

A photograph of a forest path with sunlight filtering through the trees. The path is a narrow, light-colored trail winding through a dense forest of tall, thin trees with green foliage. Sunlight creates a dappled pattern of light and shadow on the path and the surrounding forest floor.

Open Space & Conservation Plan

Tolland, Connecticut

**Prepared by
The Conservation Commission
of
Tolland, Connecticut**

April 2006

Acknowledgements:

This report was produced under the direction of the Tolland Conservation Commission.

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Additional Thanks

The Conservation Commission would like to thank all past and present members of the Conservation Commission as well as the following Town of Tolland Staff for their assistance and guidance in preparing this report:

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The Conservation Commission would also like to thank following other contributors to this report:

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Professional Assistance

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The Tolland Conservation Commission was created as an advisory board in 1998 by the Town Council to further the town's open space goals, to study the land and natural resources of Tolland, to create a strategy for protecting and preserving desirable land and resources, to develop conservation education programs for the Tolland community and to oversee stewardship of open space parcels..

Cover Photo - Shafron Wooded Path
Courtesy of the Tolland Conservation Commission

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A photograph of a snowy forest. The ground is covered in a layer of snow, with some fallen leaves and twigs visible. Several tall, thin trees with bare branches stand in the foreground and middle ground. The background is a dense forest of similar trees, with some evergreens visible on the left. The overall scene is quiet and wintry.

INTRODUCTION

Town Setting

The Town of Tolland, Connecticut is located in the northeastern portion of the State. It is bordered to the north and northwest by the Town of Ellington. To the southwest is the Town of Vernon, to the south is the Town of Coventry and to the east is the Town of Willington. This eastern border is defined by the Willimantic River, which flows southward.

The topography on the eastern part of Town tips toward the Willimantic River and several small streams drain this area and help provide water to the river. On the western edge of Town is Shenipsit Lake a public drinking water supply. This is a large water body shared by the Towns of Ellington, Vernon and Tolland.

Much of the topography in this area drains toward the lake or other water bodies to the west. Between these are two long gentle ridges running north to south. These create a “bowl” in the middle of which the Skungamaug River and the Tolland Marsh are located. Waterways in and around rolling hills feed this and the Charter Marsh. These also run generally north to south creating parallel ribbons of riparian and upland areas. Tolland ranges in elevation between 340 feet to 1,001 feet above sea level.

Historically Tolland has been a crossroad. It is theorized that the Tolland Marsh was a midpoint destination for the Nipmuck Native Americans in their travels between destinations to the northeast and southwest. In colonial times Tolland was a Post Road community. This influenced the development of the Tolland Green. Today the town is bisected by Interstate 84 and is roughly half way between New York City and Boston and is an easy commute to both Hartford and Worcester.

Tolland began as a number of self-sufficient farms grouped around Grant Hill in the southerly part of town. These farms originated from the English settlement of Windsor on the Connecticut River. After the town center was moved to the current Green, meeting houses were built and farms grew to support inns and related “cross road” services. Tolland began as a number of agricultural communities. Cranberries and fruit were grown where field crops were impractical. As the Town grew, a cider mill was built, home industries such as silk and coopering developed and the local population of beavers was used to support a hat industry.



Willimantic River at Heron Cove canoe launch



Geologically unique rocky knob at Campbell's Peaceful Valley Conservation Area



Tolland farmland

The Town of Tolland is 40.4 square miles or 25,792 acres. Approximately 16% of the Town of Tolland has been permanently protected as open space, 95% of that designated for passive use and 5% for active use. Along with Shenipsit Lake, the Willimantic River, Tolland Marsh and Charter Marsh, there are a number of significant, large parks or open spaces in town. These include Crandall Park located near the center of town, Cross Farm Recreation Complex, Skungamaug Marsh, Nye-Holman State Forest and the Kollar Wildlife Management Area. Newly acquired Conservation Areas include the Shafran property on Eaton Road, the Campbell and Stoppeworth properties on Hunter Road, the Parciak property between Bald Hill Road and Burbank Road and the Weigold property on Weigold Road.

The average temperature in town is 47.5 (F) with summer highs typically in the 90's and winter lows slightly below 0 (F). The Town includes areas of both USDA Vegetative Hardiness Zones 5 and 6, which means that a wide range of plants thrive in the area helping to support a wide range of habitats. The town typically receives just over 40" of liquid precipitation annually, which includes at least 40" of snow.

The population remained between 1,000 and 1,700 for almost 200 years until the 1950's. The population has since continued to grow reaching 2,950 in 1960; 7,859 in 1970; 9,694 in 1980; 11,001 in 1990; 13,146 in 2000 and is estimated as 14,500 in 2005. Projections for the upcoming decades show continued population growth in the town.



Municipal Center – Tolland Green

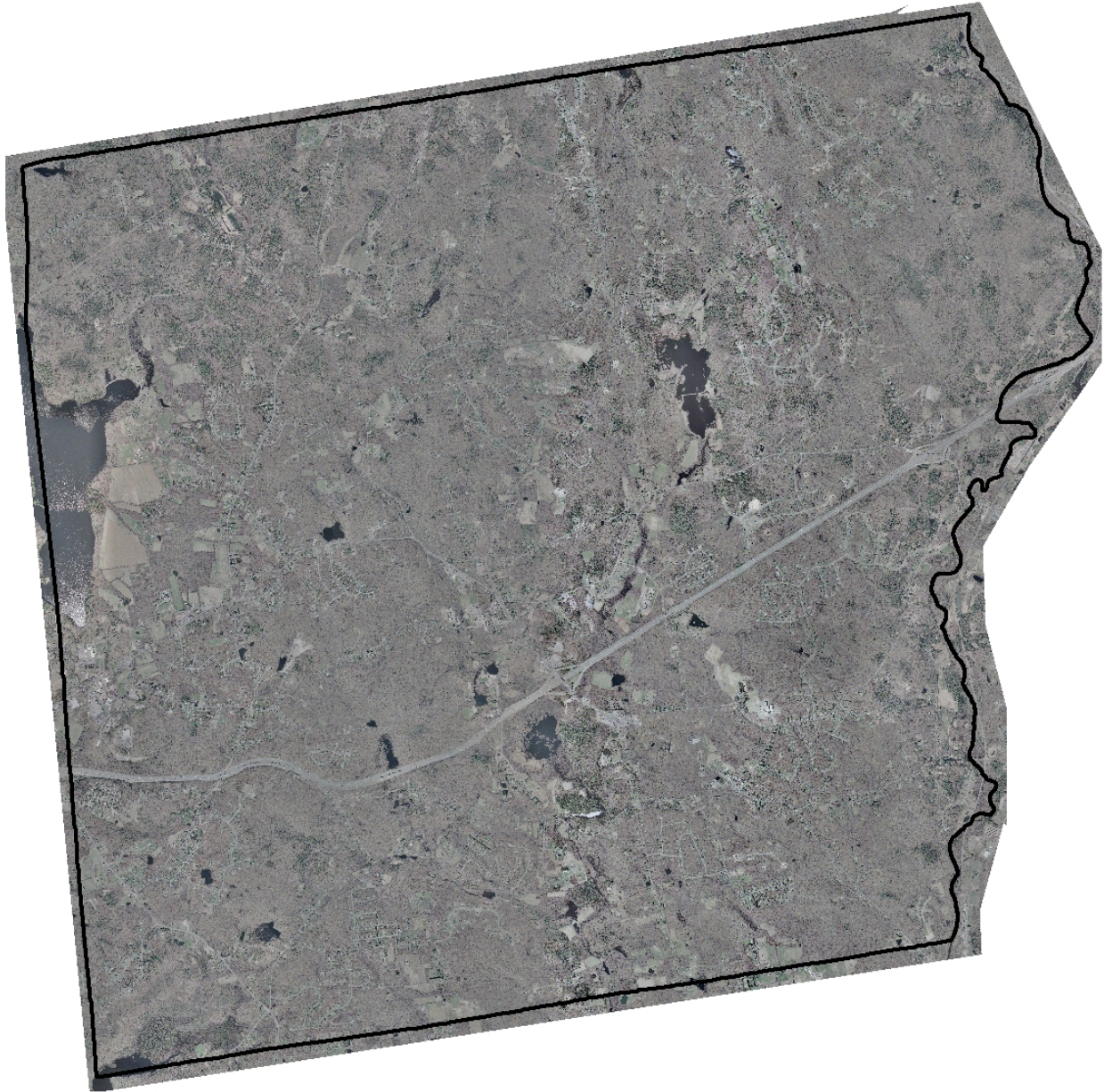


Tolland Art Center



Metcalf Road

MAP 1
Aerial Photography, April, 2004
Tolland, Connecticut



1 inch equals 1 mile
August 2005

Introduction

The character of Tolland is derived from many sources: the people, schools, business ventures, buildings, special events in the community, its history and much more. At the base of all this, however, is the land. The topography, soils, streams and rivers, areas of forest, farm and meadow all play a vital role in our community, our sense of “place”.



Campbell Peaceful Valley Conservation Area – Hunter Road

The land and its natural systems not only connect people to the Town but also play a crucial role in the cycles of life. These natural systems work in ways that are both well understood and still yet to be known to form and sustain the planet we live on. They provide local resources and habitat but also connect Tolland to the larger world.

The land not only has much to do with the current character of a place, but also tells a story of the past. The reasons why homes were built in one area and mills in another, the selection of some areas to be cleared for tillage and others kept as woodland are often tied directly to the land and water resources. Our history of settlement, of war and of change are directly linked to decisions tied to geography, location and natural resources. These past decisions create places of cultural significance adding to our sense of place and community because they link us to our past.

Tolland’s future is also tied to the land. Improvements in construction technologies make it possible for people to build in almost any location or alter almost any landscape. In the past the very form of the land, such areas as steep slopes, wetlands, and outcrops, have provided protection to many vital parts of our ecosystem.

Along with these advancements in construction advancements in transportation, electricity, refrigeration and even entertainment have made living in dispersed patterns more desirable. All this has combined with growth and changes in population, to create pressure to build, particularly housing, in almost any and every location in Tolland, just as technology has provided the tools to do that.

For many residents, however, this is not acceptable. Many aspects of the land, the natural systems, and the flora and fauna living on and in the land are valuable enough that they demand some sort of protection. At a minimum, many of us agree that we should protect the natural resources that are key to the functioning of the earth. We would like to protect habitats that allow the native plants and animals of the area to continue to be part of our community. Others agree that some areas are valuable as recreational resources, or are critical because of their historic content or simply because of the visual quality that makes Tolland unique.

It is also important to note that many studies have shown that the taxes generated by undeveloped land are greater than the cost of services that a community provides. Conversely the cost of community services are greater than the taxes generated by residential developments. In many communities, particularly in other states, communities have invested in the conservation of natural, cultural and open space resources not only to protect natural habitats and community character but also a mechanism to preserve fiscal stability.



*Historic Photo of Crandall’s Pond Mill
(Richard Symonds)*

Part of Process

This Plan is an important step in the process of making decisions about the future of Tolland - i.e. which lands should be conserved and which lands should be considered for reasonable development. Much of those decisions are the work of the Tolland Planning and Zoning Commission, the Land Acquisition Committee and the other Boards and Commissions of the Town and the Citizens of Tolland. This Plan is intended to be an aid to those groups in four ways:

- First, it is an inventory of the land in the Town. This inventory describes and maps the Town; depicting areas that have important natural and cultural resources.
- Second, it analyses the inventory into a coherent structure for conservation of land in Tolland, as well as identifies areas with less strategic importance.
- Third, it identifies goals for preservation and establishes priority resource areas that should be conserved.
- Fourth, it presents a series of recommendations for tools or methods that can be employed to help accomplish these goals.

Purpose of Conservation Plan

The primary purposes for the preparation of the Open Space and Conservation Plan stem from a critical need to identify natural, cultural and open space resources in Tolland that should be conserved and to identify methods to achieve conservation. As development pressure continues in Tolland it is increasingly important to make land use decisions that protect sensitive resources and habitats, encourage citizen support and participation in these decisions, and provide guidance to land developers and development consultants to work with the town to achieve open space goals.

This Plan is a good faith effort of volunteers and professionals to collect information about and suggest priorities for the protection of the land and resources of Tolland. The commission recognizes that without information about the natural and cultural resources of the town it is very difficult to develop a meaningful, defensible and implementable plan to conserve our open spaces and our sensitive natural and cultural resources. While this Plan does advocate for protecting certain resources it does not do so in a vacuum as it recognizes the value of individual property rights and the importance of reasonable and responsible growth and development in Tolland. It is hoped that this plan will serve as an important tool for future planning.



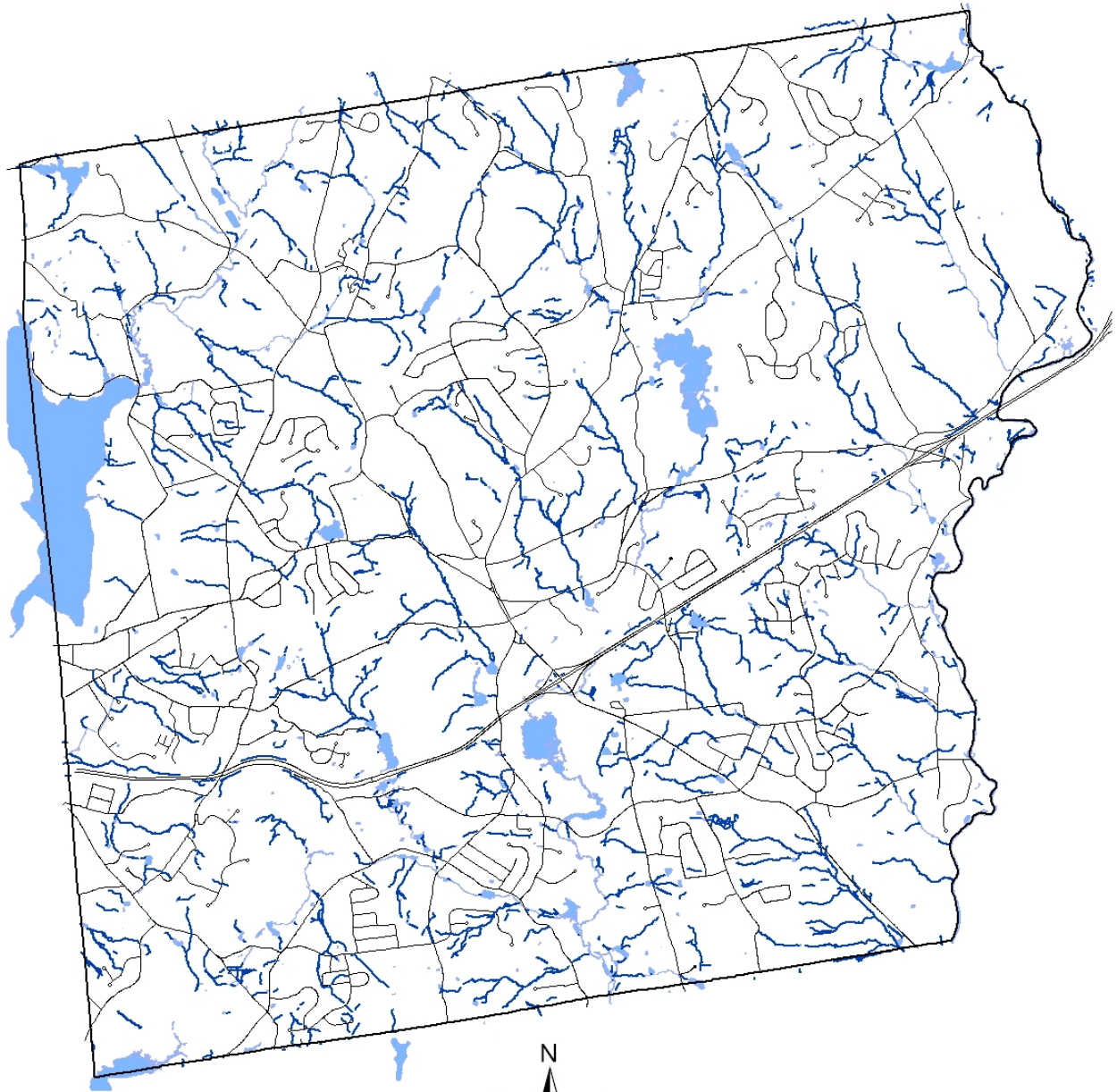
Scenic Overlook at Campbell Peaceful Valley Conservation Area

Objectives

The residents of Tolland have voiced concern in a December 1998 telephone survey about maintaining the rural character of Tolland by achieving the following objectives:

1. Identify and protect Tolland's unique and significant natural resources.
2. Promote protection of natural areas which have the highest visibility and which provide the greatest number of Tolland residents an appreciation of the natural beauty of Tolland.
3. Protect surface and subsurface water resource. Protect groundwater (aquifers), surface water (watershed) natural drainage ways, wetlands (including vernal pools) and water quality.
4. Preserve local agricultural heritage and prime agricultural soils.
5. Create greenways of open space that allow for wildlife corridors and trail networks.
6. Protect critical habitat for native plant and animal species listed as threatened, endangered or of special concern. Identify a system of wildlife corridors and trails that could be established to link to other open space areas.
7. Preserve scenic and/or productive forestlands.
8. Identify and protect historic and cultural resources.
9. Preserve significant geological features such as ridgelines, promontories and scenic vistas.
10. Create an open space plan that supports the Plan of Conservation and Development.

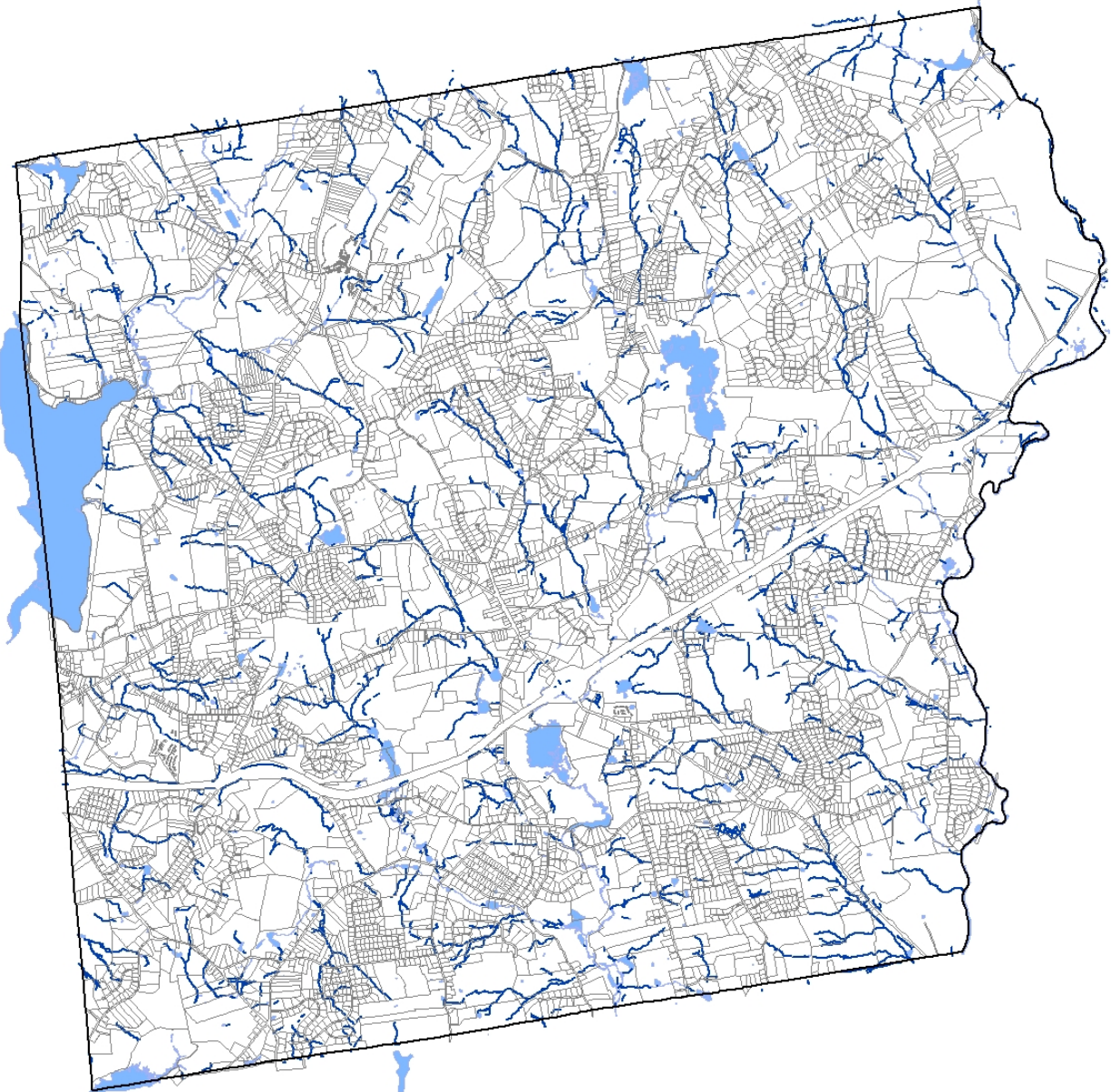
MAP 2
Roads and Waterways
Tolland, Connecticut



1 inch equals 1 mile
August 2005

MAP 3

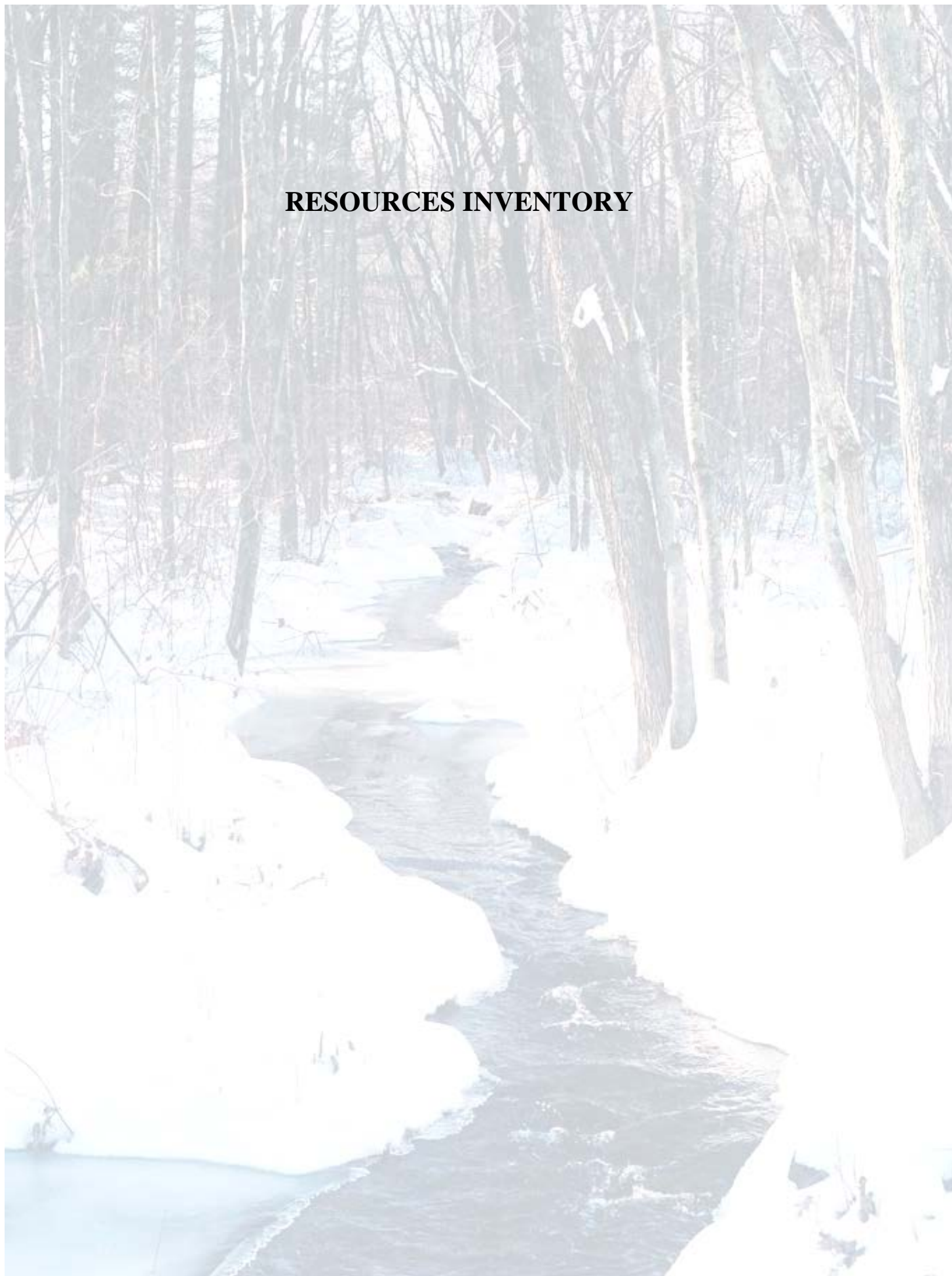
**Parcel Boundaries
as of October 2005
Tolland, Connecticut**



1 inch equals 1 mile

May 2006

RESOURCES INVENTORY



Natural and Cultural Resources Inventory

For this type of study, it is important to first develop a baseline of information regarding the land and the natural and cultural resources on it. This allows those who develop the study, as well as those who read and use the report, to understand clearly the location and status of these resources.

