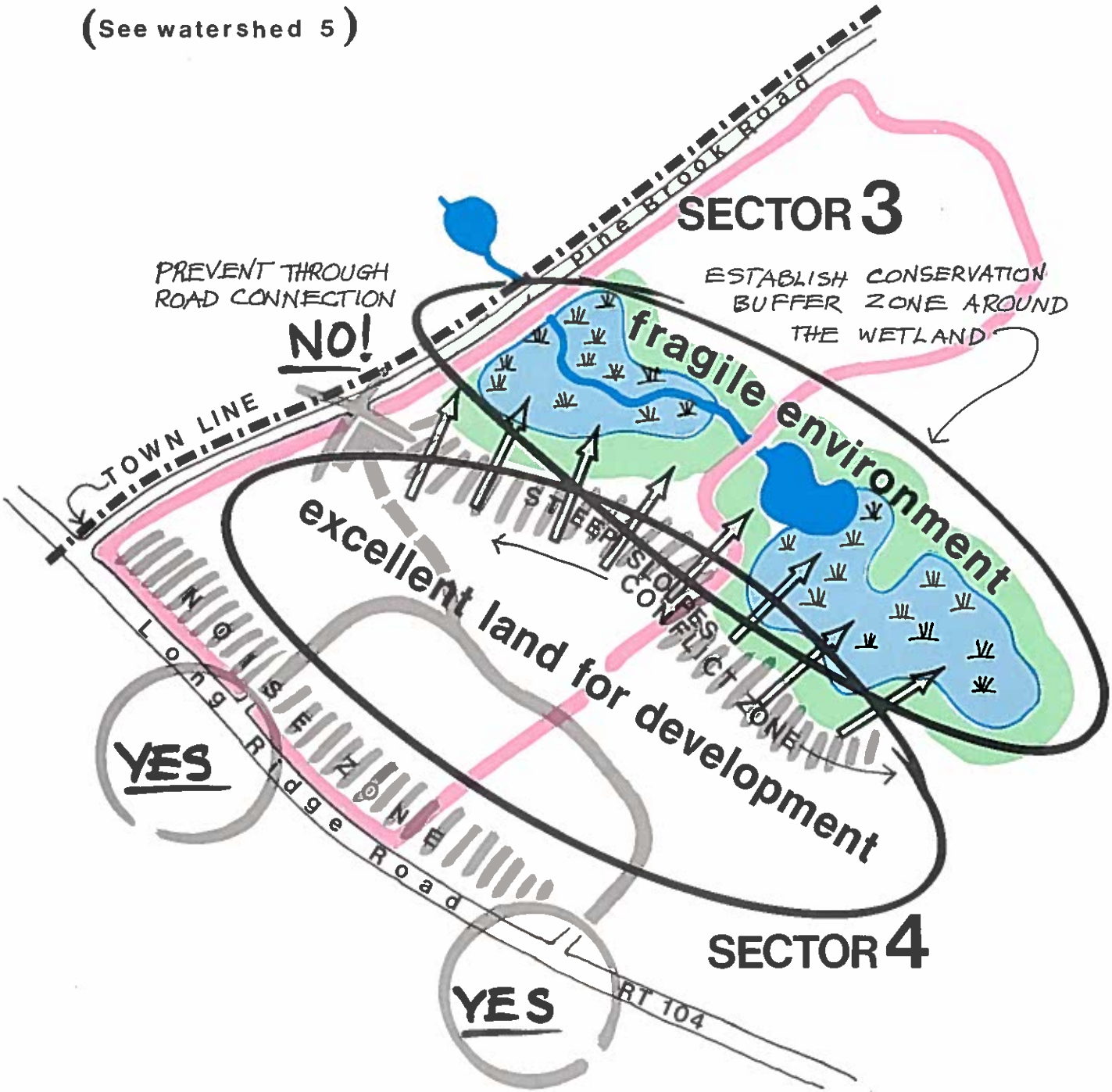
(See watershed 2)