For the most part this is simply factual information presented in the form of text, charts or maps that attempt to lay out the current condition of these resources in the town. In some cases expert opinion or other methods have been used to help elaborate the value of these resources, however, it is hoped that this information is presented and received in a way that allows it to be a foundation on which further discussion can be based. This inventory has become an integral part of this report.

The natural and cultural resources inventory was created so that:

- A town Open Space and Conservation Plan can be developed and integrated into the town Plan of Conservation and Development;
- Land use decisions made by town commissions, Town officials and individual landowners can be made with full understanding of the effects of these decisions on the local environment;
- Strategies for protecting and preserving existing open spaces can be developed and strategies for acquiring additional open space can be formulated;
- The Town will be in a position to identify and acquire grant funding assistance to protect and preserve open space;
- Future open space priorities and protection strategies can be developed to create an optimum balance between continued economic growth and the protection and preservation of Tolland's environment and rural character.
- Regulatory procedures based on reliable and objective information can be recommended to town boards and commissions for the protection of Tolland's natural and cultural resources; and

- The information compiled can be shared with other local, regional, and state organizations so that they may understand what we are trying to achieve with this Open Space and Conservation Plan.

GIS

Tolland implemented a geographic information system (GIS) in 2004 with additional layers and increased availability in 2005. GIS is primarily a tool used to create maps about the earth. Much of the mapping used in this report comes from data assembled by the Department of Environmental Protection (DEP) and is available to the public through the DEP or through the Map and Geographical Information Center (MAGIC) located at the University of Connecticut and found on the internet at www.magic.uconn.edu.

GIS systems simply combine mapping or "geography" with data or "information" about places. This allows a person knowledgeable in using the system to, for example, know the soil type of a given location or conversely see where a specific soil type occurs anywhere in town.

GIS allows you to prepare composite maps that combine multiple natural or cultural resource features so soils information can be combined with information about topography, streams, roads, or other data. The ability to combine information can be very useful and can help us see complex relationships that are often difficult to consider without the visual tool of maps. These maps show the location of the various landscape features in relation to each other, and can help us identify critical densities of natural and cultural features.

The geographic information system developed for Tolland has enabled the Conservation Commission to develop resource mapping that is the basis for this report. In addition, this inventory will allow all boards and commissions and the public to better understand natural and cultural resources to guide in their decision-making.



Barlow's Pasture looking north

Wetlands and Other Water Resources

Wetlands and other water resources are both a critical natural resource and an important element in open space planning. They are not only important for human drinking water supply, but also are a key element for many habitats and sustaining plant and animal life. Unlike many of the other resources mapped in this study, water resources tend to literally flow from one town to another. Therefore land uses and activities in Tolland and in neighboring towns also play a crucial role in the protection of these resources.

Protection of these resources in Tolland is especially important since the high elevation of Tolland form a major watershed divide between the Thames and Connecticut Rivers. Tolland is also the source of many rivers that are important to various downstream towns and holds the headwaters of the Skungamaug and Hop Rivers, which are significant tributaries of the Willimantic River and important resources to the towns of Bolton, Coventry, Andover and Columbia. Tolland also holds the headwaters of the Tankerhoosen River, which is an important resource in the Town of Vernon and hold more than half of the watershed of Shenipsit Lake, which is the source of the Hockanum River, an important resource for Vernon, Manchester and East Hartford.

Wetlands

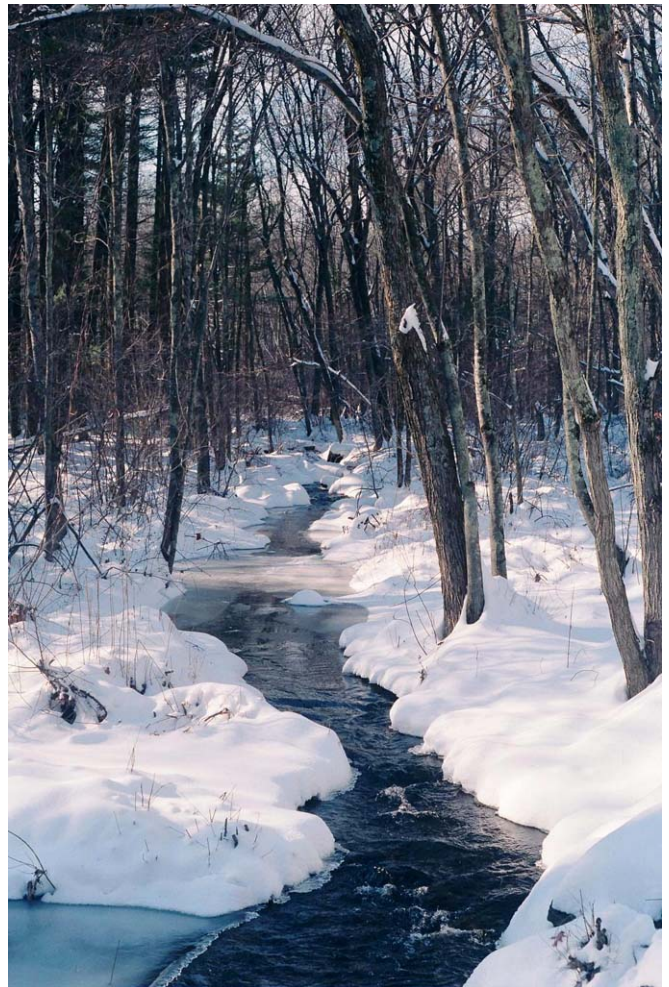
Wetlands are particularly important because they provide important habitat for many species. This includes plants and animals that are more or less permanent residents, but also for many species that use wetlands during only a portion of their life cycle, particularly for reproduction. Wetlands are also critical to flood control since they typically can absorb large amounts of water and then slowly release that water over time.

Rivers and Streams

Rivers and streams collect and transport water from higher drainage areas to lower ponds, lakes or larger rivers and, particularly when in their native state, absorb runoff and protect downstream areas from flooding. They provide excellent recreational opportunities for canoeing or kayaking. Several rivers and streams in Tolland provide excellent opportunities for fishing including a Native Trout Management Area along a substantial reach of the Willimantic River from the confluence of Roaring Brook in Willington to the Route 74 bridge in Tolland.



Green Brook



Metcalf Brook

Lakes and Ponds

Lakes and ponds store water and often recharge ground water supplies. They provide recreational opportunities such as boating and fishing as well as ice fishing or skating in winter. They provide unique habitat for a range of amphibians, mammals and birds. The aesthetic qualities of these lakes and ponds help to define the character and quality of life in Tolland.



Pond at Shafran Conservation Area

Vernal Pools

Vernal Pools are depressions in the landscape of varying size characterized by holding water seasonally from late fall through mid-summer and then drying out. The flora and fauna of these pools have adapted to this periodic flooding and are unique to them. For some of the animals (such as fairy shrimp and finger-nail clams), these pools are the only places where they live, for others (such as wood frogs and spotted salamanders) these pools provide a critical habitat for a period of their life cycle.

The particular animals that use a pool vary with the size of the pool, the available sunlight and the period that it is flooded. Every pool, however, that holds water for at least two months out of the year supports some unique wildlife. Unfortunately, vernal pools are not easy to identify when they do not have water in them.

It is important to recognize these pools and protect them in order to preserve the unique mix of species that live in and around them. Not only do these pools need protection, but also a sizable portion of the natural habitat surrounding them as well. The animals that use these pools for certain stages of their lives need to have suitable habitat to carry out the rest of their life cycle.

Water Supply Watersheds and Aquifers

The Connecticut Water Company manages the Shenipsit Lake as a drinking water supply reservoir to serve parts of Tolland, and other nearby communities. The Town of Tolland has a public drinking water supply well field in the flood plain of the Willimantic River to service a portion of Town.

In addition to these groundwater resources, there are a number of coarse-grained, stratified drift aquifers in town. These are underground reserves where the water is stored in the pore spaces of sand and gravel deposits. At least some of the existing private wells draw from these aquifers. It is important that the location of these aquifers is understood and water withdrawal is controlled. These aquifers are naturally replenished, usually from surface water sources, however high usage or drought can reduce the amount of water in the aquifer, reduce its holding capacity and also draw pollutants from surface waters.

Functions

Wetlands, streams, rivers, ponds and groundwater lakes all perform a number of functions that are valuable to Tolland, among them are:

- Drinking water supply – Direct withdrawal and from Shenipsit Lake, and well fields located near the Willimantic River aquifer all provide important drinking water supply;
- Water Quality Protection - Physical settling of pollutants associated with particulate matter; sorption of pollutants to clay or organic materials; natural filter of pollutants and assimilation of soluble pollutants by plant matter and other organisms within wetland soils;
- Flood Control - Storage of flood waters in riparian (stream-side) wetlands, swamps and waterbodies; Release of flood waters over extended periods of time which result in lower peak flood flows; recharge of groundwater through flooding of alluvial floodplain soils, which provides base flow to streams and rivers during periods of low rainfall;
- Aquatic habitat - Provides habitat for aquatic organisms such as fish, amphibians, crustaceans, mollusks and insects;
- Aesthetics – Visual appeal, views and vistas and simple beauty provided by marshes, rivers, streams, lakes and ponds provide a great aesthetic appeal to the Town of Tolland and are a good part of the reason that people find this Town such a desirable place to live;
- Recreation -The Willimantic River is a prime canoeing and kayaking river, which draws people

from all over the State. One can put in a boat at the northern end of Tolland on the Willimantic River and paddle all the way to the Eagleville Dam on the in Coventry Mansfield border.

The town includes a number of important water resources. A list may be found in Appendix #2.

Objectives

Conserve wetlands and other water resources in a way that:

- Protects and enhances functions of water supply, waste assimilation, flood management, aquatic habitat, aesthetics and recreation
- Provides open space
- Preserves wildlife corridors.

Methodology

To understand the extent and importance of water resources in the town several maps have been developed. These include:

- Inland Wetland and Watercourses – which depicts streams, rivers, lakes, ponds and wetlands and the related upland review areas
- Surface Water Quality – which depicts water quality related to human drinking water and fish and wildlife habitat
- Ground Water Resources – which depicts coarse grained stratified drift aquifers as well as aquifers currently used for the Tolland Water System wellfield



Shenipsit Lake

Recommendations

It is recommended that riparian (stream-side) corridors, particularly those that are also identified as potential habitat corridors, be protected. These corridors should have a width of at least 330'. The Inland Wetlands Commission already has a 100' regulated area on either side of a watercourse and, in many cases may be able to acquire a Conservation Easement up to 150' on either side of these streams. The Conservation Commission suggests the use of conservation easements along wetland areas as the most effective way to protect corridors.

The network of waterways in Tolland is extensive and already provides a certain level of protection due to the Inland Wetland and Watercourses regulations and the policies of the Tolland Inland Wetland Commission. The Commission already restricts development in riparian lands adjacent to wetlands and watercourses in order to protect wetland habitat and water quality. Currently the Upland Review Area from wetland areas is 50' and from watercourses it is 100'. The preservation of these regulated wetland and watercourse buffers forms one logical base from which to establish Greenways throughout town. There are also a number of other town, state and federal regulations that help to protect wetlands and other water resources. For a comprehensive list of these programs, please see Appendix #2 to this report.

A key opportunity for the protection of water related resources is the development of greenways along rivers, streams, wetlands, ponds and lakes. A greenway is simply a continuous corridor of land that typically provides a variety of benefits, such as:

- maintain undisturbed, vegetated edges along water resources, reducing erosion and promoting absorption of excess nutrients and other pollutants
- provide wildlife habitat and corridors, enhancing animal movement between larger patches of habitat
- allow for paths and trails for hiking
- maintain the visual character of the Town by preserving areas with natural vegetation.

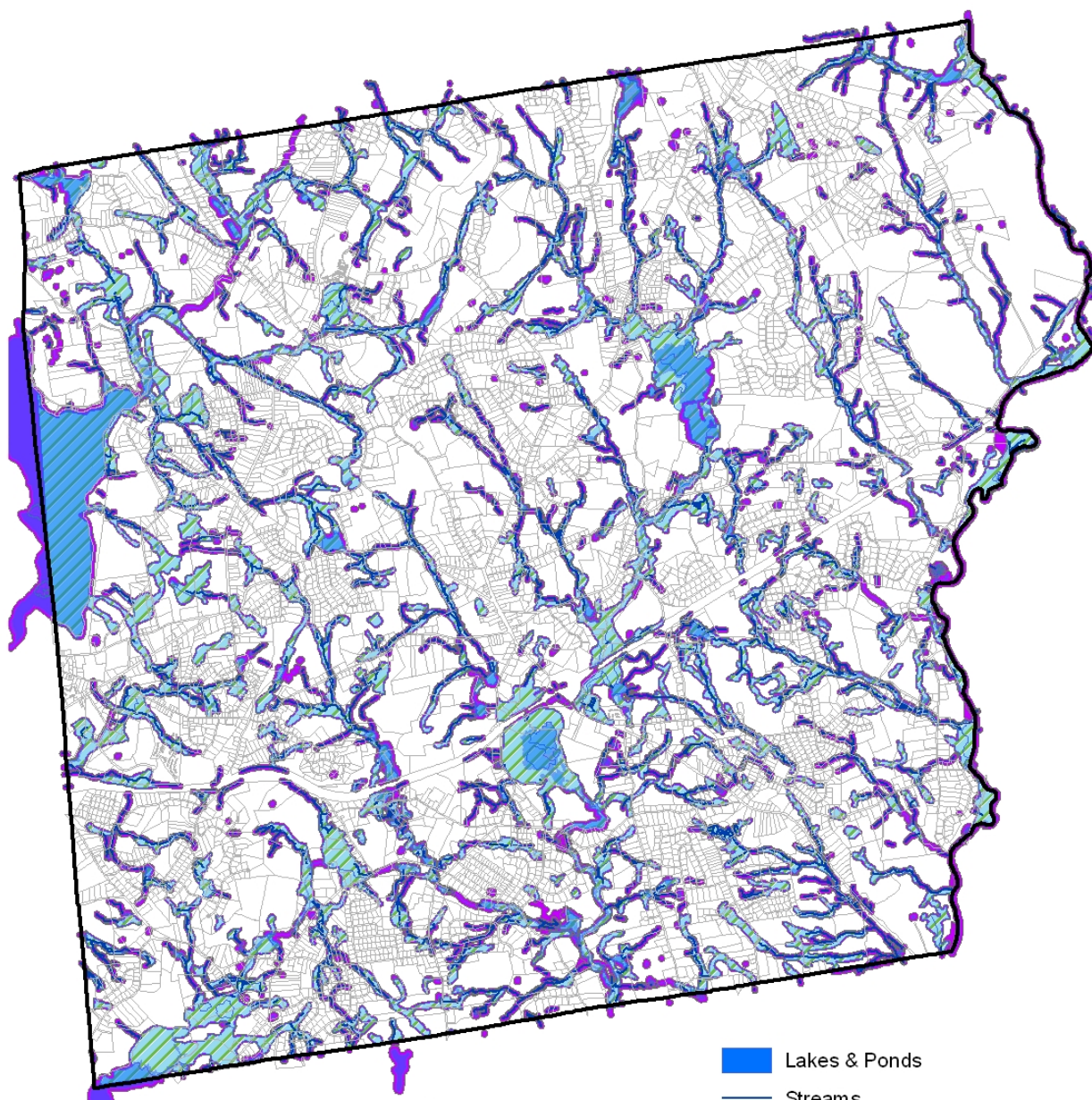
Research completed at the University of Connecticut by faculty in the Department of Natural Resource Management and Engineering has revealed that Greenways should be at least 330 feet in order to

provide for passage of wildlife. A greenway of this width encompassing a watercourse would provide the desired effect of protecting the riparian habitat, providing a sheltered wildlife passage and also providing adequate width to incorporate walking trails.

To accomplish this, a collaborative approach between the Planning and Zoning Commission, the Wetlands Commission, the Conservation Commission and the Planning Department must be put in place. This strategy would build on the progress already made in preserving open space in Tolland by these groups. These would include:

- When the planning department is reviewing pre-application subdivision plans with site planning consultants and developers it can inform them of this Greenway Strategy and the desire to preserve these areas along the watercourses.
- When the Wetlands Commission is reviewing land use applications it can inform the land owners of this Greenway Strategy and apply their current policies to protect these riparian areas to the full extent possible.
- When the PZC is reviewing subdivision applications they can utilize the 20% open space set aside as the mechanism to see that upland soils adjacent to the Wetland Commission regulated buffers are deemed open space to be dedicated to the Town to create the full 330 foot wide Greenway.
- When the Conservation Commission comments on subdivision plans as requested by the PZC, it will recommend open space dedications which support this Greenway strategy. Where enough land cannot be dedicated to accomplish the full width of the Greenway the Conservation Commission could recommend to the PZC that this land be granted in easement only. If this were not possible then the Commission could recommend to the Town Council that they consider purchasing this land or easement to create the full Greenway.
- The Conservation Commission will identify parcels that may be suitable for purchase by the Town. Typically these would be parcels in close proximity to watercourses which could be suitable for active or passive recreation and which could be connected to the Greenway network.

MAP 4
Inland Wetlands and
Watercourses
Tolland, Connecticut



1 inch equals 1 mile

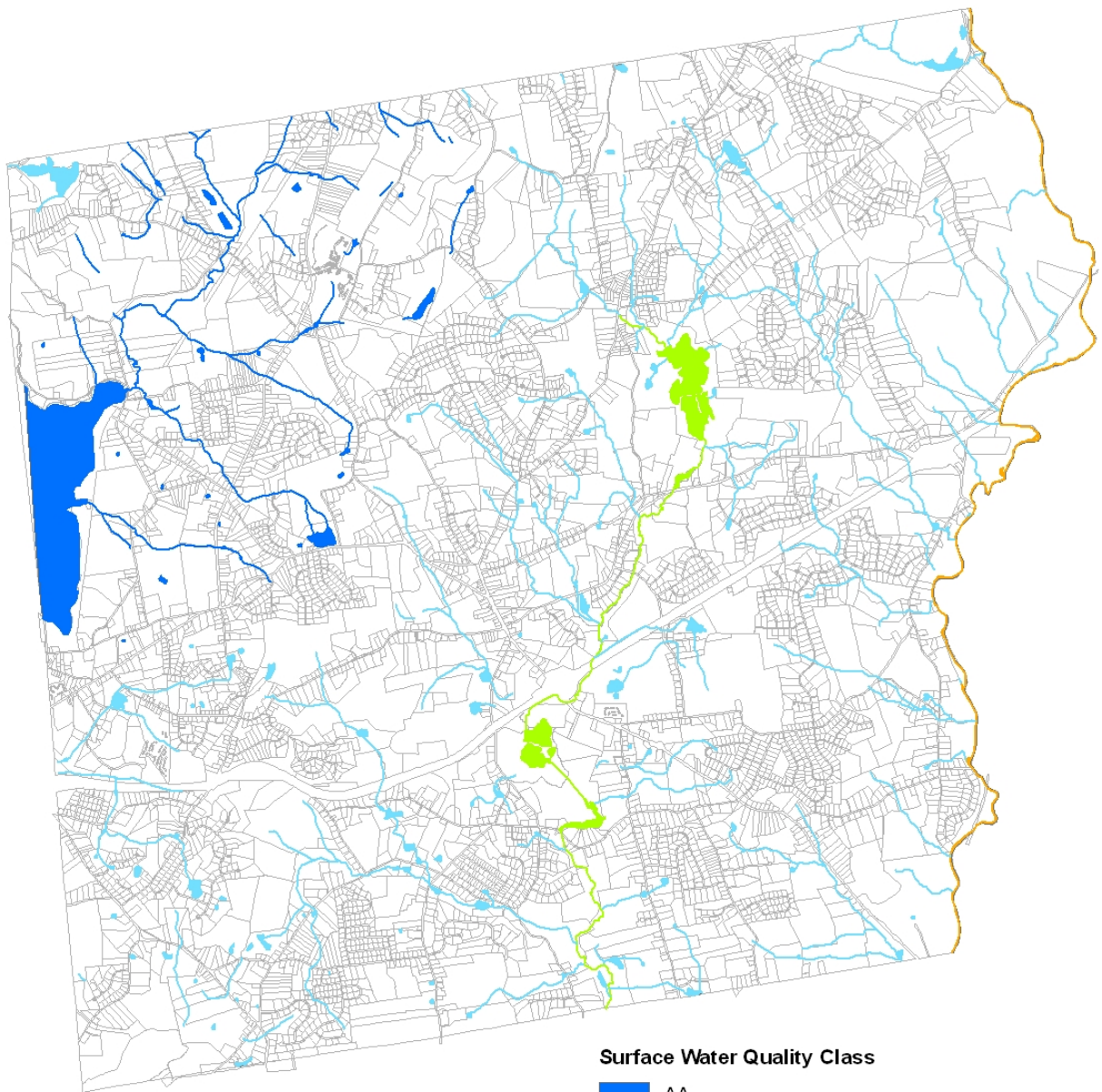
August 2005

-  Lakes & Ponds
-  Streams
-  Wetlands
-  Upland Review Area

Upland Review Area:
50' around Wetlands
100' around Watercourses

MAP 5

Surface and Stream Water Quality Tolland, Connecticut



1 inch equals 1 mile

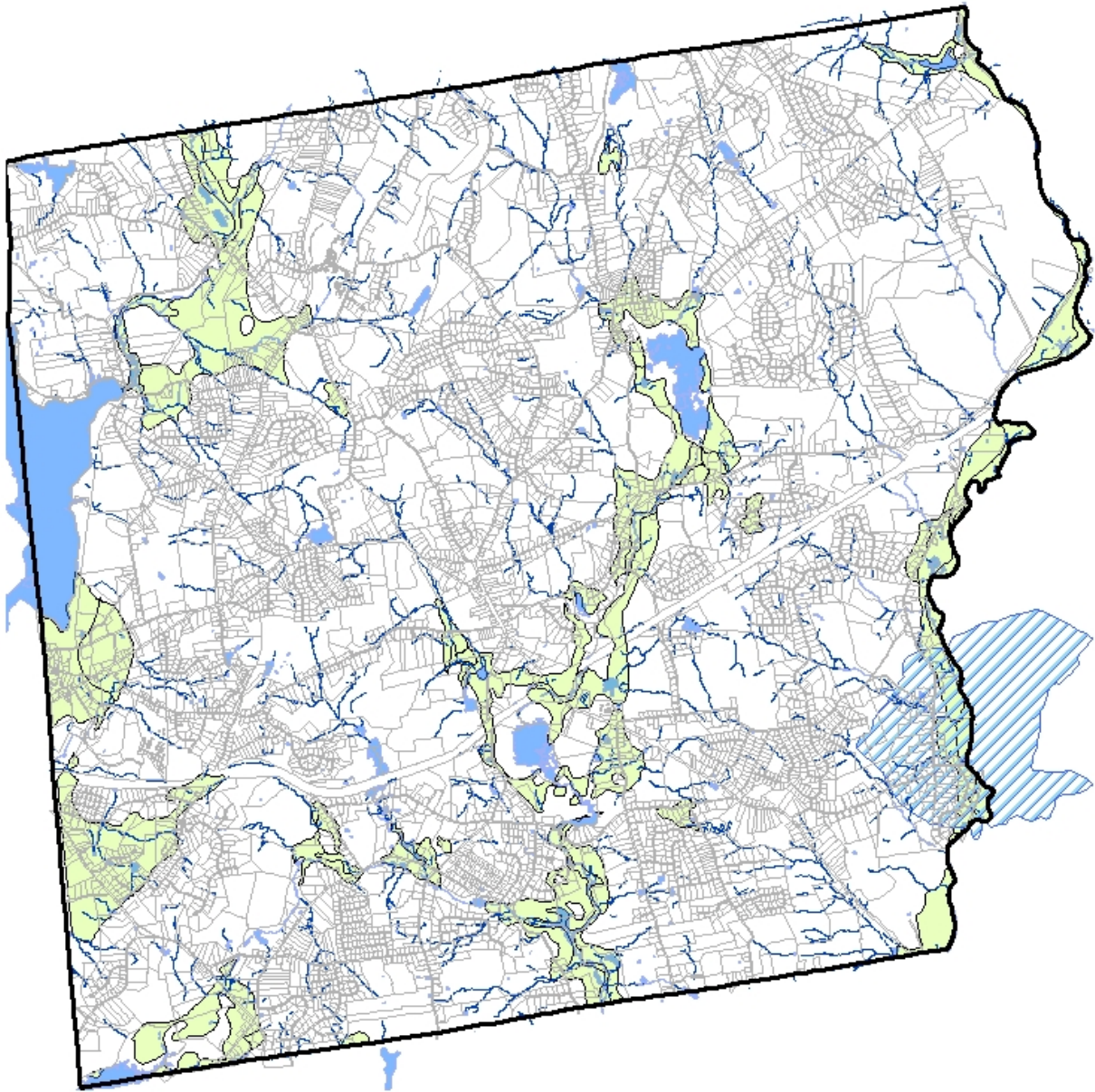
August 2005



Surface Water Quality Class

- AA
- A
- B
- B/A

AA Existing or proposed drinking water supply
A Potential drinking water supply
B Fish & wildlife habitat and recreational use
B/A Currently not meeting target use / Target use

MAP 6
Ground Water Resources
Tolland, Connecticut

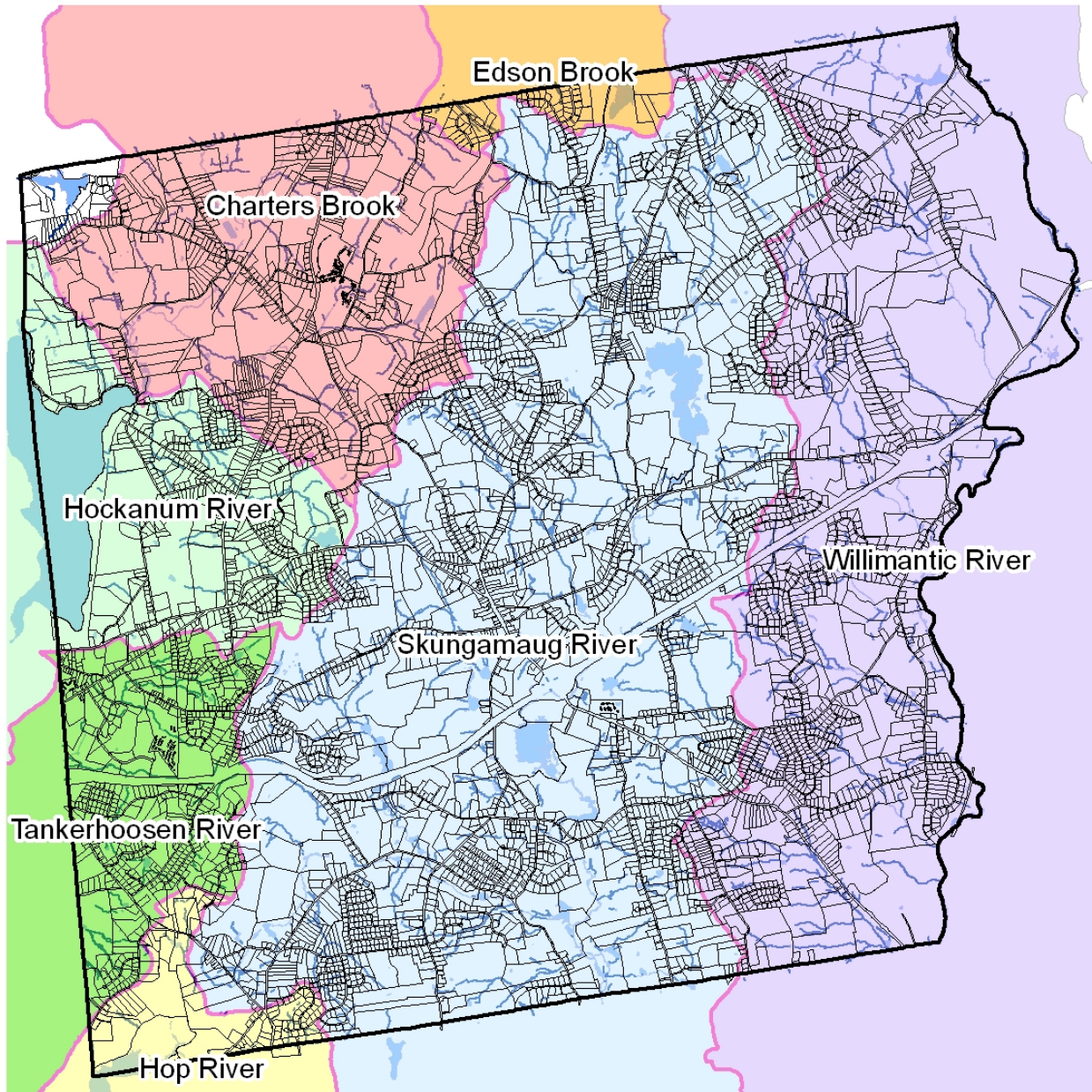


-  Coarse-grained Stratified Drift Aquifer
-  Tolland Water Co. Wellfield Aquifer

1 inch equals 1 mile

August 2005

MAP 7
Major Watersheds
Tolland, Connecticut



1 inch equals 1 mile
August 2005

Forest Resources

Forests are the natural vegetative cover in Connecticut. They provide many critical benefits that we often take for granted, including: removal of carbon dioxide and pollutants from the air; production of the oxygen we breathe; cleansing and moderating the flow of our water supply; and providing the habitat for virtually all of Tolland's native wildlife species. In addition these forests provide countless recreational and educational benefits for our townspeople. They provide logs and other raw materials to Connecticut's forest based industries - being made into products, such as furniture and flooring, which are sold all over the world.



Woodland near Anthony Road

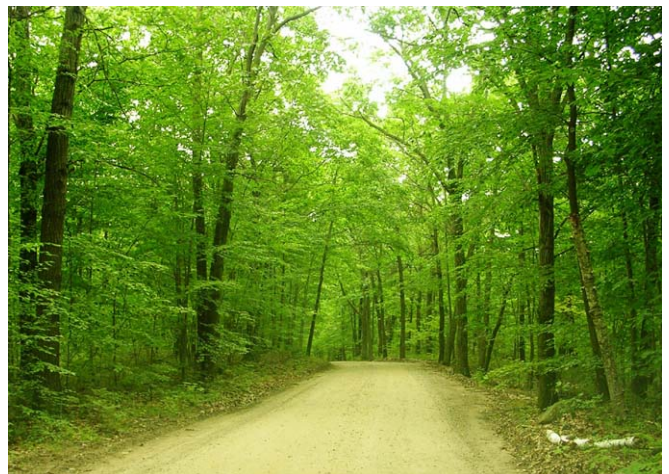
Forests have been recognized by the state as an important resource. The Conservation and Development Policies Plan for Connecticut, 1992-1997 states that, "...it is of growing importance to actively encourage conservation and management of forests to meet a variety of needs including watershed protection, wildlife habitat, scenic vistas, and protection of air quality." (pp97) Forests, like many other natural resources, provide benefits that reach far beyond the borders of Tolland.

Forest fragmentation due to dispersed, residential development is the primary threat to forest resources and their ability to provide these benefits. Individuals and families own over 80% of Tolland's forestland. Individual houses, particularly if sited far back from the road and with large lawn areas can create significant holes in the forest cover. Each of these holes in the forest not only reduces the function of the forest itself, but can interrupt drainage systems, disrupt animal movement patterns and have many other impacts. In

some cases, the remaining forest literally becomes isolated islands which are completely surrounded by residential and/or commercial development, with no connection to other portions of the forest.

Forests should not be thought of as empty land whose only value comes from the sale for development. The long term scientific management of forests for forest products can yield reasonable economic gains approaching that of the stock market, but with the additional production of environmental and recreational benefits. As dispersed development and the resultant fragmentation proceeds, the ability of the forest to provide its many benefits declines rapidly.

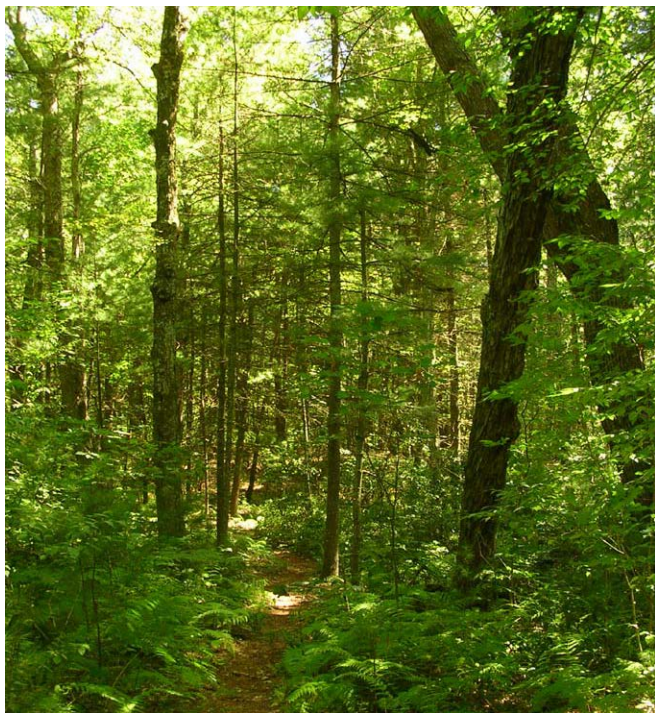
Wildlife habitat value also diminishes rapidly as forests fragment. Some wildlife species, such as turkey, require home ranges of 1000 acres or more; others like the pileated woodpecker and many of our less common songbirds require 300 acres or more per pair to breed successfully. In addition, blue jays, cowbirds and other predatory species that frequent the edges of forests will gradually prey on interior forest bird species, and put them out of existence, as parcel size decreases. Certain other species that are able to adapt to living near developed areas, such as deer, bear and coyotes will have increased contact with residents as their home ranges are fragmented by development. This interaction, however, is not always welcome by the residents or beneficial to the animals. Forest fragments cannot support the diversity of species that larger forests can. Finally, the lack of genetic diversity in wildlife populations doomed to isolated forest "islands" causes them to gradually decline due to sterility and other results of inbreeding.



Bald Hill Road

Research has clearly shown that one large, contiguous tract of forest, which is biologically diverse, provides far greater habitat, recreation and other resource benefits than many small tracts adding up to the same acreage. Further, by connecting such larger tracts to one another with vegetated “corridors”, wildlife populations can intermingle and avoid the devastating effects of genetic inbreeding.

Some degree of fragmentation is inevitable in a developing region such as ours. Land use and conservation plans must therefore seek to direct development to appropriate areas and limit impacts through education and regulation, thus mitigating the negative effects when appropriate.



Wooded path at Shafran Conservation Area

Objective

Conserve productive forests in a way that:

- protects the health and diversity of our native wildlife populations;
- allows regional forest based industries to continue to exist;
- maintains and enhances Tolland’s rural character;
- provides for ongoing forest-based recreational and educational opportunities, and;
- is compatible with desirable economic growth.

Methodology

Locating and mapping our most valuable forests is less straight forward than locating streams or active farm fields. To understand the extent and importance of forest resources in the town several maps have been developed. These include:

- Productive Forest Soils - NRCS soils maps and field data were used to identify soils that are fertile enough to grow timber and other forest products at a reasonably rapid rate.
- Forest Land Cover – Land Use and Land Cover Mapping was used to depict areas recently having forest cover.
- Land Used, in part, for Forestry

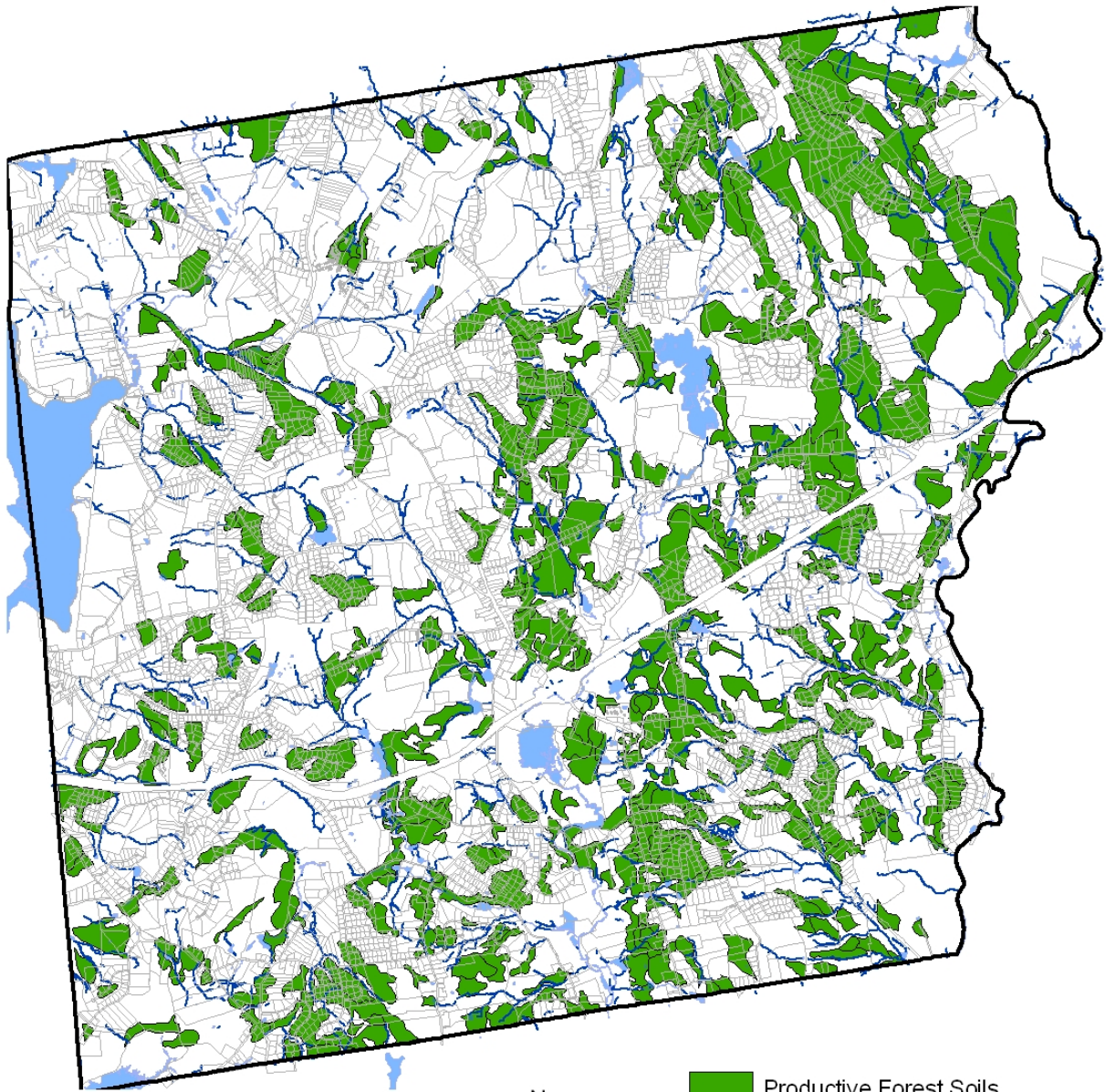
Recommendations


It is recommended that areas of Productive Forest Soils, particularly those areas that are currently forested, be protected.

1. Minimize loss of forest in areas delineated in the Productive Forest Soils Map
2. The Connecticut Forest Practices Act (P.A. 91-335) requires registration of loggers and professional foresters and regulates forest practices. Once the DEP has fully implemented this law (presently all forest practitioners are tested and registered and logging practices in and around wetlands are regulated, however, there are not yet regulations with respect to the extent and method of harvesting) Tolland should actively assist the DEP in ensuring good forestry management practices within the Town.
3. It is recommended that the Planning and Zoning Commission fully and routinely integrate the use of the Productive Forest Soils Map (Map 8) into its deliberation process when considering future land use policies. It is important to understand that areas outside of the Productive Wildlife Habitat zones are not devoid of wildlife value. In cases where open space set-asides are involved, this map can provide tremendous guidance in identifying areas within a given parcel which will provide the greatest long term forest and wildlife value.
4. Long cul-de-sacs and rear lots with long driveways should be discouraged as they drive development deep into forested areas and contribute to fragmentation.

MAP 8

**Productive Forest Soils
Tolland, Connecticut**



 Productive Forest Soils



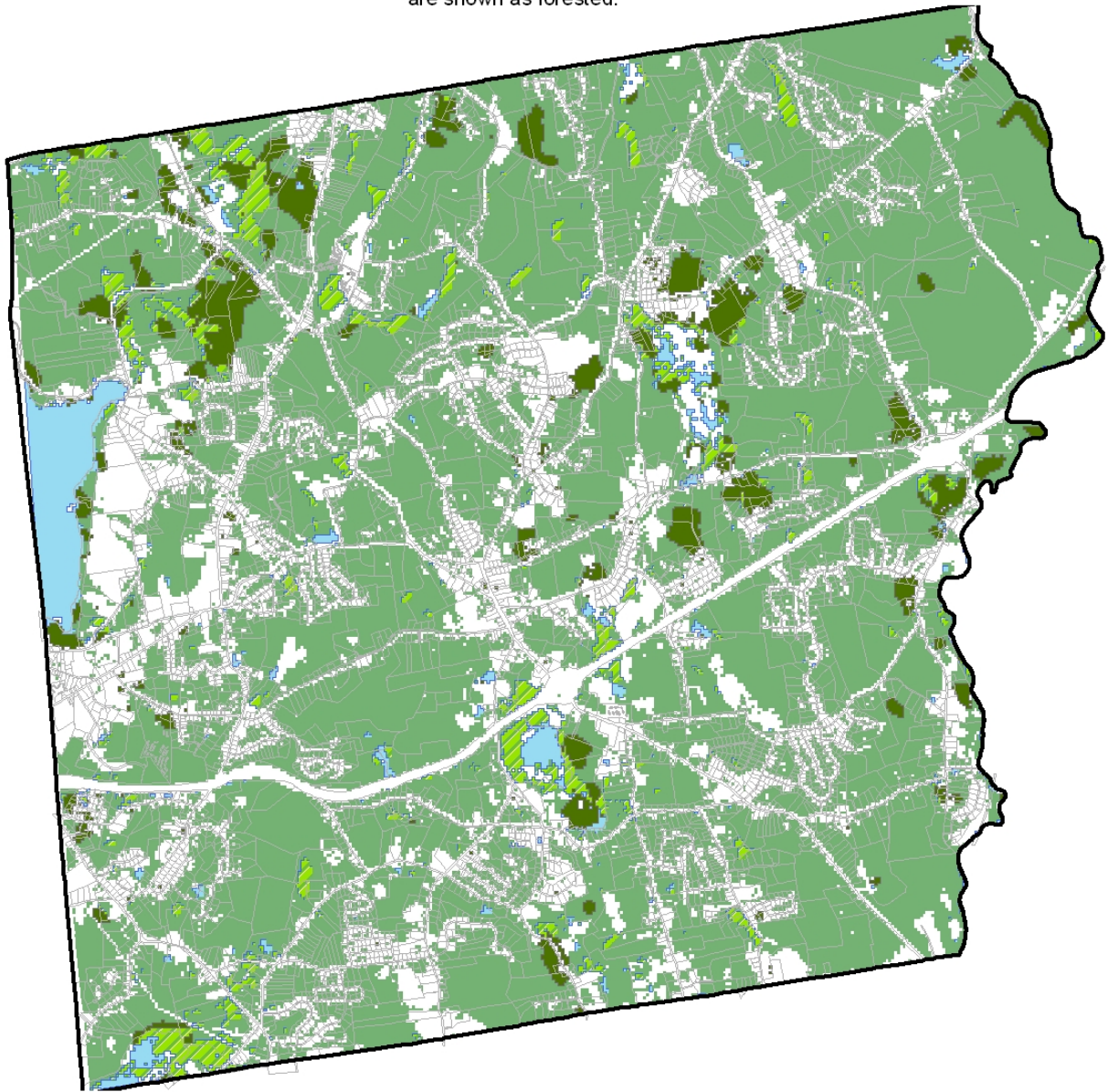
1 inch equals 1 mile

August 2005

MAP 9

Forest Cover Tolland, Connecticut

Heavily forested residential properties
are shown as forested.