- DEVELOPMENTS IN SECTOR 11 AFFECT SECTORS 7 AND 10

Environmental effect of new road connections and steep slopes

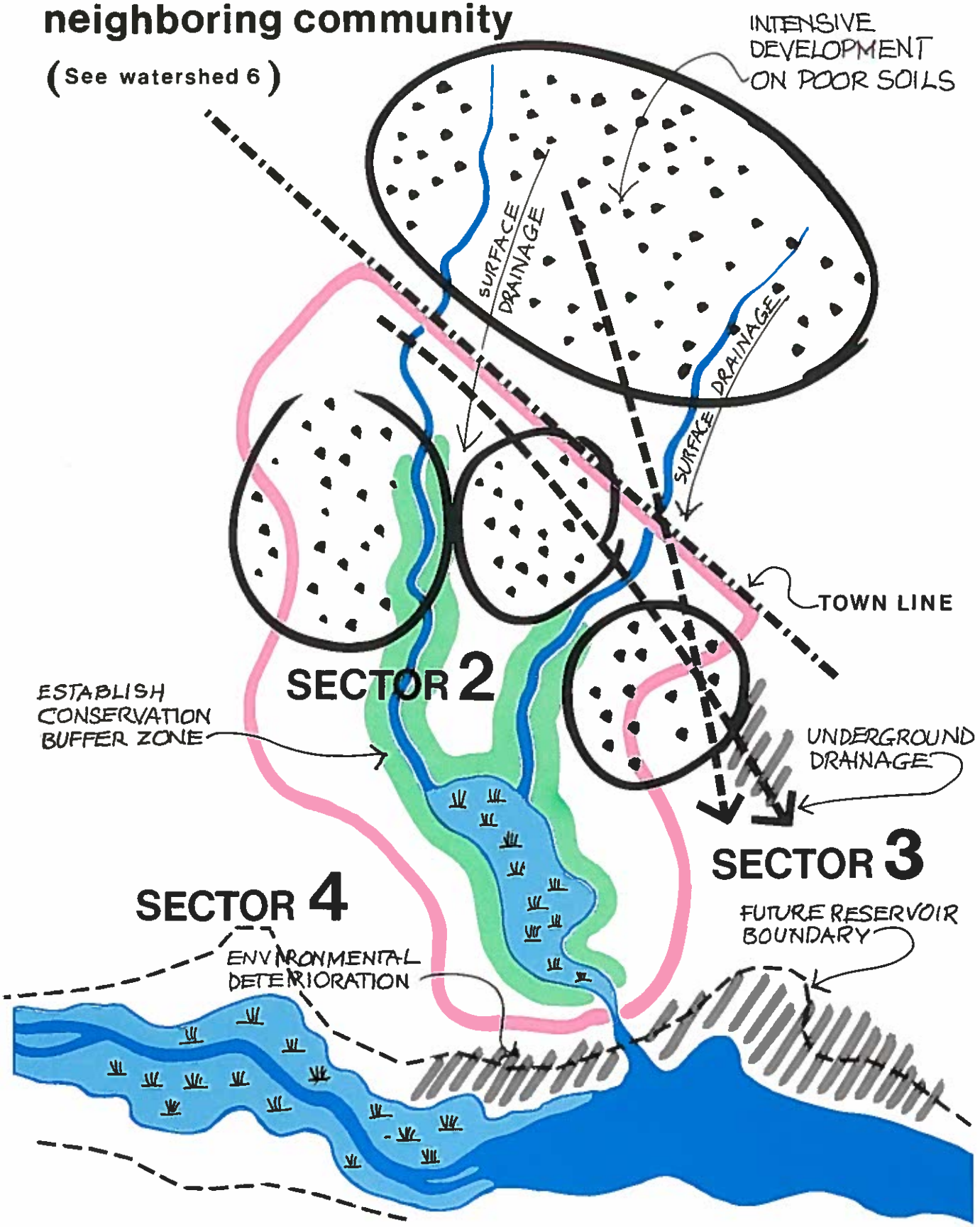
(See watershed 5)



- MAINTAIN RURAL CHARACTER OF PINE BROOK ROAD
- PROVIDE ACCESS TO DEVELOPMENT LAND OFF RT 104
- PROTECT STEEP SLOPES
- ESTABLISH CONSERVATION ZONE