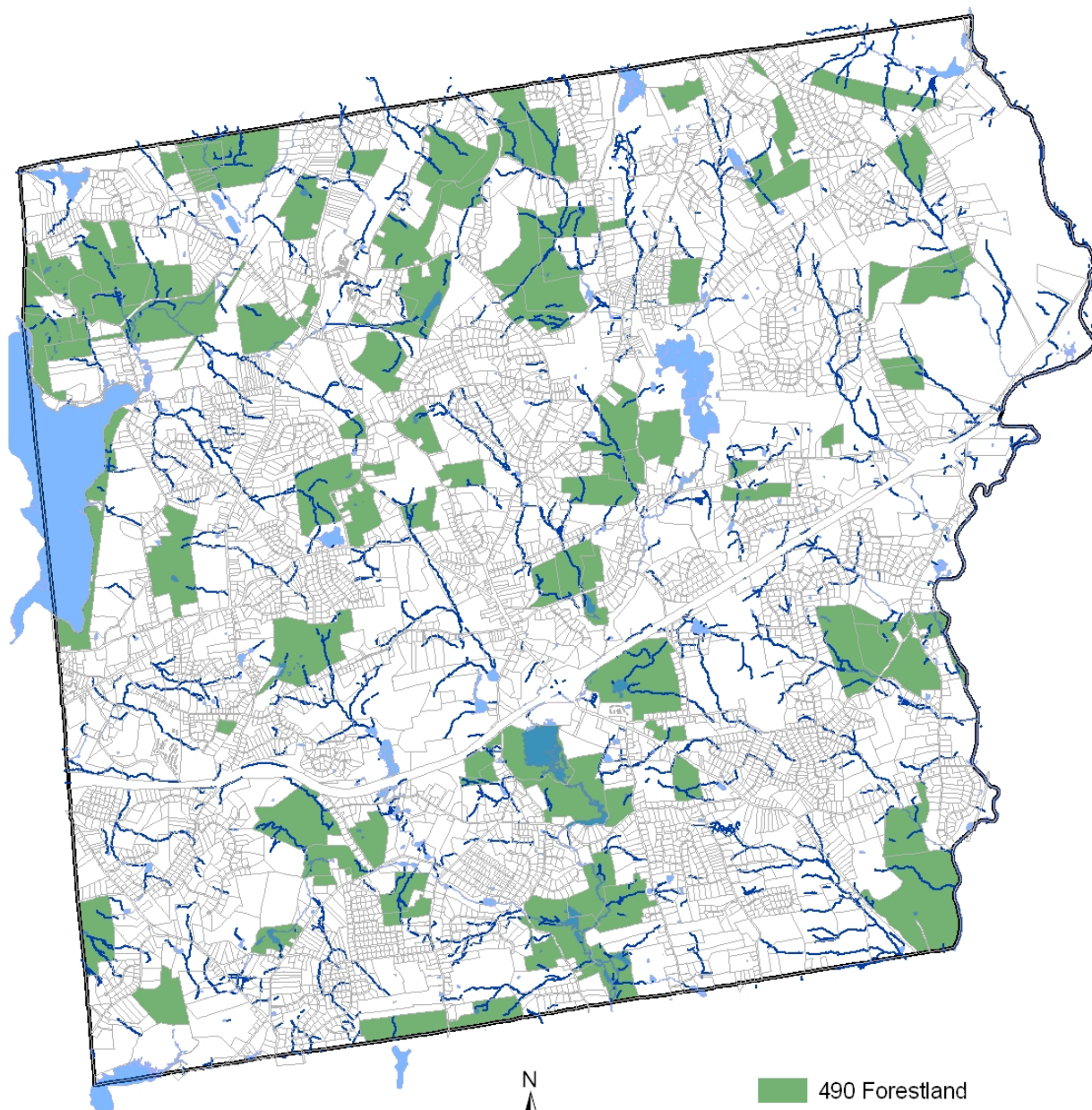
- Deciduous forest
- Coniferous forest
- Forested wetland

1 inch equals 1 mile

August 2005

MAP 10

Land Used, in part, for
Forestry and placed
in the P.A. 490 program
Tolland, Connecticut



490 Forestland

1 inch equals 1 mile
August 2005

Wildlife Resources

Productive wildlife habitats are contiguous land tracts that are of sufficient size to provide abundant food, water and canopy protection at all seasons of the year. Tolland still retains numerous large undeveloped properties over 25 acres (see Map 11). In addition to their innate ability to provide this food and protection in abundance, wildlife biologists agree that the productive forest soils are also, generally speaking, the best potential habitat sites as well. Productive habitats must also contain sufficient water and ideally be large enough to accommodate those interior forest species that cannot tolerate forest edge effects and/or human presence.

Productive wildlife habitats have been defined as relatively undeveloped areas greater than 200 acres in size that consist primarily of productive forest soils and wetlands or watercourses. The larger the size of the potential habitat, the greater the overall habitat value. Additional priority should be given to areas meeting the criteria, which also contain committed open space or are protected from development by steep slopes or other restrictions. This will ensure their protected status and continued productivity.

Important Wildlife Areas and Corridors with Significant Natural Habitat (Map 12): These connecting corridors were identified after the productive habitat areas, in order to prevent those areas from becoming isolated “islands”. Their purpose is to allow terrestrial wildlife populations to migrate from one habitat area to another. Because wetlands and stream courses have great habitat value themselves and are largely protected from development, these corridors follow stream belts and wetlands wherever possible. “The junction between land and water is by far the richest of our wildlife habitats.” (ENFO, 1991)



Winter foragers



Turkeys

Important Wildlife Habitat

1. Managed properties for hunting & fishing such as Kollar Wildlife Management Area, Coventry Fish and Game Club and Rockville Fish and Game Club
2. Riparian areas along Skungamaug and Willimantic rivers
3. Marsh areas such as Tolland Marsh, Skungamaug or Charter Marsh and Cedar Swamp
4. Large contiguous forested properties
 - a. Shenipsit Lake area
 - b. Sugar Hill and Bakos Rd.
 - c. Corridors connecting important large tracts
5. Grassland
 - a. Rte 74 and 30 “Bach farm”
 - b. Rte 74 Leonard’s Corner west to Shenipsit Lake Road
 - c. Rte. 74 Skungamaug area
 - d. Grant Hill Rd.
6. Kozley & Peter Green Rd.
7. Ridges
8. Quarries

In cases where a habitat corridor does not coincide with a riparian area or wetland, protection of a continuous 330-foot corridor can be achieved by the Planning and Zoning Commission through Open Space set asides within subdivisions.

Methodology

To understand the extent and importance of habitat resources in the town several maps have been developed. These include:

- Productive Forest Soils
- Inland Wetlands & Watercourses
- Large Undeveloped Areas - Land Use and Land Cover or Aerial Photography depicting relatively undeveloped areas of approximately 200 acres or more (approximately 1" x ½" at 4,000 scale) or Aerial Photography depicting relatively undeveloped area of approximately 200 acres or more (approximately 1" x ½" at 4,000 scale)

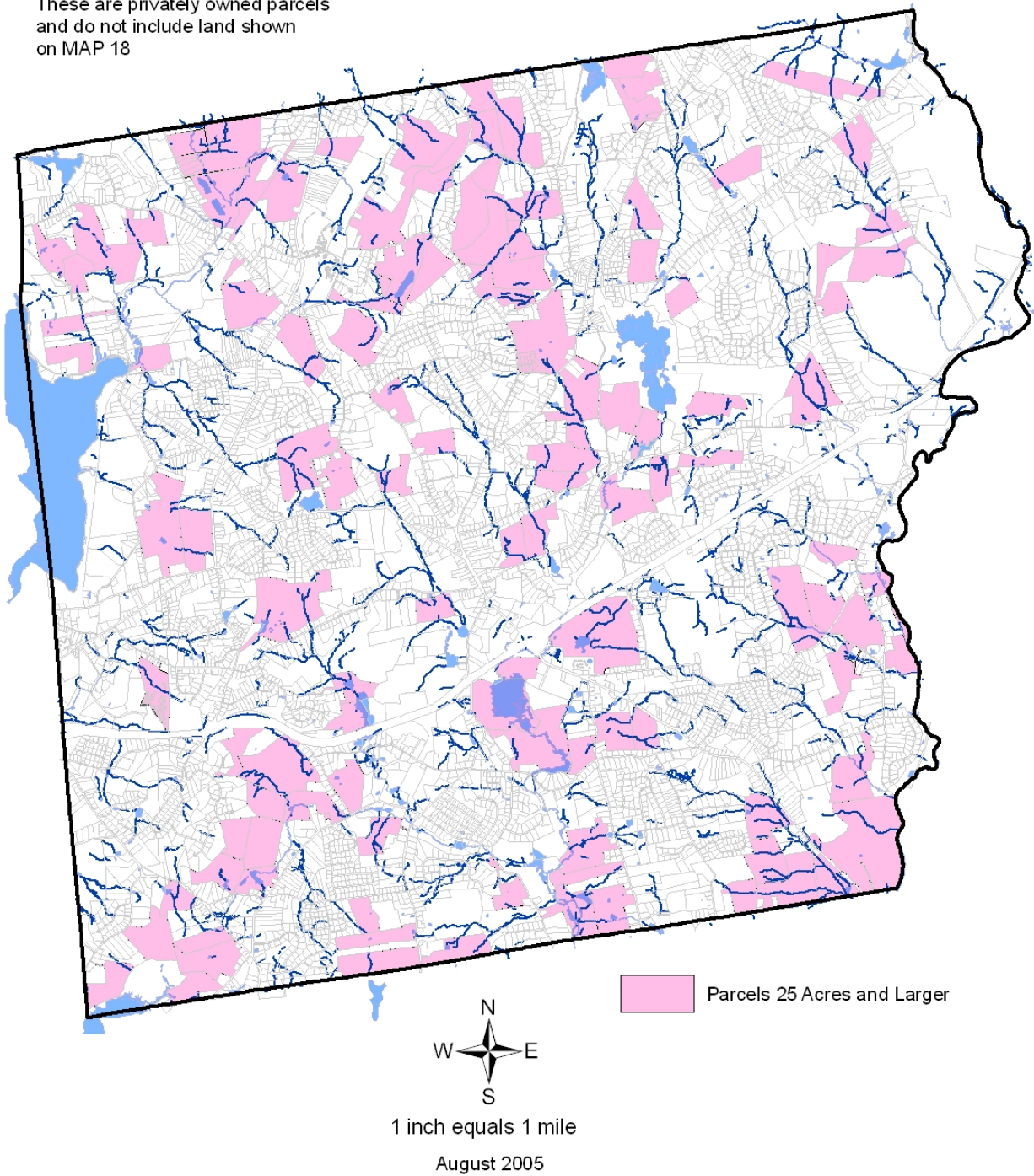
Recommendations

It is recommended that important wildlife habitats and habitat corridors be protected.

1. Minimize fragmentation in the Important Wildlife Areas and Corridors with Significant Natural Habitat areas as identified in Map 12. Particular attention should be given to the protection of undeveloped parcels adjacent to existing committed open space within these habitat areas, to increase the contiguous sizes of protected parcels.
2. Protection of the habitat corridors as identified in Map 12. Since most of these corridors are along stream belts, their protection will logically fall to the Inland Wetlands Commission and will overlap with the previously recommended riparian corridor protection zones. When protection is not feasible the project design should enable the largest wildlife species that may use the corridor to continue to do so. Mitigating measures may include increasing the culvert size in wetland crossings and bridging for stream corridor crossings.
3. All Tolland landowners and particularly those within the areas shown on Map 12 should be encouraged to implement sound forest and wildlife conservation practices. Several state and federal agencies provide no-cost (cost borne by tax payers) assistance and in many cases cost-sharing incentives to landowners interested in improving their land for wildlife and other forest benefits. The Conservation Commission should assist in keeping landowners informed about such programs and encouraging their participation.
4. It is recommended that the Planning and Zoning Commission fully and routinely integrate the use of the Important Wildlife Areas and Corridors with Significant Natural Habitat Maps (Map 12) into its deliberation process when considering future land use policies. It is important to understand that areas outside of the Productive Wildlife Habitat zones are not devoid of wildlife value. In cases where open space set asides are involved, this map can provide tremendous guidance in identifying areas within a given parcel which will provide the greatest long term forest and wildlife value.

MAP 11
Undeveloped Properties
25 Acres and Larger
Tolland, Connecticut

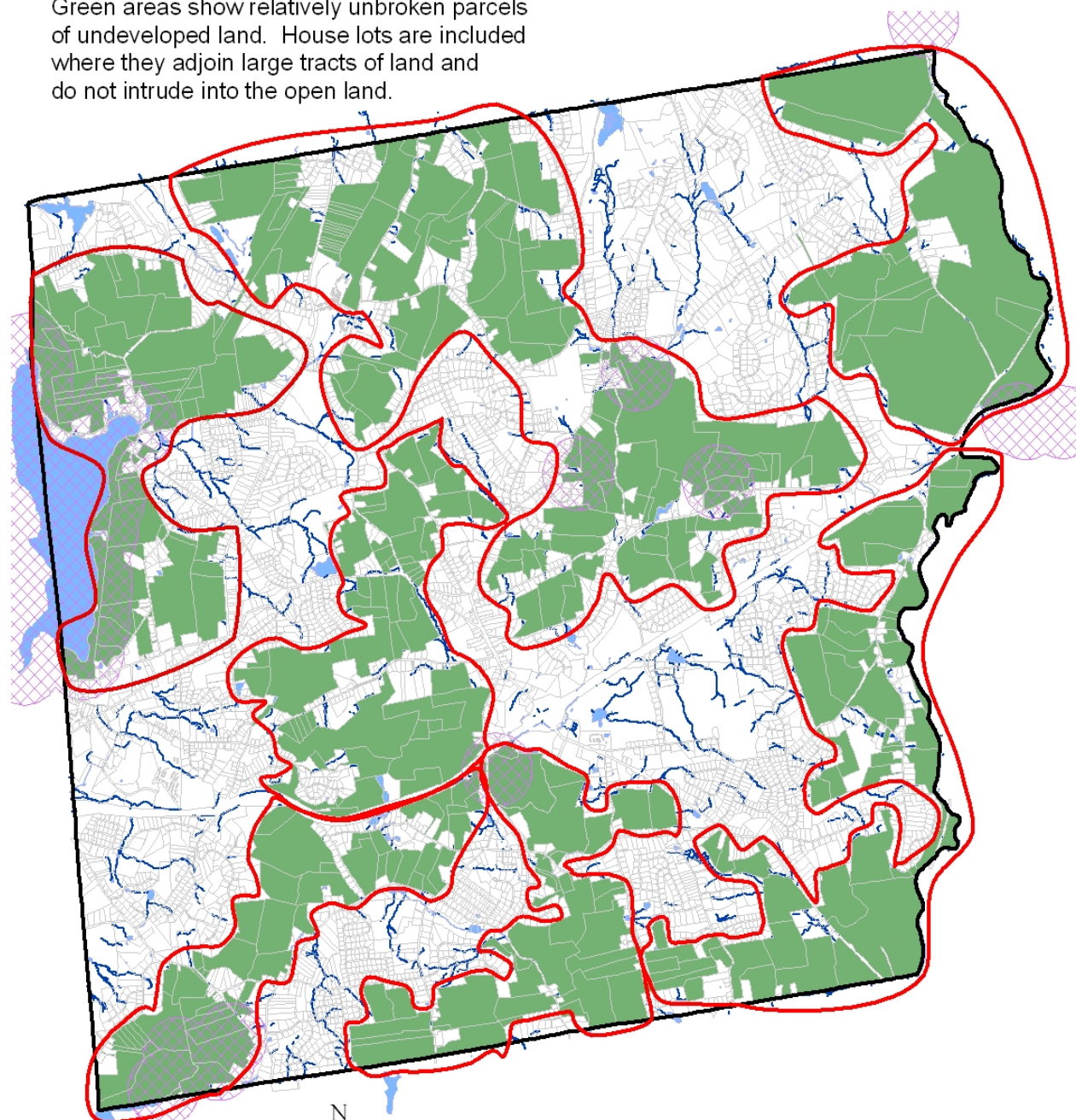
These are privately owned parcels
and do not include land shown
on MAP 18



MAP 12



Important Wildlife Areas and Corridors with Significant Natural Habitats Tolland, Connecticut

Green areas show relatively unbroken parcels of undeveloped land. House lots are included where they adjoin large tracts of land and do not intrude into the open land.



1 inch equals 1 mile

August 2005

-  Important Wildlife areas & corridors
-  Habitats of Species of Concern

Agricultural Resource

Tolland's first settlers were originally farmers that produced crops for consumption for themselves and their cattle. Over time the number of farms dwindled as the lure of higher wages drew young men away from the farm to work in Rockville's textile mills. The commercial farm acreage left today is devoted to growing hay, silage corn, Christmas tree farms, berry patches, and a few family operated orchards. The remaining state registered farmland is currently worked by retired or hobby farmers providing pasture and silage for their livestock.

Farmland adds greater value to the communities' character beyond its inherent function. It provides excellent wildlife habitat for many species and in some cases recreational opportunities such as hunting, fishing, hiking, and bird watching for town residents. Farms have also shown to have a positive effect financially with respect to local government. A study conducted by the Town of Hebron, as well as other studies, have shown that farms provide more tax dollars to the town than they require in service expenditures and are, therefore, a net benefit to the community.

Tolland, like many other surrounding towns, has been forced to address increasing issues of suburban sprawl, as it continues to grow outward from the metropolitan areas. Sprawl has been slowly deteriorating our farms and agricultural resources. Soils that are good for farming are generally well drained, gently sloping, free of ledge and are, therefore, highly sought after by developers for home building. This land may represent a significant portion of a farmer's assets or estate, which may be under financial pressure to sell the land for development.

Although Tolland's farms no longer dominate our landscape, the nearly 1,000 acres of farmland left scattered throughout the town provide a link to Tolland's agricultural past. They contribute to the preservation of its rural character and have been identified as an important asset by homeowners in a survey conducted by TPA Design Group in 1998. Protecting farmland as an agricultural resource in the Town Plan of Conservation and Development has thus become an important priority. In 2005, Tolland received a \$365,000 USDA matching funds grant to purchase the Development Rights of the 155 acre Bahler Farm on Shenipsit Lake Road containing over 95% Prime Agricultural Soils.

There are significant amounts of Prime and Other Important Farm soils in Tolland. They occur throughout town but there is a concentration of these soils in the western part of town near Shenipsit Lake; in the central and south central part of the town along Clough Brook and Tolland Marsh, Skungamaug River and in the northeast corner of town at Buff Cap Hill.



Becker cornfield on South River Road



Wright's Orchard barn

Objective

Tolland's goal is to preserve the remaining farmland and undeveloped agricultural soils and to nurture commercially viable agricultural operations in Tolland, without unduly restricting the rights of private property owners.

Methodology

To understand the extent and importance of agricultural resources in the town several maps have been developed. These include:

- Prime and Other Important Agricultural Soils
- Lands Currently Used for Agriculture, as well as Public Act 490 Farmland. This includes land use and land cover mapping depicting areas recently being farmed or aerial photography depicting areas recently being farmed

In addition these steps have been taken:

- Farm owners were invited to a forum to talk over specific concerns for their land, and share ideas to aid in Tolland farmland preservation efforts
- Farm owners were surveyed to assess the amount of crops and livestock produced for private use and/or commercial sale.
- Active farms and vacant agricultural soils were inventoried.
- Short and long term goals of individual farm owners were determined.



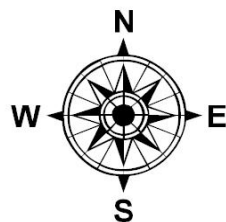
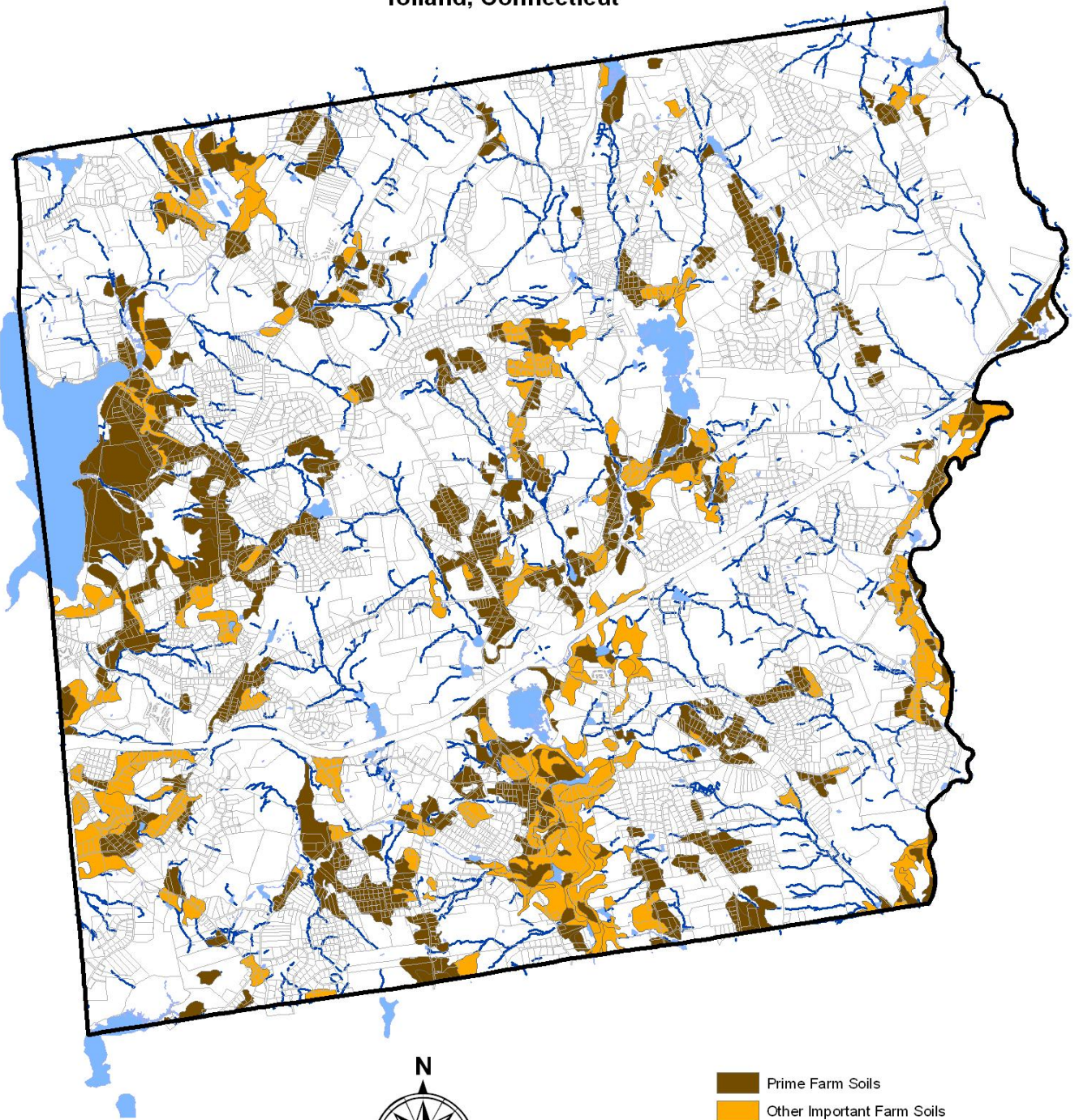
Cattle near Eaton Road

Recommendations

- Continue to support various State of Connecticut and Federal farm protection programs.
- Encourage the purchase of locally grown produce including its use by the Tolland school system.
- Establish buffer requirements separating existing farms from areas of new residential development to be maintained in a vegetative state as long as the farming operation remains.
- Make note of neighboring farms on land records.
- Recognize that the farmer is better at what he does than the town
- Secure "Development Rights" instead of an outright purchase to allow farming to continue in the best possible way.
- Explore adoption of local tax support with reduced assessment on farm Buildings and farm machinery.
- Adopt a "Right to Farm" ordinance consistent with state statutes.
- Be more proactive in support of farming and establish a "Farm Advocacy Group" to voice farmer's needs.
- Establish a "Community Farm" area as a means of creating farm awareness.
- Lease suitable space on town owned property for short or long term agriculture. Christmas trees, blueberry, strawberry or pumpkin patches open to the public for cutting or picking.
- Consider making land available to the students of a Vocational Agriculture program.
- Offer informational assistance and seminars by the Conservation Commission to all farmers interested in preserving their way of life for future generations.
- Amend the Zoning Regulations to promote the continuation of commercial agriculture and encourage the development of new farming enterprises.

MAP 13

Prime and Other Important Agricultural Soils Tolland, Connecticut



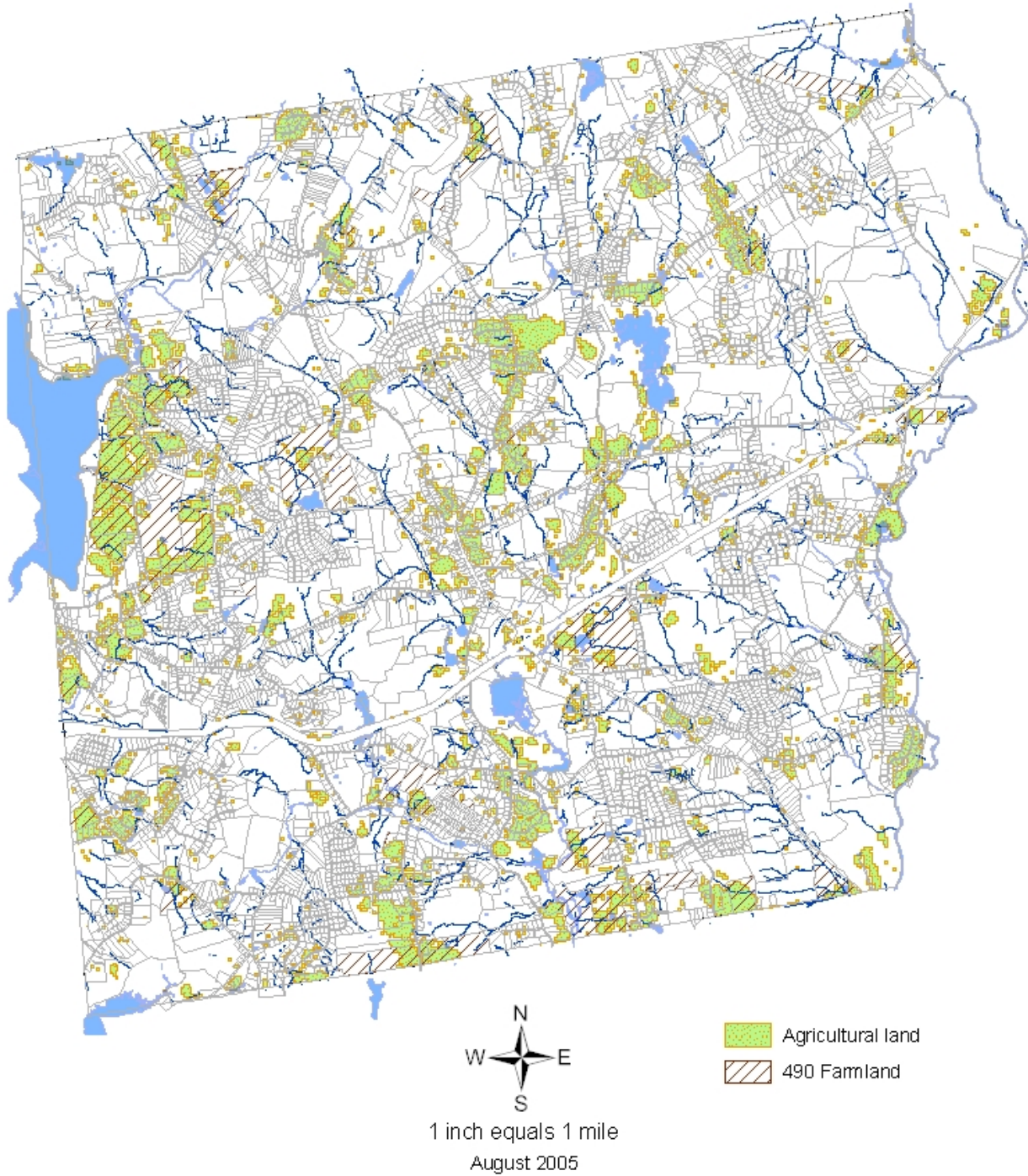
■ Prime Farm Soils
■ Other Important Farm Soils

1 inch equals 1 miles

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MAP 14
Land Used for Agriculture
Tolland, Connecticut

Agricultural Land from satellite imagery, may also show areas cleared for forestry purposes or future land development.
490 Farmland is land actively farmed under P.A. 490.



Historic and Cultural Resources

While there is no positive evidence that Tolland was inhabited by Native American Indians year-round, the abundant presence of arrowheads, spears, and tomahawks provides evidence that Indians came often to hunt and fish. Shenipsit Lake and Charter and Tolland Marshes along with the abundant woodlands in the area were likely very attractive to our Native American ancestors. Many of our current roads started as Indian paths and trails, which were based on ease of walking, not the shortest distance, explaining why so many of them are winding. Some still exist through woods and fields on private property.

The story goes that when the English settlers came from Windsor in 1713, they sought shelter under Settlers' Rock, located on Gehring Road, while they decided where to lay their first roadway. This symbol is depicted on our Town seal. Another early landmark was Pulpit Rock, located on Cook Road, where itinerant preachers orated in the 1790's. Both of these important historic sites are now on private property.

Many of the early settlers were farmers. After felling the trees for building a shelter and making a fire, they set about farming the land for food. They created stone walls out of the plentiful rocks and boulders found on almost all the land in Tolland. These walls were often simply a byproduct of field clearing so crops could be planted. However, farmers also used stone walls to define property lines and keep stock from roaming. Stone walls are important historic artifacts and should be preserved whenever possible.

There are several important sites in town related to the industrial heritage of the town. These include: the Donkeyville Mill on Weigold Road (so-called because donkeys were used for transporting the goods), the Silk Mills on Rt. 74 (Ober property), which still has partially remaining dams, Anderson's Mill dam site and pond on Anderson Road, and the Brooks Mill. This site includes dams and a stone culvert on Johnson Road which is the last stone bridge in Tolland. The Historical Guide – Ponds, Dams & Mill Sites in Tolland, CT publication prepared by Richard Symonds for the Tolland Historical Society provides an in depth description of these sites in Tolland. In the 1930's, Bruce Cramer developed a garnet mine on Mountain Spring Road. Garnets of many colors and fine mica have been mined there on the 125 acres ever since.



Settlers' Rock on Gehring Road



Hunter Road



*Donkeyville Mill on Skungamaug River
(Richard Symonds)*

Life in Tolland revolved around the Tolland Green and the activity generated by the Tolland County Courthouse and the Tolland County Jail (both museums today). Many of the homes around the Green are still as they were in the 19th century. Even the Homestead continues as a place of business, as it has for many years. The Old Town Hall (1879) is now the Tolland Arts Center, the current Town Hall was once the Hicks Memorial School (1907-08), and the old Savings Bank of Tolland (1829) is now the Board of Education office. The front façade of the Tolland Congregational Church remains the same as it was when built in 1838. The Green itself, while no longer used for grazing animals or for playing tennis, remains the cultural center of Tolland. Its designation to the National Registry of Historic Places and the formation of the Tolland Green Historic District Commission will help ensure its future.

Another area of nicely preserved historic homes is the Skungamaug Village area-so named by the Indians to denote the joining of two brooks. The colonial-era (1720) Daniel Benton Homestead on Metcalf Road, which has gained notoriety as a “haunted house” is being carefully restored by the Historical Society.

The four cemeteries-North, South, East, and Grant Hill Family Cemetery reflect the many people who, over the centuries, have chosen Tolland as their home. Many Revolutionary War, Civil War and other war veterans are buried in the cemeteries. The headstones and markers represent the hopes and fears of the generations buried there.

Finally, a word about the Town Pound, which is located on Cider Mill Road on the way to Crandall’s Park. In 1853 laws were enacted laying out the rules for the Pound and what fines could be imposed by the Hog-Hayward for animals that had strayed. All animals were marked by their owners and could not be retrieved at the Pound until all fees were paid.

Tolland’s past includes:

- mills that captured flowing water at stone dams to create mechanical power,
- farms that provided produce to the nearby mill Towns of Stafford and Rockville.
- a Town Green that was a crossroads and center of Town and County Government
- a local drinking water supplier
- native American encampments and trails
- a Trolley connecting Rockville to Crystal Lake in Ellington



Hicks Stearns Museum – Tolland Green



Benton Homestead



Skungamaug Village Cemetery

Important Historical Locations

1. Settlers' Rock
2. Tolland Green
3. Donkeyville Mill
4. Cider Mill Pond at Crandall Park
5. Identified archeological sites
6. Stone Walls
7. Trolley Line (a portion is a CT Water Co. trail on the east side of Shenipsit Lake)
8. Museums
 - a. Tolland County Jail and Museum
 - b. Tolland County Courthouse
 - c. Hicks-Stearns Family Homestead
 - d. Daniel Benton Homestead
9. Tolland Arts Center
10. Homestead Country Store
11. Level crest of Grant Hill Rd. (Original layout of town center)
12. Ponds, dams and mill sites as cited in The Historical Guide - Ponds, Dams and Mill Sites in Tolland, CT by Richard Symonds for the Tolland Historical Society

Objectives

The 1999 Tolland Plan of Conservation and Development (POCD) lists as a policy: "Protect the Town's remaining historically or architecturally significant structures, archeologically sensitive sites, and areas of unique or exceptional beauty..." (pg. 12). Again, on page 16, the POCD states "Identify and promote preservation of natural areas of historic, scenic, natural, or cultural value."

Any development in such areas must have a review from the Town staff and the State Archeologist. Such a review was recently done for the Senior Housing project on Rt. 74 and the Fieldstone Commons project on Rt. 195.

Methodology

To understand the extent and importance of historic resources in the town several resources have been developed. These include:

- Historic & Cultural Resources Map 15
- Historic District Map 16
- The Historical Guide - Ponds, Dams and Mill Sites in Tolland, CT – a report written by Richard Symonds

Recommendations

- The Tolland Zoning Regulations must continue to reflect the importance of those sites in Tolland of historical, architectural, or cultural significance. Specific major landmarks are listed and noted in the Regulations and on maps.
- Staff should review – along with the State Archeologist, if warranted – all sensitive historic and archaeological areas. Development patterns should reflect the Town's concern for preservation.
- Educational outreach to the community on the importance of our cultural and historical areas must continue.

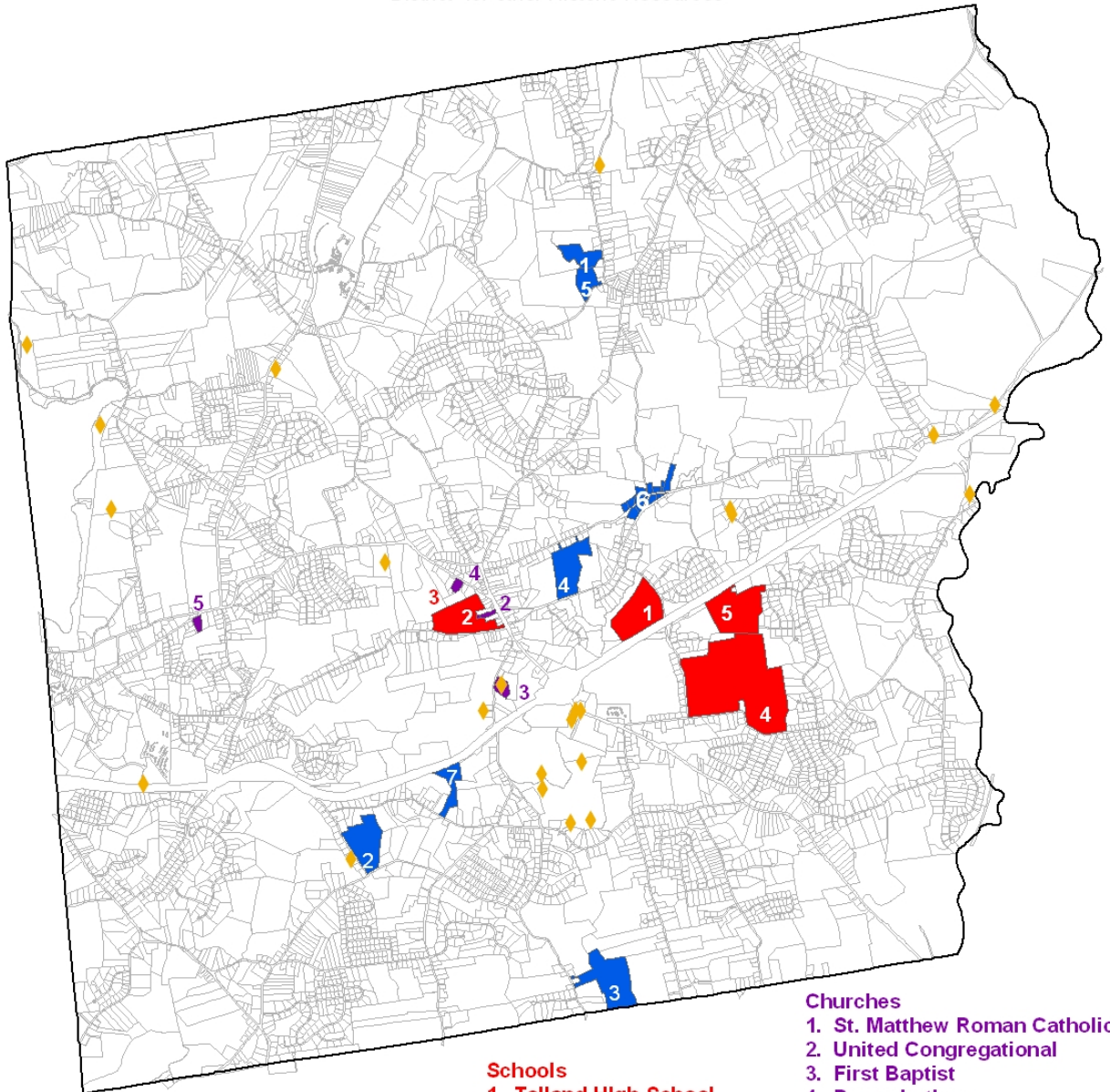


*1934 Aerial Photograph of Tolland Green
(Map and Geographic Information Center, University
of Connecticut, <http://magic.lib.uconn.edu/>)*

MAP 15

Historic & Cultural Resources Tolland, Connecticut

See the Map 16, Tolland Historic
District for other Historic Resources



1 inch equals 1 mile

August 2005

Schools

1. Tolland High School
2. Tolland Middle School
3. Parker Elementary School
4. Birch Grove Primary School
5. New Tolland High School



Recognized Archaeology Sites

Churches

1. St. Matthew Roman Catholic
2. United Congregational
3. First Baptist
4. Peace Lutheran
5. Seventh Day Adventist

Historic Sites

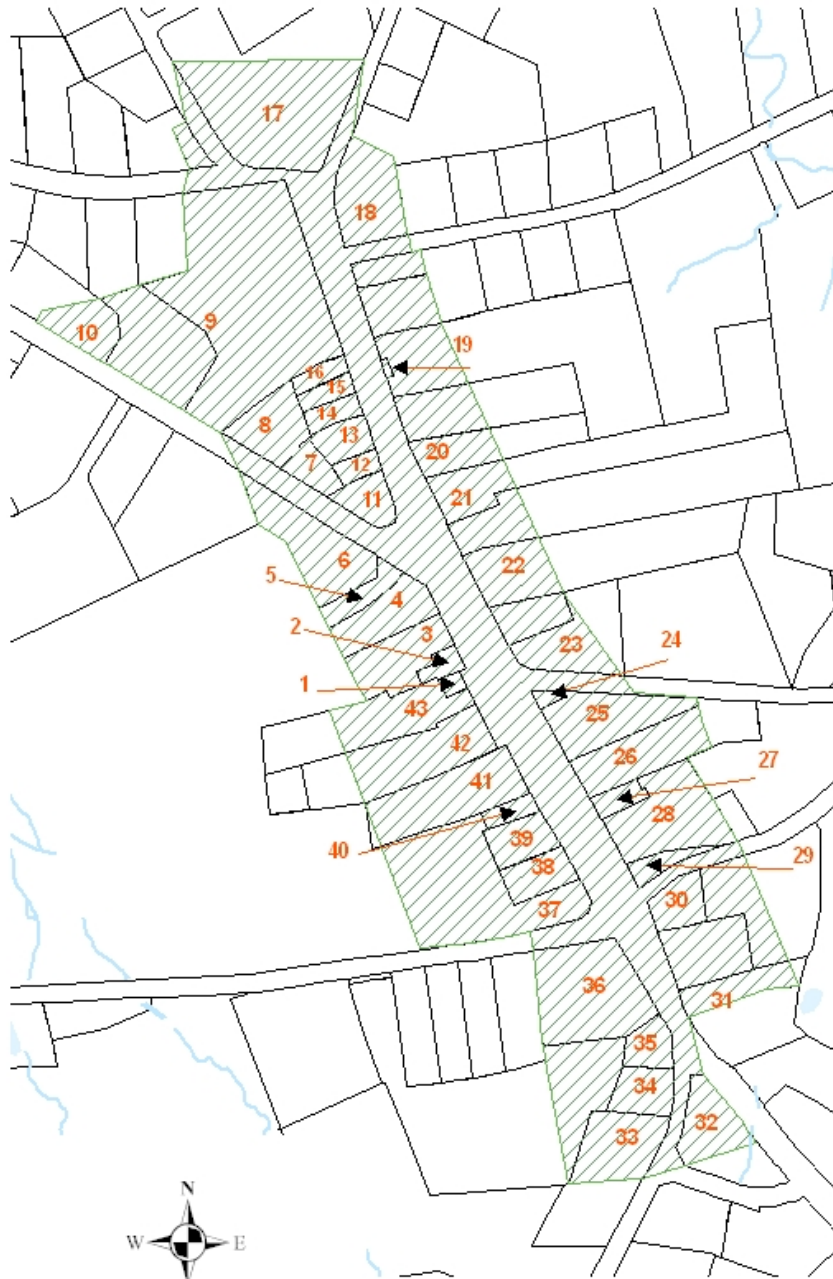
1. Pulpit Rock
2. Settlers' Rock
3. Donkeyville Mill
4. Silk Mill
5. Brook's Mill Dam
6. Skungamaug Village
7. Benton Homestead

MAP 16 **Tolland Green Historic District** **Tolland, Connecticut**

On the National Registry
of Historic Places

HISTORIC PROPERTIES

1. Old Tolland County Court House
2. E. & E. Smith Store / later Post Office
3. Site of Elijah Smith's Tavern
4. Benjamin Ashley House
5. Joseph Pitkin House
6. Charles Underwood's House
7. Dr. Brace House
8. Ira K. Marvin Wagon Factory (moved)
9. Site of Underwood Belting Factory
10. Moses Underwood House
11. Albert Hawkins House
12. Lewis B. Price House
13. Howard House
14. Howard House / first Methodist Parsonage
15. Store / Jewett House
16. 2nd Lee Methodist Church / later Tolland Grange
17. Site of Dr. Ladd House
18. George Eaton House
19. Site of Blacksmith Shop
20. Site of Lyman Kibbee House / later Congregational parsonage
21. Ransel Agard House
22. Reverend Steven Steel House
23. Old Tolland County Jail
24. Danforth Richmond General Store
25. Benoni Shepard's Tavern / Charles Hicks House
26. Jonathan Barnes House
27. F. W. Wescott House
28. Elisha Sterns House
29. Old Town Hall
30. Griggs House
31. Dr. Gurdon Thompson House
32. Jeremiah Parish House
33. Howard Ayers House
34. Bowers House (moved from Merrow Rd.)
35. Joseph Pitkin's Store
36. Dr. Potwine House
37. Ratcliffe Hicks Memorial School
38. Frank Underwood House
39. Loren P. Waldo House
40. Calvin Willey Store
41. Calvin Willey House
42. Congregational Church
43. Old Tolland County Bank



1 inch equals 500 feet

August 2005

Historical information provided
by Barbara Cook of the Tolland
Historical Society

Recreation Resources

During the past two decades, Tolland has experienced expansive growth due in part to the Town's natural beauty and character, quality of services and proximity to natural resources and urban areas.

Tolland's commitment to its recreational resources is best summarized in its recreation philosophy: "As Tolland grows and changes, we are committed to enriching the lives of all of our citizens by ensuring that a high quality of facilities and programs is maintained; that the type of services we provide reflect our population and its needs; that we exercise proper stewardship of our natural resources; and that we remain vigilant of balancing our desires with need and cost." (Tolland Recreation Master Plan, 2003).

Town Parks

Crandall Park – Cider Mill Road

This is the main park in Town with over 400 acres of land, 20 acres of which is developed, leaving 380 undeveloped acres. A seasonal swimming pond and open sided pavilion provide warm weather enjoyment and picnic facilities. The pond may be used for ice skating in the winter. Softball, baseball, soccer and basketball recreation areas, as well as hiking trails provide both active and passive recreation capabilities.

The Crandall Park Lodge provides rental facilities and a boat launch on Crandall Pond II.

River Park – South River Road

Several baseball fields provide playing area for the Town's little league and there is fishing on the Willimantic River.

Heron Cove Park – South River Road

This 35-acre park along the Willimantic River provides basketball and soccer areas along with hiking trails, ice skating and a canoe launching site. There is also fishing along the Willimantic River.