Negative environmental effect from neighboring community

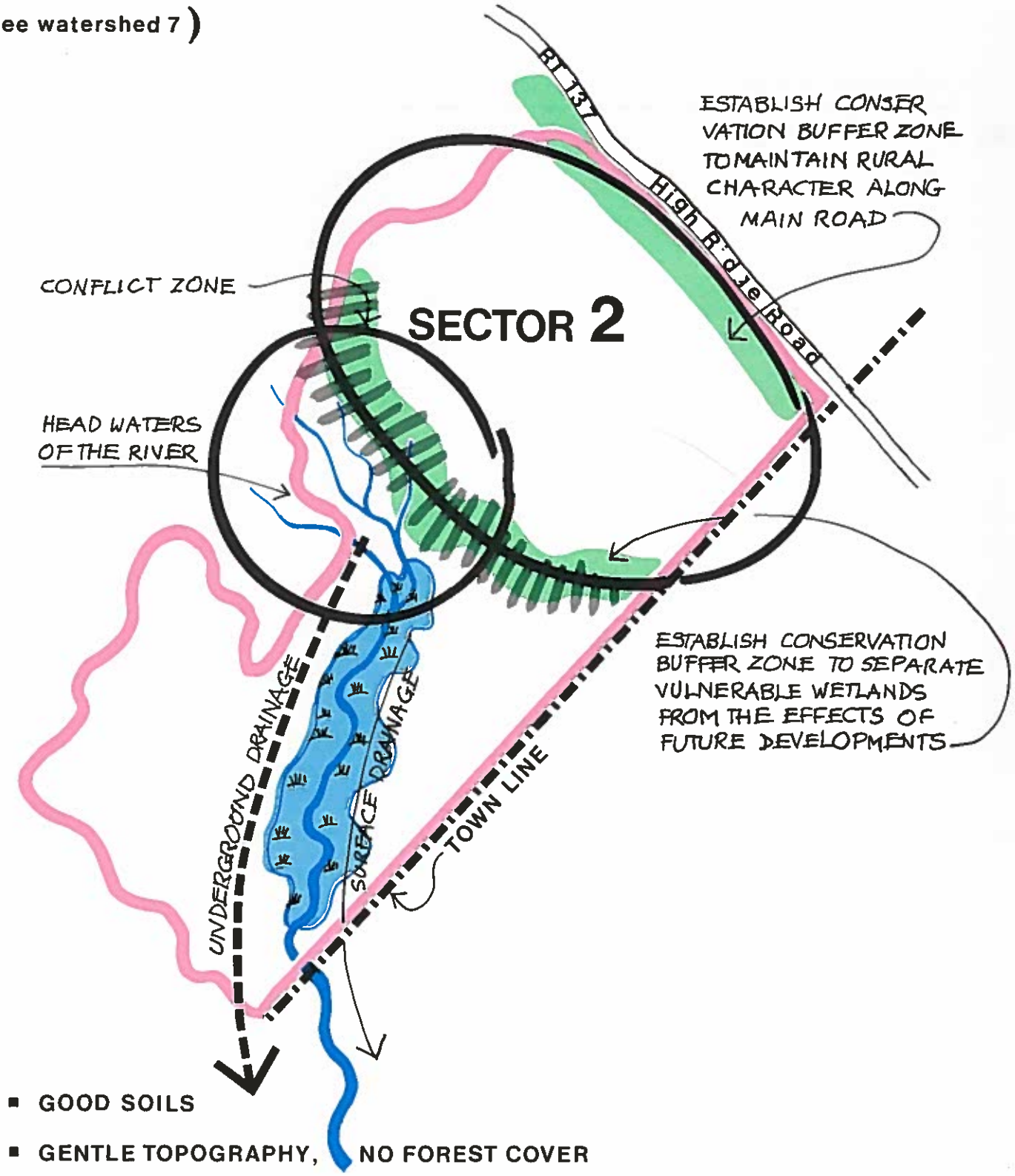
(See watershed 6)



- DEVELOPMENT IN LEWISBORO INTENSIFIES ENVIRONMENTAL PROBLEMS IN POUND RIDGE AND NEW CANAAN, CONNECTICUT

Environmental conditions favoring more intensive development

(See watershed 7)



- GOOD SOILS
- GENTLE TOPOGRAPHY, NO FOREST COVER
- DIRECT ACCESS TO MAIN HIGWAY
- LOCATION ON THE TOWN LINE

APPENDIX A

Land Management and Control Options

The following is a description of existing methods of land management and control. Although it refers only to individual parcels of land it can serve as the basis for a comprehensive package of planning guidelines.

1. *Acquiring Total Ownership*

This is usually the most expensive method of managing land, but it has the advantage of giving the community complete discretion over its use. It is also the only certain method of implementing some planning policies.

2. *Less Than Fee Acquisition*

This means the purchase of some interest in land, short of total ownership. For example, the community may purchase easements for public access. Development rights may also be purchased. In addition, the community may purchase land and sell it back or lease it with deed restrictions that protect a desired land-use plan.

This method can be used to allow an owner some use of the land while making it highly likely that planning goals will be achieved.

3. *Zoning and Planning*

a. Conventional zoning

Zoning is a technique concerned primarily with managing the unacceptable side effect of certain land uses. Land uses that are presumed to be incompatible are separated from each other. Zoning is usually based on land and building uses, lot size, building size, or density of development. It is based on the "police power" of a community, and may be exercised only insofar as it does not prevent reasonable use of the land by its owner.