Cross Farm Recreation Complex – Rhodes Road

This new complex is located between Birch Grove Primary School and the new High School and provides a total of six playing fields. A trail system through the woods will provide a connection between the two schools via hiking trails.

Tolland Schools

Recreation opportunities and playing fields are provided at all the town schools.



Crandall Park – Cider Mill Road



Ice Skating at Heron Cove



Baseball Fields at Cross Farm Recreation Complex

Objective

Meet present demand and plan for future recreational needs integrating Tolland's beauty, character, and its precious natural resources by:

- Offering a broad range of programs to serve the greatest number of citizens.
- Integrate active and passive uses and provide physical linkages to trails and greenways.
- Provide and maintain high quality, safe facilities.
- Be proactive and monitor on-going demands, as well as needs for the future.

Methodology

The extent and importance of recreational resources in the town are shown on the following map:

- Important Recreational Resources

In 2003, a Pathways Committee was formed in conjunction with the Planning & Zoning Commission, the Recreation Advisory Board and interested citizens with the goal to:

- Encourage alternative means of transportation by providing safe corridors for walking and bicycling.
- Promote pedestrian linkages between public spaces and residential and commercial development.
- Create opportunities for increased physical activity.

The Willimantic River Alliance has organized towns along the river and secured a State Greenway designation to promote preservation and public access along the full length of the river.

Recommendations

- Continue to evaluate demand for recreational resources.
- Evaluate existing utilization of Town property.
- Develop a map of proposed linkages and trail to guide land and conservation easement acquisition process.
- Complete an analysis that measures the gap between demand versus available resources.

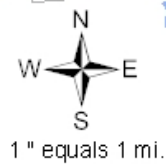
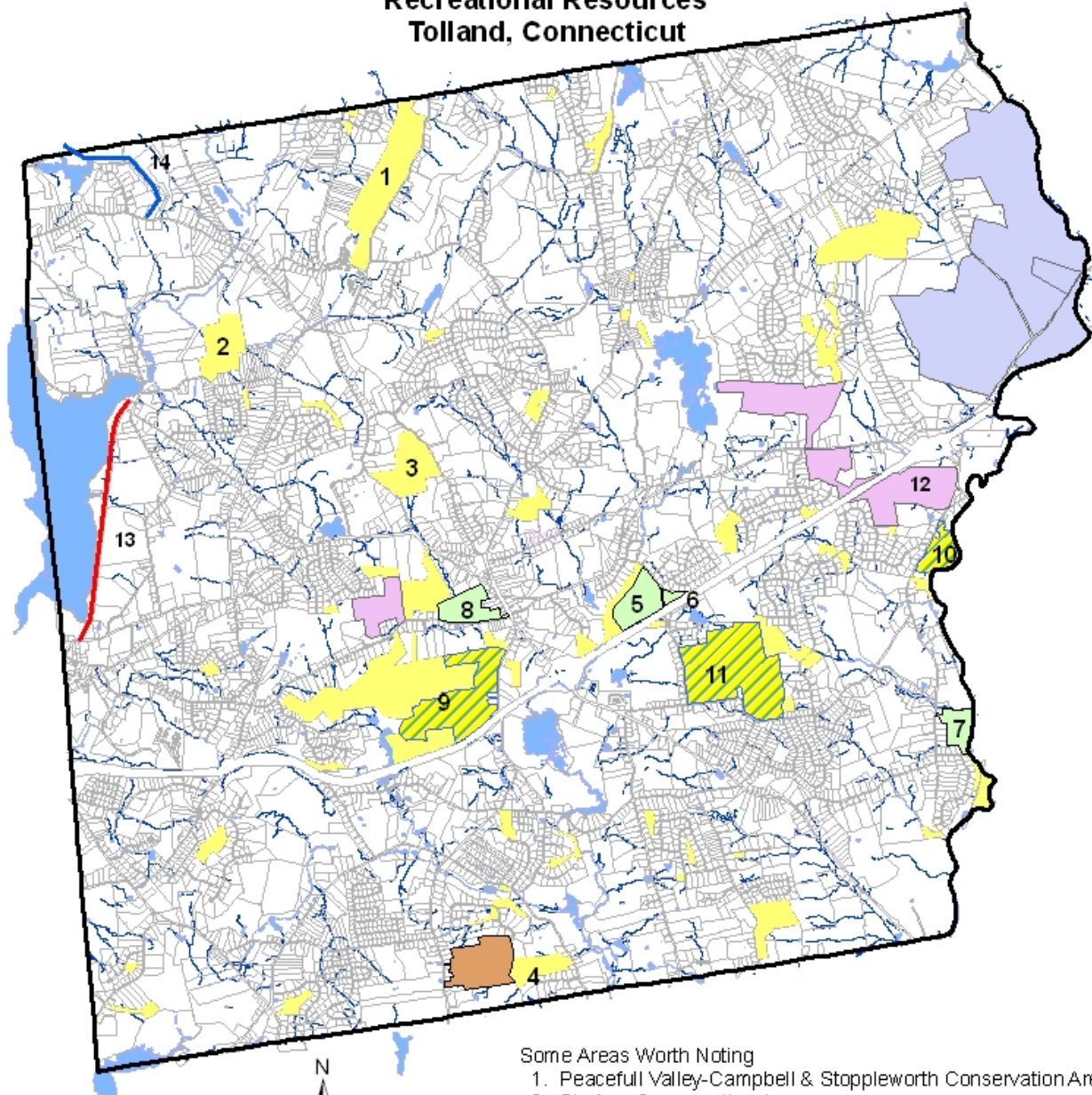
- Prioritize demands based on feasibility and fiscal constraints.
- Establish and implement a plan accordingly.
- Map resources and points of interest and make this information available to the public
- Categorize resources i.e. open space, passive and active recreation areas, and areas of resource protection
- Make public aware of available resources and their attributes
- Create a combined web based and leaflet handout information resource:
 - Develop trail maps with description of trails using a rating system (easy to difficult),
 - Develop theme hikes and trails or description of views and experiences that emphasize the natural areas that have been preserved such as,:
 - Foliage trail (Valley View Trail, Ridgeview Trail)
 - Deer Run Trail, Turkey Walk
 - Fox Den Trail, Brookside Trail
 - Laurel Way Trail
 - Full Moon Meander
 - Points of access for trails, parking and other facilities of interest,
 - Park highlights, (The developed park areas will likely stay the province of the Recreation Department so these can be referenced, however details will be in the Recreation Plan.)
 - State-owned open space
 - Kollar Wildlife Management Area – trails and hunting preserve,
 - Nye Holman State Forest – Archery course and catch and release fishing area,
 - Charter Marsh Wildlife Refuge – closed to the public

Others

- Benton Homestead,
- Old Tolland Jail,
- County Courthouse, and
- Tolland Arts Center.

MAP 17

Recreational Resources Tolland, Connecticut



- Active Recreation
- Active & Passive Recreation
- Joshua's Tract Conservation & Historic Trust
- Kollar Wildlife Management Area
- Nye-Holman State Forest
- Passive Recreation

Some Areas Worth Noting

1. Peacefull Valley-Campbell & Stoppleworth Conservation Area
2. Shafran Conservation Area
3. Parciak Conservation Area
4. Weigold Conservation Area
5. Tolland High School Track & Fields
6. Tolland Tennis Courts
7. River Park Ball Fields
8. Middle & Parker School Ball Fields
9. Crandall Park Ball Fields, Swimming, Tennis, Hiking
10. Heron Cove Park Ball Fields, Walking, Canoeing
11. Cross Farm Ball Fields, Walking
12. Nye-Holman State Forest Archery Course
13. Conn. Water Co. Trolley Trail
14. Shenipsit Blue Trail

August 2005

Visual & Aesthetic Resources of Tolland

Tolland derives its aesthetic beauty and scenic nature from both its historical and geological past. Geologically, Tolland is in the Central Connecticut Highlands, deriving this name from the substantial elevations that are attained by its many hills and ridges. These elevations are the highest in eastern Connecticut, with the exception of its neighboring Towns of Stafford and Somers that share some of the same geological characteristics.

Tolland's hills and ridges rise 900 feet, and in some instances top 1000 feet above sea level. Contrasting these hilltops and ridgelines, are the stream valleys and western facing slope that grades down towards the Connecticut Valley Glacial Terrace to an elevation of approximately 500 feet. The Connecticut Valley Terrace located in neighboring towns to the west provides spectacular views of the Connecticut River Valley and the downtown Hartford area.

Two major rivers, the Willimantic and the Skungamaug, flow through Tolland. The Willimantic flows into Tolland at an elevation of approximately 450 feet and leaves at less than 350 feet above sea level. In Tolland, the western side of the valley rises to elevations of 600 to 700 feet providing wonderful views of the river valley to the east. Steep hillsides rise on the opposite shore to similar elevations in Willington affording scenic views of these ridge-tops from the Willimantic River Valley.

The headwater of the Skungamaug River is in the North central portion of Tolland at elevations of approximately 750 feet or so and flows into Coventry at an elevation of about 500 feet. The hilltops and ridgelines, with their 900 foot plus heights, afford beautiful views of the Skungamaug River Valley and the expansive Tolland Marsh. These views can be enjoyed from the North, East and West sides of Tolland as the entire River Valley is encompassed within Tolland.

The views from these ridge-tops to valleys and conversely from the valleys to the ridge-tops are quite impressive. Many roadways run in or near the streams and rivers so views of the ridgelines and hilltops can be readily appreciated while driving in an automobile. Travel along Routes 195, 74, 30 and I-84 all offer scenic opportunities to view the ridge-tops and river valleys of Tolland.



Campbell Peaceful Valley Conservation Area



Willimantic River looking south



Tolland Jail and Courthouse



Interstate 84 – looking west

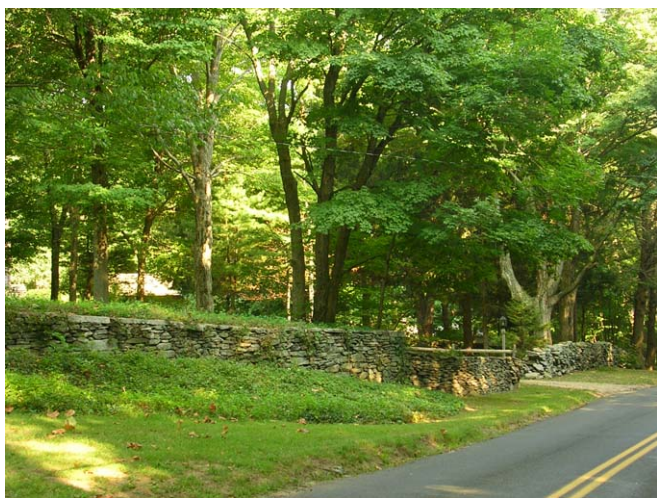
I-84, of particular note, transverses the major watersheds, crossing from the CT River watershed into the Thames River watershed over a ridge of nearly 800 feet before it drops to the Tolland Marsh on the Skungamaug River. It then rises over a ridge of nearly 700 feet down into the Willimantic River Watershed to an elevation of 400 feet or so at the river edge before crossing into Willington. Traveling along I-84 one is treated to steep tree covered ridges, dramatic vistas of hilltops, ridgelines and river valleys with very little development to mar the view. These dramatic elevation changes along the highway can also be experienced in the wintertime when the weather conditions on the tops of these ridges along I-84 can be markedly different than the river valleys (snow and freezing rain, versus wet pavement).



Shenipsit Lake

The Shenipsit Lake, located partially in the northwestern corner of Tolland is at an elevation of about 500 feet and can be seen from numerous higher elevation locations in the western portion of town. Prime Agricultural Soils exist along the side of Shenipsit Lake and are currently being farmed or maintained as open fields, providing aesthetically pleasing views and vistas along Shenipsit Lake Road and Routes 74 and 30.

The beauty of Tolland is often most appreciated from one's automobile while traveling along its highways and byways. Local roads vary from paved thoroughfares to gravel country roads. Trees along the edges arch over the roadways framing travel within a forested landscape. The remaining agricultural lands and forested areas provide bucolic views of field and woodlands. The views from the ridge and hilltops can be impressive, and due to the distance and elevation changes, the viewer is treated to a full appreciation of Tolland's steep and hilly lands.



Metcalf Road

Scenic Places, Drives & Vistas

- See Visual Resources Images

Visual Agricultural Resources

- Shenipsit Lake Road (155-acre protected Bahler Farm)
- Rte 74 at Route 30 - Leonard's Corner to Shenipsit Lake Rd.
- Hunter Rd.
- Route 195 at Coventry Town Line (Pumpkin Paul's)
- Grant Hill Road at Coventry Town Line

Objectives

The main objective is to protect the listed scenic places and vistas, scenic drives and visual resources. These resources directly affect the rural quality and help establish character to Tolland. They were also included in the inventory to inform people what the resources are and where they are located. Tolland has a rich diversity of topography, vegetation, waterways and structures. These resources should be enjoyed. Also, in knowing what and where the resources are, steps can be taken to insure they remain. Finally, it is hoped that, through sensitive development as well as preservation, new sites can be added to the list of resources, enhancing the town's character.

The categories of resources, scenic places, scenic drives and visual resources were derived from the objectives of:

- Preserving unique geographical vistas
- Preserving historic views which reflect the town's culture and history
- Preserving outstanding specimens such as ancient trees
- Preserving features which are typically not built anymore, i.e. stone walls, unique architecture
- Preserving a variety of views
- Acknowledging sites which were developed in a manner which is sensitive to the town's character or enhances the town's character

- Preserving dams and old mill sites

Methodology

The methodology used included both field work and map work. The resources were identified by townspeople supplying their own list of favorite places and views. These lists were then compiled on the Visual Resources Map (Map 18).

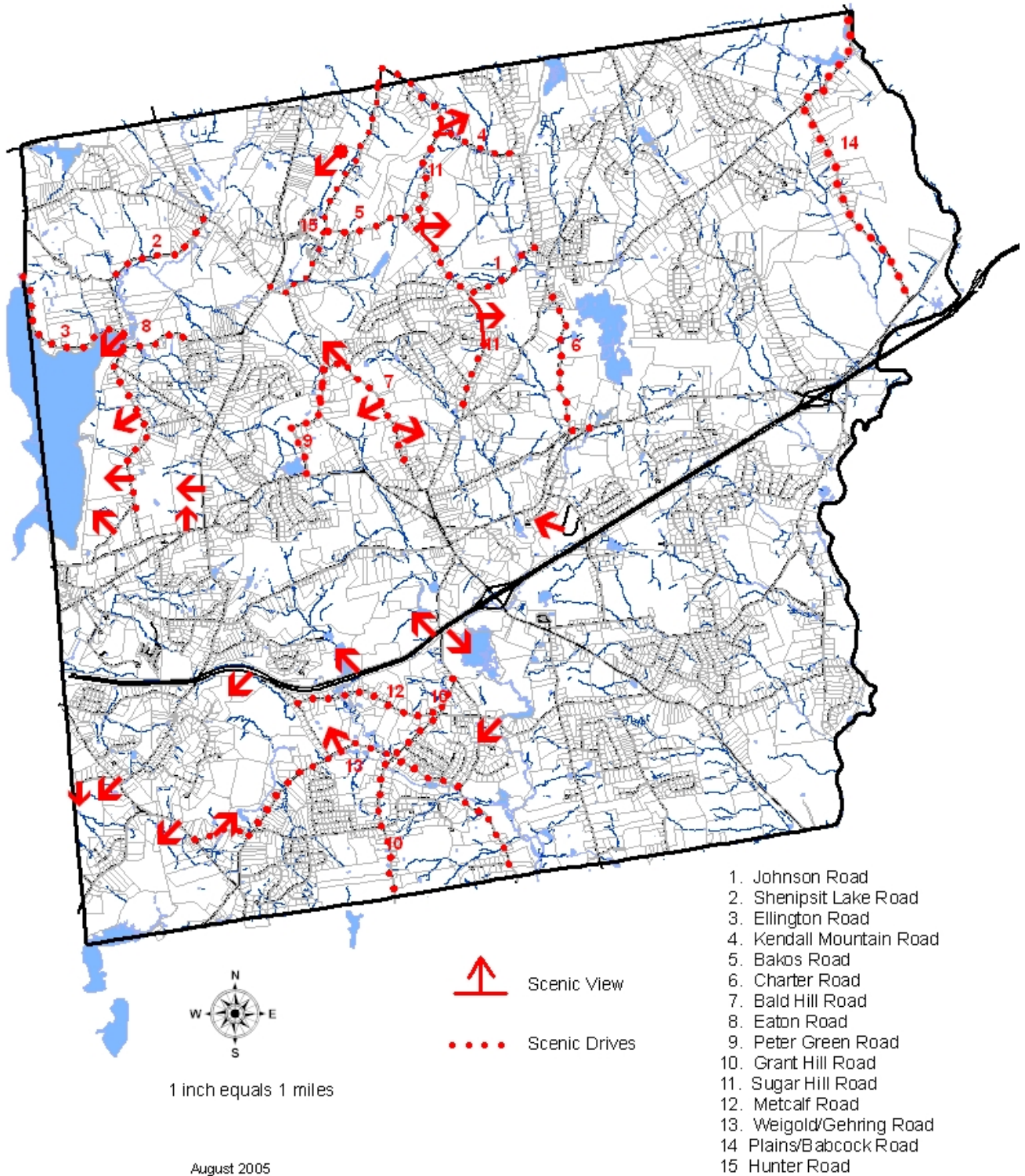
Recommendations

It is hoped that by identifying the rich variety of visual and scenic resources, the town will both appreciate them and take steps to preserve them. Preservation may include but not be limited to:

- Regulations to protect, maintain and restore vegetation such as:
 - protecting ridgelines in a viewshed by identifying building envelopes
 - protecting unique or mature specimen trees
 - requiring replanting of disturbed areas
- Regulations to maintain treed or vegetative buffers between different use areas or zones
- Regulations protecting unique features on a site during and after development
- Tax incentives and education programs so that agriculture remains a viable economic endeavor in town
- Regulations to protect existing stone walls
- Preserving the remaining dirt roads in town
- Maintaining site and architectural review boards for both commercial and residential development so that new sites which are sensitive to the character and existing features of town may be added to the list of visual and aesthetic resources.
- The Conservation Commission should act as an advocate for the newly adopted Scenic Road Ordinance by educating landowners along designated scenic drives on the benefits of such designation and assisting in the process.

MAP 18

Visual Resources Tolland, Connecticut



Visual Resource Images



Oak Ridge Farm, Shenipsit Lake Road



Charter Road



Looking westerly from Kozely Road in the winter



Barn on Bald Hill Road



Looking westerly from Kozely Road in the summer



Stone wall along Hunter Road



Brook's Mill Dam



Shenipsit Lake



Metcalf Road



Skungamaug River north of Rt. 74



Hunter Road



Stone wall on Metcalf Road

A photograph of a winter landscape. In the foreground, a snow-covered road or path leads towards a low, rustic stone wall. Behind the wall, a dense line of bare trees stands against a pale sky. The scene is captured in a soft, slightly hazy light, suggesting a quiet, cold day.

ANALYSIS AND IMPLEMENTATION

Co-occurring Resources

Co-occurring resources are the accumulation of chosen attributes or resources in one area. This can be an ideal way of analyzing multiple resources across the town. The process can produce a list of areas within the town which have a concentrated and/or unique combination of resources.

“Greenprinting” is a GIS system used by the Trust for Public Land to identify land whose protection would meet multiple priorities for conservation. Tolland’s GIS system could be used to “greenprint” or provide an objective means of evaluating land for protection based on selected criteria weighted in accordance with community goals. Multiple models could be created to create overview maps to provide parcel priority rankings.

The benefits of a “Greenprint” include (as stated in *Land & People, Volume 17, Number1, Spring 2005 by the Trust for Public Land*):

- Identifies land whose protection could meet multiple conservation priorities, including recreation, watershed protection, habitat preservation and flood control.
- Offers an objective way to evaluate land for protection, helping diverse community members reach common ground on conservation priorities.
- Living computer models can be updated easily as data changes.
- Makes the case for conservation funding providing a scientific, credible basis for evaluating lands to be conserved.

Mapping multiple resources on one map will not always give any indication of how the critical resources are prioritized in a particular area. The priority of attributes may, and most often do, depend on its location in town and the characteristics of an area. So, for example, views may be a higher priority in an area of town with higher elevations, while habitat or water resources may be more critical in a different area of town. Smaller areas or site by site analyses may then be used to identify more specific attributes and priority areas.

Recommendations

- Tolland’s GIS system is still in the developing stages although a wide variety of maps, overlays and studies have been created. It is important to maintain all information up to date and continue to incorporate field delineated data into the system as new layers.
- Specific programs that could facilitate a greenprinting process would be of great value in the evaluation of land and acquisition.
- The Conservation Commission should:
 - Analyze and determine priority areas for each section of resources
 - Establish a priority system for open space acquisitions
 - Utilize GIS and above information to determine overall greenprint
 - Seek funding to contract with the Trust for Public Land to facilitate a stakeholders group and assist in the prioritization of land acquisitions

Existing Open Space

The Town of Tolland consists of 25,792 acres. Approximately 16% of the Town of Tolland has been permanently protected as open space, 95% of this open space is designated passive use and 5% is active use. Tolland has shown a strong commitment to the acquisition and preservation of Open Space. Conserving Tolland, a grassroots political action committee dedicated to open space preservation was formed in 2000 and since then, voters have authorized \$4 million in bonds and over 500 acres have been preserved. A list of properties acquired as open space is attached as Appendix

The Conservation Commission advises the Town Council on open space acquisition, develops individual management plans for acquired conservation areas and oversees the implementation of those plans. (See Flowchart for Open Space Procurement and Management Process in Appendix #3) Land stewards are assigned to each property and the Tolland Conservation Corps (TCC) volunteers maintain and improve passive recreation opportunities according to the management plans. The TCC regularly reports progress on the planned initiatives and property conditions to the Commission.

A map of committed open space in the Town shows some significant areas that enjoy permanent protection. These include state lands particularly Skungamaug Marsh, Nye-Holman State Forest and Kollar Wildlife Management Area. The map also shows that the town owns many parks and open space areas, such as Crandall Park and the Cross Farm Recreation Area. In addition, there are areas such as the Girl Scout camp in the northeast corner of Town and the lands of the Connecticut Water Company near Shenipsit Lake that are committed open space. In addition there are other private lands that have been committed to remain as open space, such as the Tobiassen Open Space parcel off Noah Lane which is owned by Joshua's Tract Historic Land Trust.

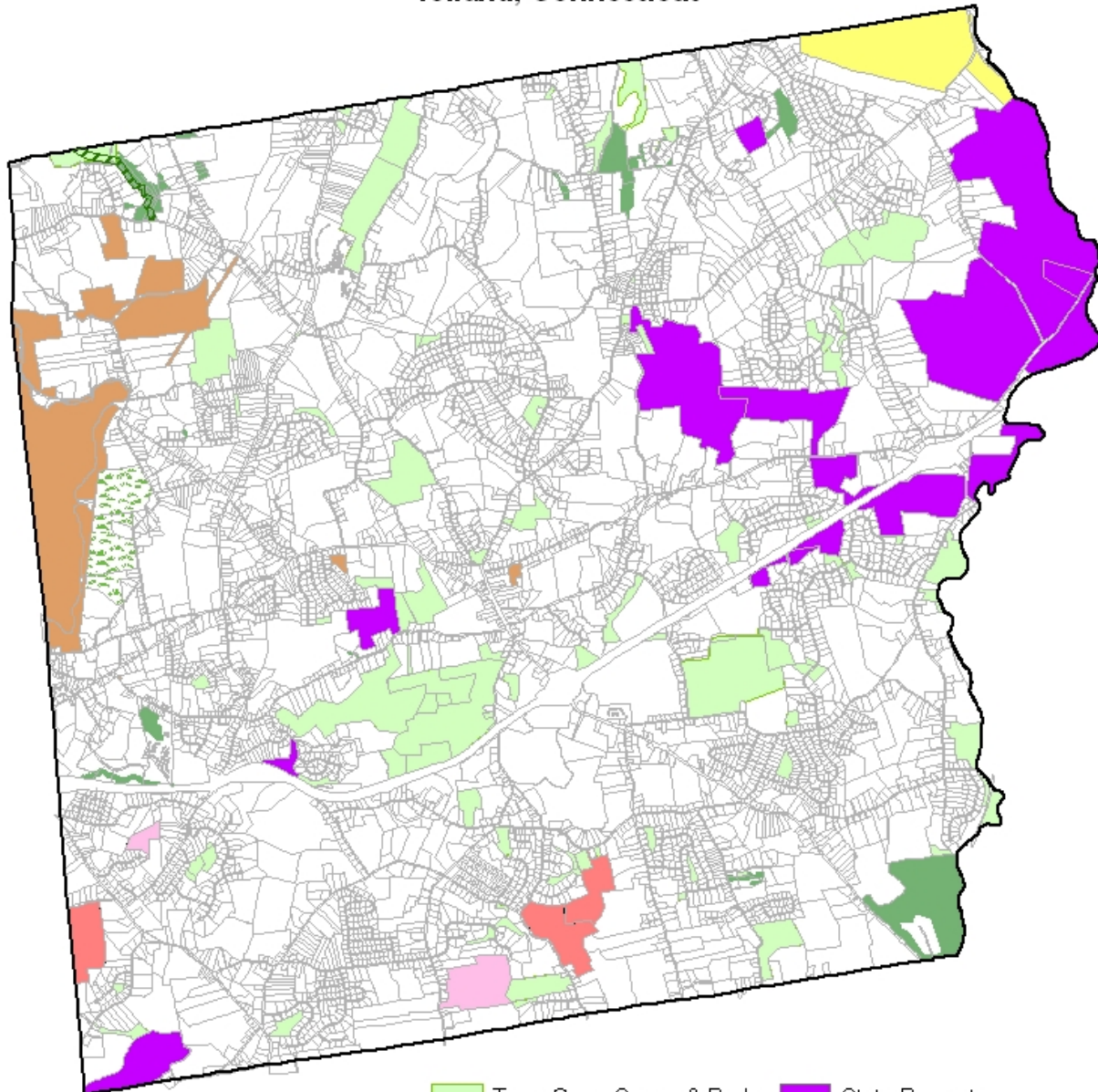
In addition to these protected parcels, there are portions of parcels that are considered wetlands or are in Upland Review Areas. There are also significant portions of parcels that have slopes in excess of 20% and other lands that are in flood zones or state regulated stream channel encroachment areas. All of these limit the development potential of individual parcels and protect some land from development.

There are also lands that have enrolled in the states Public Act 490 program which provides tax relief for parcels used primarily for forest or agriculture. These lands have some protection from development, but the program allows lands to be removed from the program with some penalties.

This mapping does show a significant amount of committed or otherwise protected open space. It also, however, shows that much of the town is still available for development and has little protection. It is critical that the preceding resource mapping be compared with these maps depicting open space and that steps be taken to provide protection for lands that have been deemed important for their value as wetlands and water resources, forest resources, wildlife resources, agricultural resources, historic resources, recreational resources or visual and aesthetic resources.

MAP 19

Committed Open Space, Including Municipal, State and Private Land Tolland, Connecticut

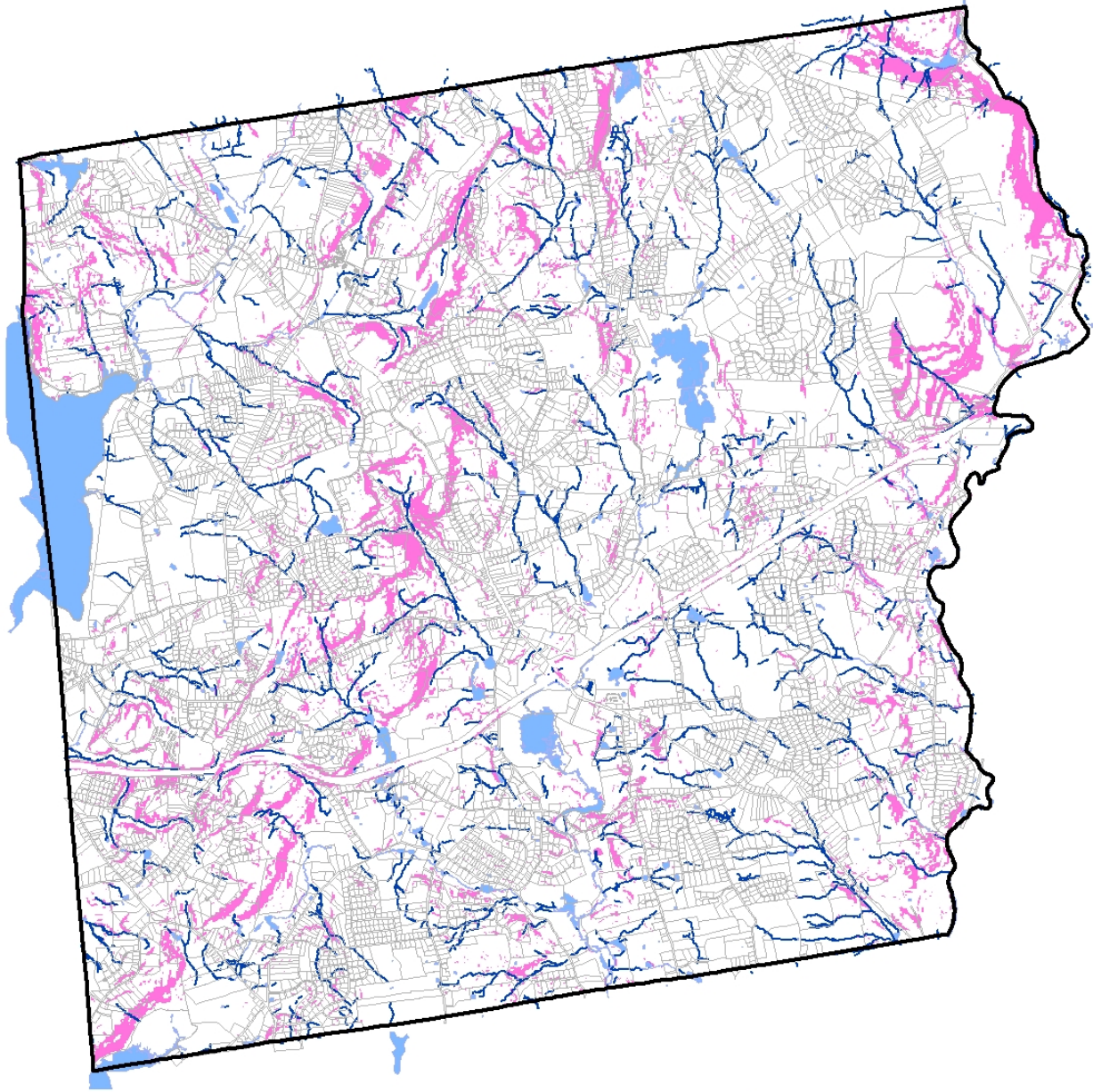


1 inch equals 1 mile

December 2005


MAP 20

Slopes in Excess of 20%
Tolland, Connecticut

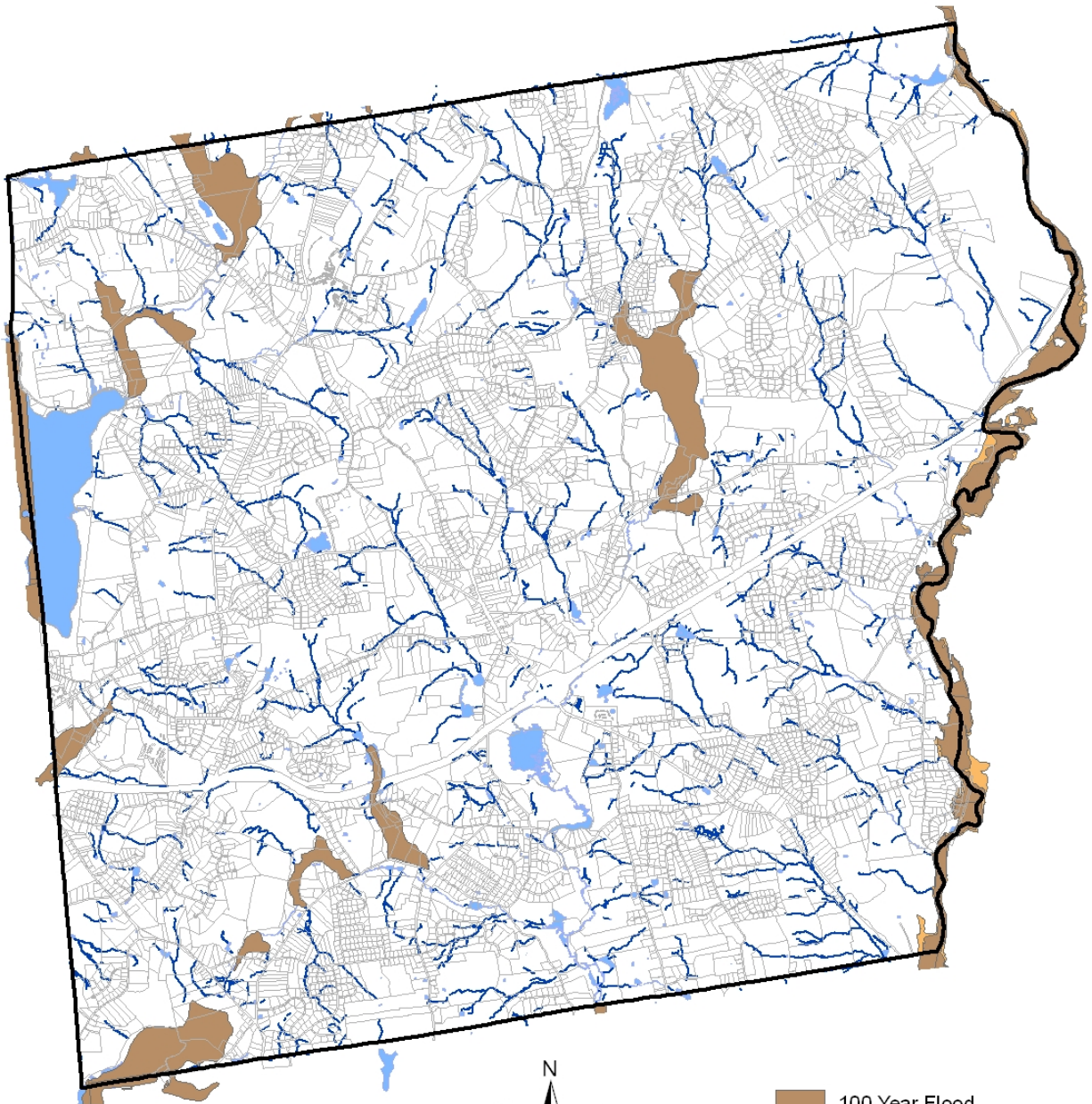


1 inch equals 1 mile

August 2005

 Slopes 20% and greater

MAP 21
Flood Zones
Federal Emergency Management Agency
Flood Insurance Rate Map
April 1, 1982
Tolland, Connecticut



100 Year Flood
500 Year Flood

1 inch equals 1 mile

August 2005

Priorities for Protection of Open Space

The Tolland Conservation Commission was formed to promote the conservation of natural and cultural resources and open space in town. It is believed that by conserving resources and open space the town will not only be better suited to sustain human and animal life but the natural and cultural features that are inherent to the quality of life and the character of the town will remain forever. It is hoped that the current sense of place and community will be preserved.

In evaluating land in Tolland for conservation, the Tolland Conservation Commission has developed a set of criteria to prioritize the complex matrix of resources of the Town. Highest of these priorities is protecting water quality; second is protecting wildlife.

Upland soils are often important to farming. These areas frequently provide large areas of open space that play a significant role in determining the character of the Town. These areas and particularly the edges of these areas that border forest or wetlands provide important, unique habitats.

Preserving larger tracts of land is of great value. These would provide both protection of significant natural resources and systems as well as protect many of the cultural and historical resources and much of the visual character of the town. The preservation and protection of important lands and the connectivity of these lands within the context of a watershed is a very effective way to accomplish the protection of water quality, wildlife and edge areas or ecotones.

Watersheds contain the critical elements of water quality protection; (see Major Watersheds of Tolland – Map 7)

- These include upland forested areas which allow infiltration of rainfall and recharge of groundwater. Wetland areas that are fed by groundwater discharges from the uplands and through vegetated buffers receive and purify rainfall runoff. Forested stream corridors that purify rainfall runoff prior to its discharge to the stream which shade and cool the waters of the stream.
- The Skungamaug River is a class B/A river and, as such, is deserving of increased scrutiny of development within that watershed in an effort to improve water quality.

Watersheds also contain the critical elements of wildlife protection:

- These include upland habitat areas that are connected to wetland areas and stream corridors. The connection of upland to wetlands and streams provide the basic elements of sustenance required for a wide variety of wildlife. The edge areas or ecotones created by forest adjacent to wetlands and streams provide even greater habitat value. The stream corridors provide protected pathways for wildlife moving between larger habitat areas.

Watersheds contain the full array of landscapes that define the character of Tolland:

- These include ridge lines, hill tops, hillsides or valleys, forests, fields, streams, ponds and wetlands.

By preserving and protecting open space on a watershed basis, the full benefit of open space protection can be optimized.

It is unreasonable to expect that all watersheds will or can be protected to the same degree since in certain areas of Tolland there is extensive development which has fragmented much of the large tracts and eliminated much of the stream corridors. These areas by no means should be written off since there still may be good opportunities to protect what is left. However there are other watersheds in Tolland that have a good deal of their natural attributes relatively intact. This means that there are still roads and development but to a relatively light degree and with a good deal of natural areas still left untouched. These areas should receive higher priority in the attempt to acquire or preserve large tracts of land where possible.

Management of Invasive Plant Species

The Town of Tolland recognizes that the spread of invasive plants is a serious environmental problem threatening our local natural ecosystems. Specifically, non-native invasive plants such as Asiatic Bittersweet, Multiflora Rose, Autumn Olive, Japanese Knotweed, Purple Loosestrife, Russian Olive and Burning Bush have been identified in Tolland. Managing invasive species is a long term project with a variety of requirements. Accordingly, the Town will make a continuing effort to preserve, restore and protect native plant communities.

Objectives

- Identify specific locations where existing invasive plants are thriving and threatening diverse plant populations
- Develop a plan to eradicate invasive plants from public lands
- Educate the public so that individual landowners can, not only, identify invasive plants, but chooses non-invasive plants for landscaping

Recommendations

- Conduct an inventory using field maps and GIS to specifically identify which non-native invasive plant species are present on Town land and in water areas.

- Prioritize both the sites and the species for targeted management based on the level of threat to the community
- Allocate funds for the mechanical removal and herbicide control of invasive species
- Establish an educational program for Town staff and residents to identify invasive plants and understand the threat they pose to Tolland's environment
- Work with other groups and authorities to better understand the pro and cons of various control options and obtain permits if necessary
- Include the development and implementation of an invasive species control plan in the Land Use Management Plans for Town properties
 - Identify responsible party, such the volunteer Tolland Conservation Corps or professionals, for removal of invasive plants
 - Provide specific recommendations for the removal or control of the invasive plants
 - Monitor the success of the invasive species management at least once every two years, including the possible need for replanting of native plants or further removal of invasive plants



Autumn Olive
(Connecticut Invasive Plant Working Group
<http://www.hort.uconn.edu/cipwg/>)



Burning Bush
(Connecticut Invasive Plant Working Group
<http://www.hort.uconn.edu/cipwg/>)

Methods of Conservation and Protection

There are a number of steps that can be taken at the local level, the state level and the federal level that could significantly assist with the conservation of natural, cultural and open space resources in Tolland.

Local Level

Scenic Road Ordinance –

An ordinance has been adopted. Identify scenic roads and encourage property owners to apply for designation.

Stonewall Preservation Ordinance –

Stone wall preservation has been added to the Subdivision Regulations. An ordinance could be explored to provide added protection.

Building envelopes –

Enforce new rules regulating amount of clearing of land during property development.

Fee simple purchase –

Most town owned open space was purchased with assistance requiring local matching funds.

Continue to update Subdivision Regulations –

- Subdivisions now require 20% open space set aside
- Fee-in-lieu of open space provides a small fund for open space.
- Density-based regulations will promote better open space in larger contiguous areas
- Vegetation Preservation Easements used as a preservation tool.
- Continue to investigate ways to improve the quality of open space.

Assist Land Trusts –

- Joshua Tract Land Trust has shown interest in some properties in Tolland.
- North Central Land Trust is active near the Vernon Town line.

Support Land Acquisition Committee –

- Inclusive program of open space evaluation
- Land Acquisition Flow Chart

Continue to update Zoning Regulations to support agriculture and open space

Zoning and other regulations such as density, frontage and setback requirements play a strong role in the pace and form of development. Given the expected rise in population and the related demand for residential development in many areas of the state, including Tolland, these play a critical role.

Explore agricultural zones

It is important to realize that for many communities zoning is not meant to significantly slow growth but rather to proscribe the form that development will take. Given time and demand development will fill out the town more or less exactly as depicted in zoning documents. It is critical for Tolland to revisit their zoning requirements and assess if they are and will create the community they envision for the future.

Educational presentations about the impacts of zoning regulations, setbacks and related issues are available from several groups including The Green Valley Institute.

Encourage increased funding for the purchase of open space

This program is funded through annual appropriations. Increases in these appropriations would allow increased purchases of open space and could provide substantial funds to purchase lands that are critical elements in the overall open character of the landscape.

It is important to note that Federal funds are available to help with the purchase of agricultural lands. These funds can be used to assist with a local initiative. The funds will match local efforts, effectively doubling the local investment.

Encourage well-designed subdivisions

The new density-based Zoning Regulations provide an incentive to increase open space and reduce infrastructure costs. When lots are constructed on a smaller portion of the parcel, there is greater flexibility of design. This can allow the developer to build the allowed number of lots while protecting other areas of the parcel, often to protect natural or visual resources.

The decision on which resources should be protected is often difficult. The value of prime agricultural soils, open views, forested habitat, watersheds, riparian corridors and others can all be appropriate resources to be protected. The community must set priorities through an open space planning process.

Encourage Purchase of Development Rights / Conservation Easement

The value of a property has historically been divided into several different layers of value; for example the mining rights of a property can be sold separately from use of the land's surface. The value of the land that is derived from market forces to develop the land can also be sold separately from the land itself.

Purchase of Developments Rights – USDA grants

Purchasing the Development Rights allows the existing use of the land, whether residential or agricultural to continue, but sells of the ability to further develop the land. This is often beneficial to the land owner who realizes some or all of the potential value of development and also meets other goals such as limiting development in an area of town.

Conservation easements work in a similar manner by placing an easement on the property which stops development from occurring.

Encourage Transfer of Development Rights

Similar to the purchase of development rights, rights can also be moved from a “sending” property to a “receiving” property. This is typically a private sale with the rights sold by one land owner to another. This is an excellent strategy in a town that wishes to have some areas with low growth and other areas where more densely developed areas are encouraged. This could allow quality agricultural land to remain undeveloped while allowing increased density in an appropriate village area.

Encourage a right-of first refusal program

This type of program would allow the Town to purchase from land owners the right to be notified if a property is being put up for sale. The Town would then have a set time period in which to develop an offer to purchase the property.

This would keep the land in private ownership and at the same time provide the town some ability to make a decision as to the importance of a property.

Continue to require Landscape Architects Seal on appropriate development drawings and documents
Licensure law in the State of Connecticut states that the practice of landscape architecture means rendering the service of site planning. It further describes this to include “the investigation, selection and allocation of land and water resources for appropriate uses, preparation, review and analysis of master plans for land use and development; production of overall site plans and related details and specifications”

Tolland currently requires landscape architects to complete an analysis of sites prior to subdivision and to seal approved subdivision plans. Given the training, environmental ethics and language in licensure law this can significantly improve the design of site development projects.

Continue to use economic development tools to support existing agricultural operations.

Economic development tools typically used to attract and support industrial, manufacturing or commercial operations can continue to be used to support agriculture. These include loan programs, tax abatement, aid in business planning, aid in marketing and sales, and other similar efforts.

Agriculture is a significant, ongoing industry in the town, not only the agricultural entities themselves but related distributors and suppliers. The town must continue to support these operations as a keystone to the economic development of the town.

Encourage development of appropriate business that would benefit from and promote community character

Attracting businesses for which quality of life is a key element in their location decisions would also benefit the town. These companies would increase the tax base and provide employment. At the same time they would also likely value and help to protect the existing character and quality of life of the town.

Encourage responsible growth

Many towns including Tolland have economic development committees or commissions that promote industrial and commercial growth in the community. This is critical to a well balanced community both in the sense of creating jobs and services needed in the community and to support the tax base. It is important to note that many studies in similar towns show that the cost of community services (such as schools, police and fire protection) for most residential development are not

covered by the taxes generated. Industrial and commercial uses on the other hand provide much more tax revenue than the cost of community services. These do however, often generate additional residential development.

Explore alternative business models to support agriculture

The value of agriculture in many ways is shared by the entire community of Tolland. At the same time the costs are borne by the land owners and farm operators. There are many business models that allow shared investment in a business operation. While the motivation for these business models is typically a return on the financial investment there is nothing that prevents the return from being other values such as the continuation of open space or a share of the product generated.

Continue to revise tax policy to support agriculture and open space

Reduction or abatement of land and equipment taxes can aid agricultural operations that are distressed. Often because of development pressures the value of the land is very high compared to the agricultural business. State tax laws do provide relief however local policy can also help.

Continue to provide business and successional planning information to agricultural business

Workshops and other opportunities to help agricultural operations with business planning can greatly aid farmers. Often these might allow for a decrease in costs, or more efficient use of time.

Estate planning and the transfer of land and other assets is a complex issue. Legal and financial expertise in these areas can help agricultural operations continue across generations.

Provide information related to sale of land or development rights to third parties.

There are tax and other benefits for land owners who sell the land or development rights to third parties. Often these can be arranged to provide income and tax relief to the current owners while protecting the land asset for the long term.

Continue to hold community events that encourage understanding of agriculture

Events that educate the community about agriculture practices can help develop an understanding of the needs and benefits of those practices before they become a source of dispute between homeowners and

farmers. Continued ongoing communication is very important.