Zoning is generally subject to a continual process of amendment and change and hence is an uncertain, although familiar, method.

b. Special zoning

The uncertainty of zoning can at times be limited by a few special methods, such as conditional, bonus, or incentive zoning. These methods can be used to allow development on land not previously zoned for it, but in such a manner that certain criteria are observed.

c. Average density zoning

It is possible to enact a zoning ordinance that provides for a density ration of development. Land that includes an environmental resource, such as a wetlands, could have higher density on the part that is not in the wetlands. In this way the developer can use his land to the fullest extent under the law, and the resource is still protected.

d. Planned Residential Development (PRD)

PRD combines aspects of zoning and subdivision regulations to allow for a flexible form of large-scale development. Several kinds of residential development in varying densities may be allowed. Average density is usually included in order to protect environmental resources. This method includes a variety of already understood and readily implemented concepts.

e. Performance-standard zoning

Rather than specify use and density, this type of zoning sets limits on the allowable impact of development. For example, performance standards can be set for allowable runoff, erosion, groundwater recharge, etc. Various types of development that meet the standards would be permitted. This allows an owner to use land or a developer to be innovative in solving old problems. It also assures a community that its resources will be protected or its planning guidelines respected. Performance standards have been used to protect the integrity of wetlands, woodlands, marshes, steep slopes, and other land features.

A special district may be created by an ordinance that identifies areas of special significance and regulates certain activities in them. Examples of special districts are a wetlands district, steep slope district, agricultural district, conservation district, and flood plain district. Many types of regulation are possible, from lists of uses and density limitations to performance standards and formal permit requirements.

4. *Subdivision Regulation*

The purpose of subdivision regulation is to set rules for the orderly conversion of undeveloped land to developed land. Regulations

usually consist of standards for site improvements, such as curbs, street size, drains and sewer pipes, etc. These standards can be adjusted to include designs that meet performance standards, as described above.

5. *Preferential taxation*

Tax incentives can be used to encourage the preservation of valuable environmental resources. Incentives typically provide for assessment or rate reductions, freezes, exemptions, refunds, or deferred payments. All offer a financial incentive, through tax relief, to owners who preserve open areas.

This method can be used most effectively to preserve open space in areas not immediately threatened by development. It also can encourage private care and preservation of open space by helping to offset the cost. At the very least, owners are not penalized for their preservation efforts.

6. *Transfer of Development Rights*

This is a method by which each parcel of land in a specified zone is allocated a certain number of development rights. Density can be reallocated through the workings of the marketplace. This would result in increased density in one place, while density would be decreased or eliminated elsewhere.

This is an uncertain method of achieving planning goals, and is yet to be tested in the courts. A number of communities in the United States are contemplating its use, however.

7. *Local Environmental Impact Review and/ or Permit System*

A community can require that a developer submit some type of environmental impact statement before getting approval for a subdivision. The statement would be used to verify that a subdivision's enviornmental requirements and/or those of a performance standard ordinance would be met.

8. *Restrictive Covenants*

Owners can be encouraged to attach restrictions to their deeds limiting the future intensity of development on their properties. Restrictions can be attached privately or through a covenant with a public agency. Although restrictive covenants can be effective as a preservation tool, they are not easy to bring about where owners are numerous or where a consensus has not been reached. They are most successful when used in combination with revolving funds, since contributors to revolving funds can attach covenants to properties before reselling them.

9. *Gifts, Grants and Bequests*

Owners may be encouraged to give or bequeath open land to county or local governments, to nonprofit conservation groups such as the Pound Ridge Land Conservancy or to foundations. Some organizations require that funds also be provided for the maintenance and upkeep of the properties.

10. *Reliance on State and Federal Regulation*

Some recent state and federal programs, such as the New Jersey Wetlands Act, preempt local initiative in managing certain resources. A community may wish to allow its regulatory authority to pass back to the state in some instances. Many programs, however, such as Section 208 planning of the Federal Water Pollution Control Act Amendments, require that localities participate in the formulation of management strategies. It is therefore not certain that state or federal initiative can assure preservation of critical environmental resources, especially if they are primarily of local or regional concern.

APPENDIX B

COMPUTER PROCESSING

by: Richard M. de Sola Mendes

The Pound Ridge Inventory of Zoning and Ecology (PRIZE) system is a set of computer programs developed to facilitate the accurate interpretation and reporting of data gathered on conditions of ecology and zoning in Pound Ridge. The material was gathered and the methods of interpretation were defined by the staff and associates of Community Design Associates (CODA) as part of a privately financed study for Pound Ridge United for Planning Trust (PRUP). The PRIZE system was designed in a way which not only analyzes and reports the data prepared by CODA, but also permits the data to be revised and the reports to be reproduced as conditions in the town of Pound Ridge change.