Also events that encourage social interaction and show neighborly support for agriculture can do much to support agriculture as a whole.

Marketing

Marketing of regional produce and specialty products has a large potential impact on the success of agriculture in the region. The recent study commissioned by the Quinebaug and Shetucket National Heritage shows that shoppers are willing to spend more for locally grown produce.

In addition there is the potential to link tourism and product marketing with specialty products. This could include a wide variety of farm products that are unusual or of extremely high quality. Specialty cheeses, meats or wines are all good examples of products that could fill a niche market. These could add to the regional identity and draw people to the area.

State level

Lobby for increased open space funding

Currently the State of Connecticut has an Open Space Fund that is used to purchase land. Increased funding of this important initiative could benefit Tolland if funding was available.

Encourage fee in lieu of open space where appropriate

Developers are required to set aside areas of open space within developments. These can be small and relatively inconsequential. Instead developers may pay a fee to the town in lieu of the providing the open space. Those monies could be accumulated and used to purchase larger more significant parcels of undeveloped “open space”.

Lobby for increased tourism support for the town and region

Local, regional and State agencies and groups must continue to tap into the expanding tourism opportunities for the region. Tourism can bring significant revenue to the area and opportunities to see agricultural operations is one of the many draws that can be promoted in the area.

Recently the state consolidated the tourism board of northeastern Connecticut with that of southeastern Connecticut. It is critical that the assets of Tolland and the surrounding towns continue to be advertised.

Lobby for increased funding to help farmers put manure management facilities in place

Recent regulations related to manure management, primarily to reduce nutrient runoff to streams and lakes, are often difficult for farmers to put in place. The regulations appear to have significant benefits for the environment and the public at large, however much of the cost for implementation is being carried by individual farmers. Technical and financial assistance are needed to support these efforts.

National Level

Lobby for the support of agriculture in Connecticut

The U.S. Department of Agriculture, while enjoying increased funding has shifted much of its focus to accommodate the environmental problems associated with large agricultural operations as seen in the Midwest and far West. These large operations do produce a large portion of the product. Nonetheless smaller, family farms, like those in New England and Tolland need support from the Department of Agriculture. Efforts should be made to depict the benefits of these smaller, family run operations and garner support.

The Natural Resources Conservation Service in Connecticut is challenged to fashion national programs to meet the needs of diverse agricultural operations and communities in this state.

Lobby for fair food pricing policy

Currently federal policy controls the pricing for many agricultural products. Because production costs are not fixed and continue to rise this often makes economic viability of farming very difficult to attain. Efforts should be made to develop fair pricing that will allow economic viability.

Lobby for support of Farmland Protection Funds

Farmland Protection Funds are available to help individual communities protect valuable farmland. Both the amount of funding and the target of these monies can be impacted through lobbying efforts.

Maintenance and preservation of open space properties

Land use management plans

Continue to develop plans for open space properties that will identify special areas of interest, fragile areas of concern and specific maintenance issues.

Stewards – Tolland Conservation Corps

Continue to utilize volunteer work groups for maintenance and property oversight.



CONCLUSION

Conclusion

This report is a significant step towards the preparation of a Plan of Conservation and Development that will be undertaken by the Planning and Zoning Commission in 2008. It is hoped that this report clearly describes the current condition and value of natural, cultural, and open space resources in the Town.

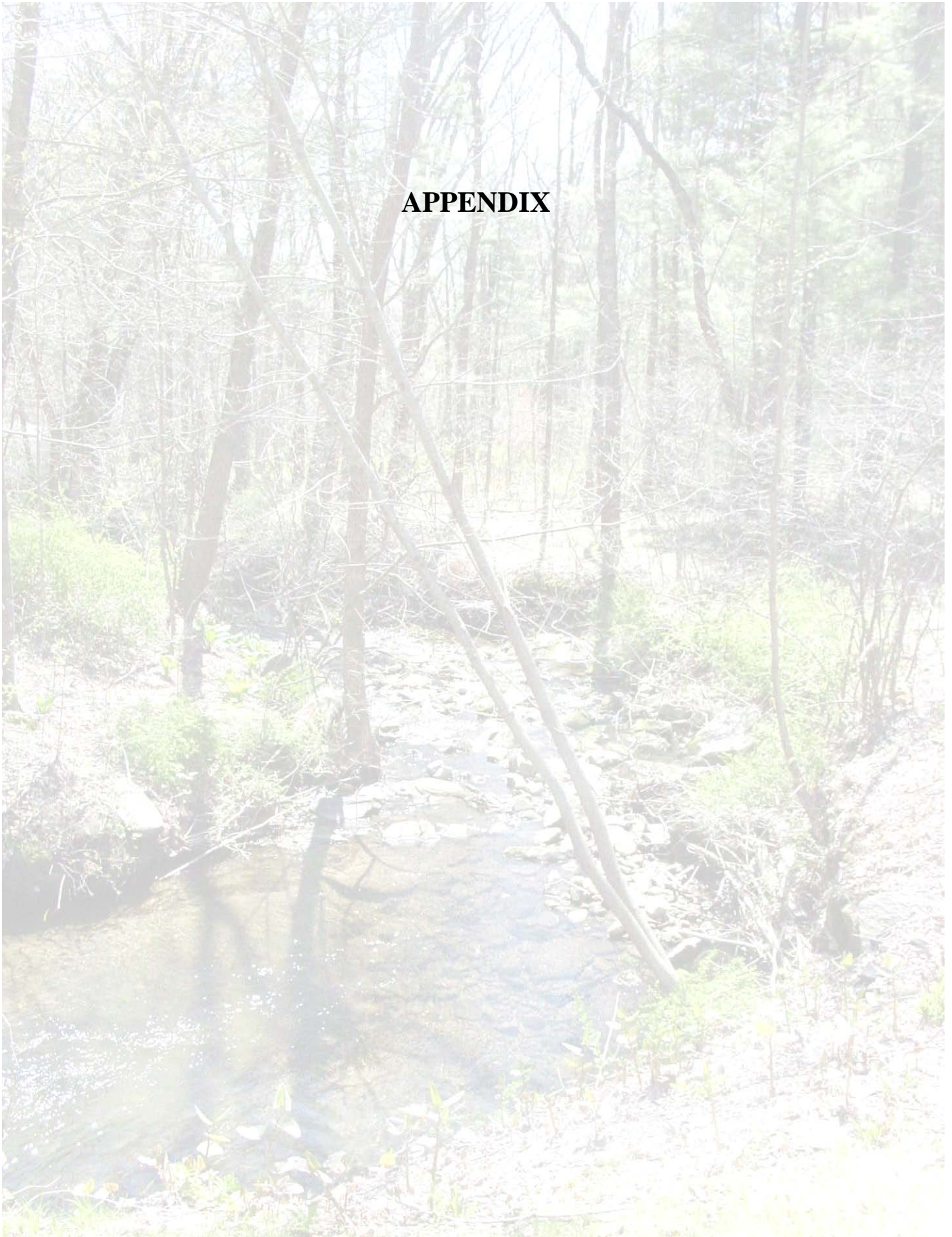
It is also hoped that by reporting on these in focused sections the extent and value of each resource will be clearly depicted and that protection of these for their own individual merits will be considered. By discussing and mapping how many of these resources occur together or adjacent to one and other will help to promote the protection of various portions of the Town of Tolland because it will help to continue the benefits currently afford by a number of overlapping resources.

This report has discussed a wide range of tools to help assist with the continued protection of resources in Tolland. Many of these are continuations of existing ideas or methods. Some are new ideas. Regardless, conserving important resources while promoting reasonable and responsible development is a difficult task. It will take a variety of tools to make much of this come to fruition.

It will also take the political will of citizens and Town officials as well as good faith efforts of land owners, developers and professional consultants to not just address the regulations that may come out of this report, but rather to see this report as an important piece of a vision for the future of Tolland. A vision that allows for housing and business growth but looks to keep much of the solid structure of resources that Tolland is built on, in place.

The time for increased protection is now. Many of these resources are complex systems and the break in any one part would cause harm to the whole. With current regulations along with increased population and development pressure many of these resource systems are in danger. Proactive steps now could protect these resources in perpetuity and allow the character and community of Tolland to stay Tolland.





Appendix #1

History and Charge of the Tolland Conservation Commission

The Tolland Conservation Commission was created in 1998 by the Town Council as an advisory board to further the town's open space goals. The charge given the Conservation Commission was to study the land and natural resources of Tolland and assist to create a strategy for protecting and preserving desirable land and resources to benefit the community now and into perpetuity. The Commission was also charged to identify and make recommendations about properties suitable to be conserved for specific uses by the Town. The Conservation Commission charge was as follows:

- It shall conduct research with the utilization and possible utilization of land areas of the Town of Tolland;
- It shall keep, update and maintain an index of all open areas, publicly or privately owned, including open marshlands, swamps and other wetlands areas.

To the Conservation Commission charge was expanded in 1999 as follows:

- It shall be granted the opportunity to review proposals and make recommendations on appropriate land use as it relates to Conservation Commission goals and objective. Town boards and commissions may refer issues to the Conservation Commission for comments and the Commission may request referrals. If the Commission deems the proposal or referral of significance to its goals, it may choose to comment;
- It shall develop conservation education programs for the Tolland community;
- It shall serve as an active participant in grant writing activities. With prior approval of Town Council it may pursue state, federal, or other types of grants which are consistent with furthering Commission goals;
- It may explore cooperative relationships with area land trusts and other conservation organizations and foster any activity in town where information concerning land trusts is made available to town landowners.

The charge was again expanded in 2003 to reflect a need for monitoring and stewardship of open space properties to:

- Be considered the Council's conservation advisory Commission and assume oversight responsibility for the aforementioned;
- Defer the establishment of the use classification for newly acquired parcels, until a survey/use plan can be created;
- Survey each parcel added to the inventory and categorize each by type, uniqueness, damage sensitivity, connectivity, management needs and use elasticity;
- Define each parcel's best potential use(s) and/or activity level and recommend a use and management plan to the Council;
- Recommend potential stewardship arrangements or other means of implementation of each parcel's specific use and management plan to the Council;
- Report periodically on the overall plan of conservation and actions taken to achieve charge goals;
- Be encouraged to review all such parcels to determine if any potential areas exist which fit the Greenways or Conservation plans and may merit special attention, treatment, or management;
- Be encouraged to provide input for the consideration prior to any decisions as to open space acceptance or payments in lieu of arrangements.

Appendix #2

Regulatory Programs Affecting Wetlands and Watercourses

Town of Tolland

Inland Wetland & Watercourses Regulations -

The State of Connecticut has adopted comprehensive laws which regulate inland wetland and watercourse areas within the State. State of Connecticut wetlands are defined by soils type. These laws require local municipalities to adopt regulations and regulate wetlands and watercourses on the local level. The Tolland Inland Wetlands Commission is the local regulatory agency. State and federal wetlands are required to be identified as part of a development permit application. Tolland's Wetland Commission has adopted regulations for wetlands and watercourses and areas adjacent to them that could have a substantial impact to the protected wetlands and watercourses. These regulated areas encompass wetlands and land within 50 feet of them, watercourses and waterbodies and land within 100 feet of them. Activities proposed within these regulated areas are generally discouraged, however if allowed would require a permit from the Tolland Wetland Commission.

Aquifer Protection Regulations

The Town of Tolland has adopted regulations in 1988 which restrict the use of land located over groundwater aquifer soils, coarse grained stratified drift, as defined in the Town's aquifer protection map. Certain types of land uses with a high potential for pollution, are prohibited within these aquifer protection zones, while other types of land uses may be allowed with controls to minimize the contamination of groundwater.

The State has adopted Statewide Aquifer Protection Regulations which will require the Town to update their regulations and create mapping which shows the area around existing water supply wells that contribute directly to the recharge of the aquifer supplying these wells. This mapping, known as Level A, will define the areas that will have strict controls on land use for the purpose of protecting drinking water sources.

Connecticut Department of Environmental Protection

Water Diversion Program -

The regulations of this program apply to the manipulation of storm water drainage from drainage areas of greater than 100 acres of land. A subdivision for instance that drains greater than 100 acres will require a diversion permit from the CT DEP. If work is proposed within a watercourse which drains greater

than 100 acres a permit will be required. If water is going to be pumped from the ground, from a surface watercourse or water body or diverted from surface water at a rate greater than 50,000 gallons per day a permit is required from the DEP.

Stream Channel Encroachment Line Program -

The DEP has established regulatory boundaries along the Willimantic River which require permits to be obtained if work is proposed on the riverward side of these lines. This program was implemented in response to the great flood damage which occurred along the river during the floods of 1955. These lines represent the areas of most intense flooding expected from a similar event, taking in to account the flood control measures which have been constructed in the upper watershed of the Willimantic River in Stafford, CT. The regulations look not only at flood level impact in the river but also the environmental impact of proposed activities.

401 Water Quality Certification -

This regulatory program looks at the impact to surface water quality from activities proposed in federally regulated wetlands which have to obtain a federal permit such as an Army Corps of Engineers 404 permit

Federal Regulations

Section 404 of the Clean Water Act -

Regulates activities within federal wetlands that are regulated by the Army Corps of Engineers. Federal wetlands are defined not just by soils, but also by hydrology and vegetation. State and federal wetlands sometimes but do not always coincide.

EPA NPDES Stormwater Program -

This is a specific component of the EPA National Pollution Discharge Elimination System program that applies specifically to stormwater. It consists of two phases of regulation. Phase I and Phase II. Phase I was adopted over 10 years ago and includes regulation of certain types of industry whose stormwater runoff could contain pollutants due to the flow of stormwater over stored equipment or materials on site. The regulated businesses are supposed to have developed Stormwater Pollution Control Plans and have taken any measures necessary to limit pollutants from leaving their site in stormwater .

Phase II of the program has just recently been adopted and it includes the regulation of over municipal stormwater systems in over 130 municipalities in Connecticut, including Tolland. The purpose of the program is to identify pollutants which are entering

stormwater and to take action to remove these pollutants prior to their discharge to receiving waters.

FEMA Flood Insurance Program

This is a national program which seeks to limit flood damage by regulation of development within flood prone areas. Mapping has been developed which depicts the larger water courses and the flood plains and flood elevations expected on those rivers. Building within flood prone areas is discouraged, however if allowed it must comply with the siting and flood proofing requirements of the regulations. Many watercourses and flood prone areas have not been identified on the mapping and therefore must be identified as part of development permit applications. The objective is to keep development out of the 100 year flood plains of watercourses and rivers

Important Surface Water Resources in Tolland

The following surface waters have been identified as the most important watercourses and wetlands in Tolland. These water courses and wetlands provide many benefits to the residents of Tolland. Among these are recreational opportunities, critical wildlife habitat, ground water recharge and adding to the appearance and character of Tolland.

Willimantic River -

It drains about 90 square miles encompassing the towns of Wales & Holland, Massachusetts, Stafford, Ellington, Willington and Tolland to the point at which it passes the Tolland Town line into Coventry. It flows, from the confluence of the Middle River and Furnace Brook in Stafford Springs, to its confluence with the Nachaug River in Willimantic.

Skungamaug River -

Flows from its headwaters on Kendall Hill through Charter marsh to its confluence with the Hop River in Andover. The Skungamaug drains the central half of Tolland and is the major drainage basin in town.

Tolland Marsh -

A large valuable natural wetland along the Skungamaug River. The marsh was crossed by the Wilbur Cross Highway in the 1940's

Charter Marsh -

A large marsh along the Skungamaug River (also known as Skungamaug Marsh). The DEP constructed a small dam to increase the area of open water and designated the area as Charter Marsh Wildlife Refuge. The marsh is managed for water fowl and is currently closed to public access.

Crandall Pond & Paulk Brook -

Crandall Pond is a former farm pond which was created by the construction of a dam on Paulk Brook. A dam on Paulk Brook along Burbank Road was once the water

supply for the Town center. Crandall Pond is one of the focal points in the Crandall Park and is used for swimming

Shenipsit Lake -

Ellington and Tolland comprise the watershed of this lake. A good portion of its watershed is located in Tolland with the main tributary being Charters Brook. It has very high quality water which is managed for drinking water supply.

Sweet Heart Lake -

This is a small but very picturesque pond located in the northeast corner of Tolland. It is owned by the Yankee Trails Council of the Girl Scouts and is used as part of a Girl Scouts and YMCA Camp program.

LaBonte Brook -

This brook is a high quality stream, both from water quality perspective and aquatic and terrestrial habitat perspectives. It is sparsely developed in its upper reaches and half its length flows through the Kollar Wildlife Management Area.

Cedar Swamp -

This is an area in the extreme southwest corner of Town that abuts both Vernon and Coventry. The Cedar Swamp is an extensive wetland system that extends from Route 31 to the Upper Bolton Lake. It contains a substantial stand of native white cedar.

Charters Brook -

This brook is a major tributary to the Shenipsit Lake. It drains a large area in the northwest corner of Tolland.

Grapeville Brook -

This brook drains land to the west of Buff Cap Road and discharges to the Willimantic River after passing through the Nye Holman State forest

Gages Brook -

Gages Brook is one of the headwaters brooks for the Tankerhoosen River in Vernon. Tankerhoosen River supports a native trout population and is managed for its high quality waters within the Belding Wildlife Refuge located downstream of the Walker Reservoir.

Lake Bonair -

This lake is located in the extreme Northwest Corner of the Town adjacent to Route 140 in Ellington. This lake consists of a small open water pond and a scrub- shrub marsh that is an important amphibian breeding area.

Charter Brook -

This brook flows from a small pond off of Sugar Hill Rd. and runs to the Skungamaug River at the village of Skungamaug.

Important Ground Water Resources in Tolland

Willimantic River Aquifer - Tolland Well Field

Impaired Waters Warranting Remediation

Crandall Pond -

Crandall Pond is used extensively in the summer months for swimming. It like many such ponds constructed on watercourses, reflects the quality of the water running off of the land within the watershed. The pond is subjected to sediment load from road and parking lot sanding operations and also has been closed at times in the past due to high levels of coliform bacteria. It is hoped that hooking up Park School and Tolland Middle School to the sewer will help to alleviate that problem.

Cloughs Brook

This brook begins on Bald Hill, flows parallel to Williams Way, under Old Stafford Road Torry Road and then Route 74 by Bill's Auto Parts. Although most of its length flows through woodland it does receive a lot of road drainage and appears compromised at Rt. 74.

Metcalf Brook -

Metcalf Brook is a major tributary to the Skungamaug River. It discharges to the Skungamaug to the east of Weigold Road. It drains a very large watershed within Tolland including a few early subdivisions with poor stormwater management.

Gages Brook

The Tolland Wetland Commission has indicated that Gages Brook should be placed on a "watch list". It flows through the Tolland Industrial Park and is subject to a large amount of poorly designed road drainage and parking lot run-off.

Impacts to Wetlands & Water Resource -

Impacts to receiving waters due to development activities. Increased runoff volume and impact to stream channels. Paving of recharge areas.

Stormwater Design Guidance Developed by the CT DEP

Stormwater Phase II Program

Recommendations

Surface Waters -

- Stormwater Quality Protection
- DEP Stormwater Quality Design Manual
- NPDES Stormwater Phase II Program
- Diffuse Runoff – Avoid Concentration of Runoff – Mimic Natural Conditions

Stormwater Quantity Management

- Peak Flow
- Volume

- Encourage infiltration of surface water and recharge of groundwater up gradient from important wetlands.

Watercourse & Wetland Buffer Establishment

- Greenway Strategy
- Natural Vegetation

Greenway Adoption

Groundwater

Specific Greenways

Willimantic River Greenway

The Town has for many years attempted to preserve open space areas along the Willimantic River for purposes of providing public access and to create linear parks (Greenways) along the river for hiking and wildlife passage. Much of this land is regulated by the Wetland Commission since it is underlain with Flood Plain and Alluvial soils, which are also regulated, and so fit well with this strategy of Greenway Preservation.

A Willimantic River Greenway has been designated by the State of Connecticut with intertown coordination by the Willimantic River Alliance formed in 1996. Additionally, Tolland should work with other towns that qualify, but have not been included in the Quinnebaug and Shetucket Rivers Valley National Heritage Corridor.

Skungamaug River Greenway

Another major watercourse is the Skungamaug River which originates in northern Tolland. It flows through mostly undeveloped land as it flows to Coventry with the exception of a subdivision near the high school and the highway interchange of I-84 and Rt. 195. The Skungamaug River flows into the Hop River in Andover and eventually into the Willimantic River, so it is also an important component of the Quinnebaug and Shetucket Corridor.

Appendix #3

Data Source for Maps

MAP #4

GIS Data Guide, Soils
<http://dep.state.ct.us/gis/Data/data.asp>,
Soils Survey Geographic (SURUGO), Tolland County;
U.S. Department of Agriculture (USDA), Natural
Resource Conservation Service (NRCS) and Conn.
Department of Environmental Protection (CTDEP),
Environmental and Geographic Information Center
(EGIC); 2005. Soils listed as either Poorly Drained
and Very Poorly Drained, Very Poorly Drained or
Alluvial and Flood Plain Soils.

MAP #5

GIS Data Guide, Surface Water Quality Classifications
<http://dep.state.ct.us/gis/Data/data.asp>
CTDEP Bureau of Water Management, May 2002

MAP #6

Coarse-grained Stratified Drift Aquifer

GIS Data Guide, Surficial Materials
<http://dep.state.ct.us/gis/Data/data.asp>
U.S. Geologic Survey (USGS) and Conn. Natural
History Survey, 1995
Deposits labeled either Alluvial/Sand & Gravel, Sand
& Gravel, Sand & Gravel/Fines or Sand

Tolland Water Co. Wellfield Aquifer

GIS Data Guide, Aquifer Protection Areas
<http://dep.state.ct.us/gis/Data/data.asp>
CTDEP Bureau of Water Management,
CTDEP, EGIF; August 2004

MAP #8

Soils Survey Tolland County, CT. USDA Soil
Conservation Service in cooperation with the Conn.
Agricultural Experiment Station and Storrs
Agricultural Experiment Station, December 1966.
All soils listed under Woodland Suitability Groups 1, 2
or 3 that were not also listed as Prime or Other
Important Agricultural Soils.

MAP #9

Landsat satellite imagery, 2002
Published by UCONN Center for Land use and
Education And Research (CLEAR)
<http://www.clear.uconn.edu/>

MAP #12

Important Wildlife areas & corridors

Delineated by Anthony Irving, MES, Ecological &
Environmental Consulting Services, Inc.

Habitats for Species of Concern

GIS Data Guide Natural Diversity Database
<http://dep.state.ct.us/gis/Data/data.asp>
Conn. Geologic & Natural History Survey, June 2005

MAP #13

GIS Data Guide, Soils
<http://dep.state.ct.us/gis/Data/data.asp>,
SURUGO, Tolland County; USDA, NRCS and Conn.
CTDEP, EGIC; 2005. Soils listed as Prime or Other
Important Farm Soils.

MAP #20

Town of Tolland Topography, 2' contour elevations
from aerial photography taken April-May 1992,
compiled by Aerial Data Reduction Assoc., Inc.