As has been described elsewhere in this report, the town of Pound Ridge was divided into a number of major units called watersheds for analytical purposes. Each watershed was further divided into smaller, more or less homogeneous units called sectors for more detailed analysis. Records summarizing repetitive characteristics were entered into PRIZE for each sector. Additional information was entered into the system for each property within a sector at the tax section and block level. This information will be described in greater detail below. All data, whether at the sector or property level, is stored on computer tape, and a major function of the PRIZE system is to permit the tape file to be modified to reflect the most up-to-date information. New records can be added, and old records can be replaced with corrected information, or if necessary, completely deleted. All data entered into the system is extensively edited to assure the greatest possible accuracy.

In addition to maintaining the tape file, the system produces two reports. A detail report is a listing of all data accepted for processing with subtotals for all properties in each tax section and block; each watershed; and grand totals for all properties. The detail report is intended as a reference document to verify the data in the system and is aimed at the few people who might need to review the underlying data. Therefore, the report format is very simple, and lacks report headings.

The key report produced by the system is the summary report. Each watershed is reported separately, and each parcel is a major reporting item on the summary report. This report was of major assistance during the work of developing the Phase 3 Sector analyses.

Each property record on the system is identified by watershed, parcel, tax section and block, and property number. In addition, each property record contains the total acreage of the property, the amount of acreage exempt from taxes, the number of existing residential units on the property, and the type of zoning applicable to the property, e.g., two or three acre zoning. This information was obtained from the town's tax maps and records and the zoning ordinance. From this information, developed acreage of the property is calculated as the lesser of:

1. Total acreage minus tax exempt acreage, or 2. The number of existing residential units times the zoning.

Undeveloped acreage is then calculated as the total acreage minus the tax exempt and developed acreages. Maximum additional residential units is then calculated as the undeveloped acreage divided by the zoning, with any fractional remainder discarded. It has been pointed out that this may inflate the number of potential additional units since many properties cannot be developed to the maximum after considering unbuildable areas, road and drainage requirements, etc.

The summary report lists the zoning types for each tax section and block within a sector. For each sector, accumulated property totals are printed for:

- Total acreage
- Undeveloped acreage
- Percentage of undeveloped acreage out of total acreage
- Exempt acreage
- Percent of exempt acreage out of total acreage
- Existing residential units
- Maximum additional residential units

All of the above information is derived from the property records within a sector. Additional information is provided based on the sector records.

Each sector record contains a number of scalar values, which represent estimated measures in each category. These estimates were arrived at by placing a grid over each sector on watershed maps of vegetation and soil surveys and counting the number of grid squares in each category according to the color codes used to produce the maps. The maps were produced originally using information gathered by federal, state and local agencies, and were supplemented by data gathered by the CODA field team. The scalar values on the sector records are not expressed as acres, but as proportional values which can be converted to percentages, and in turn, to acres by multiplying the total acreage in a sector by the percentages. This is the manner in which the open water and wetland acreage values on the summary report are calculated.

The scalar values occur in two groups, and each group is converted to a set of percentages totaling 100 percent within the group. The first group includes types of vegetation:

Symbol	Scalar value corresponding to:
A	Open water
B	Wetlands
C	Conifers
D	Hemlocks
E	Hemlocks and hardwoods
F	Mixed hardwood forests
G	Oaks
H	Old fields
I	Successional forest

A sample calculation of a percentage is shown below. The symbols defined above are used as algebraic symbols for brevity:

$$\text{Wetlands \%} = \frac{B}{(A+B+C+D+E+F+G+H+I)} \times 100$$

Both acreage and percentage of total acreage are printed on the summary report for the open water and wetlands categories. Due to space limitations, only percentages of total acreage are printed for the various types of vegetation.

The second group includes types of soils. Scalar values break down the total acreage according to suitability for use as septic fields. This was based on such criteria as soil type, slope and the amount of acreage not taken up by open water or wetlands. The suitability for use as septic fields was broken into three categories: Good, Difficult and Bad. A sample calculation for the percentage of acreage categorized as Good follows:

$$\text{Good \%} = \frac{\text{Good}}{(\text{Good} + \text{Difficult} + \text{Bad})} \times 100$$

Two other items of information are provided for each sector. An indication is provided whether physical access to the sector is easy or difficult, based on criteria such as amount of wetlands and steepness of slopes. The condition of surface water is also indicated as Unaffected, Affected or Polluted. This was based on an analysis of the EAA reports and was supplemented by direct observations of the CODA field team.

Twin Ponds Under Snow — Lisl Steiner