Updating Newtown's
Plan of Conservation and Development

Plan Memorandum #3

Conservation & Natural Resources

March 2002

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I. INTRODUCTION

The quality of life in a community is influenced by the quality, quantity and distribution of its natural resources that make its natural environment. The natural environment helps define the town's landscape thereby contributing greatly to the character of the town. The protection of the town's natural resources is key in ensuring that the quality of life in Newtown is maintained.

The Plan of Conservation and Development can be used to preserve and protect those elements of Newtown's natural environment which contribute to the Town's character and quality of life by defining those elements through a natural resource inventory process and by establishing goals, strategies and implementation recommendations for protecting Newtown's natural environment. This section of the Plan of Conservation and Development will be followed by an open space analysis that explores Newtown's existing open space in depth and recommends acquisition and conservation methods and priorities.

II. THE PROCESS

Natural Resource Inventory

The process of protecting Newtown's natural environment begins with careful documentation of the town's natural resources. These resources include the geologic (soils, bedrock & surficial geology), hydrologic (rivers, streams, lakes and ponds), and biologic (plant and animal habitat) characteristics of the natural landscape. In addition, Newtown's existing open space is documented. The network of preserved open space and the natural resources found within the town comprise essential information which will be used in updating Newtown's Open Space Plan in a later section of this Plan of Conservation and Development.

This natural resource inventory is organized and displayed using Geographic Information System (GIS) technology. The GIS provides a means to map and analyze natural resource information to assist the town in formulating policy recommendations to ensure proper protection of the natural features identified. The mapping of these natural resources also provides an opportunity to observe, on a town-wide scale, the distribution of the elements that help define Newtown's natural landscape. The ability to visualize the distribution of the town's natural resources through maps ensures that the context in which policies affecting natural resources and open space is not lost. In other words, it allows one to see the forest from the trees.

Policies, Goals, and Objectives

The second component of this planning process is identifying what policies can be put in place to ensure the preservation of the natural resources identified in the preceding inventory. This is a difficult task due to the many competing interests in how best to use the land in town. Proper allocation of Newtown's finite natural resources is a balancing act that involves consideration for the economic development needs of the community and the public health and safety requirements of the community as well.

Natural resource protection is best accomplished though the development of goals and objectives that clearly articulate and prioritize the protection of sensitive natural areas, the enhancement of recreational areas and the open space needs of the community. This will help create a focus that is critical in defining and advancing the desired character of the community.

In recent years, an approach to natural resource protection and open space planning has gained a focus that involves linking or expanding existing open space areas with other protected open space in the town and the surrounding region. This approach transcends town borders and looks more broadly at regional open space networks to find opportunities for linkage. Greenway planning, as it is often referred to, has been embraced by the State in the formation of the Connecticut Greenways Council, a part of the Connecticut Department of Environmental Protection. This approach not only provides a regional open space network, but also improves the communities' natural infrastructure by providing close-to-home recreational opportunities.

Protection Methods

The last component in this planning process involves defining methods to protect natural resources. This includes establishing land protection strategies. Basic to a land protection philosophy are the following precepts:

- Growth will continue to take place;

- Land is a basic and finite resource and control of its use is essential to the public welfare;

- The town has the power and the responsibility to preserve critical natural resources through planning and the regulation of land use;

- The town has the legal authority to acquire open space and to administer and maintain acquired property in the public interest.

Many communities, especially those without clearly defined goals, consider natural resource protection and open space preservation a luxury they cannot afford. This perception, coupled with the fact that funds are always in limited supply, often cause these activities to take a backseat to more pressing items such as infrastructure improvements. Therefore, it has become increasingly important to identify alternative means to protect a communities natural resources and preserve open space.

With this process in mind, the purpose of this memorandum is to accomplish the first two steps: 1) identify Newtown's unique natural resource features through a comprehensive natural resource inventory and 2) present policies, goals and objectives for the preservation of the town's environmental qualities and natural resources.

III. NATURAL RESOURCE INVENTORY

A. GEOLOGY

Bedrock Geology

Newtown lies in a region of the State know to geologists as the "Western Uplands". The subsurface rock, or ledge as is it is often referred, was formed through intense heat and pressure (metamorphic processes) brought on by continental plate collision. As a result, the bedrock that underlies the town and punctuates the landscape through rock outcropping is extremely strong and resilient to the forces of erosion. The strength of the underlying bedrock is the principle reason that the uplands have remained as uplands over the course of geologic time and have not eroded down.

Rock Outcropping
Great Quarter Road

As illustrated on the map titled *Bedrock Geology*, three types of metamorphic bedrock can be found within the town and the surrounding region: Schist, Gneiss, and Granofels. Schist is a coarse grained, layered rock often containing quartz; Gneiss is coarse grained and characteristically banded with varying light and dark minerals; Granofels is similarly grained to Gneiss, but lacks the compositional banding. For the most part, the bedrock formations remain hidden deep under the earth. However, outcroppings along the town's many hills and ridges provide a glimpse of town's bedrock formations.

Bedrock formations are important for a number of reasons including:

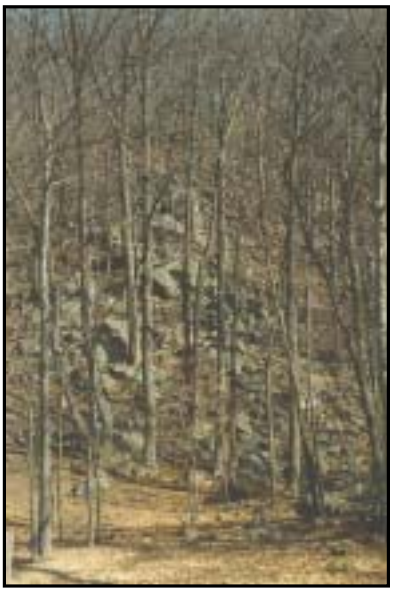
1) Bedrock outcrops are a scenic resource that adds to the character of the town. The rocky landscape and varied terrain create visual interest, and often, some of the best views of the landscape surrounding Newtown occur from outcroppings.

2) Rock outcropping provide specialized habitat for some plant and animal species.

3) Areas of rock outcropping or shallow depth to bedrock may pose significant constraints to development. Altering the bedrock geology to accommodate development can effect the surrounding ecology and impact adjacent wells

Surficial Geology

The surficial geology in Newtown is largely a product of glaciation. To the trained eye, evidence of glacial activity can be read throughout the town's landscape. Striations in the bedrock and glacial till deposits are the most obvious remnants from the glacial age. In addition, as the glaciers receded they left behind rich deposits of rock and sediment called glacial drift. This glacial drift is the primary component of Newtown's surficial geology.



Rock Outcropping
Poverty Hollow Road

Glacial drift is estimated to cover over 90% of Connecticut.[1] In Newtown, glacial drift is primarily made up of till and stratified drift. Stratified drift, generally found in the form of sand or gravel, is uniform

[1] Michael Bell, The Face of Connecticut, People, Geology and the Land, Bulletin 110, State Geological and Natural History Survey of Connecticut, Connecticut Department of Environmental Protection, 1985.

in size and has few large stones and boulders. Till, in contrast, is a mixture of materials ranging from large coarse boulders to fine deposits such as silt or clay.

The difference in the composition of till and stratified drift is important in that water, particularly subsurface water, travels very well through stratified drift, but not very well through till. Therefore, for purposes of identifying potential sources of ground water for public consumption, geologists look to those areas that have large deposits of stratified drift. These potential aquifer areas are important natural resources to protect and have been the focus of aquifer protection regulations in recent years. In Newtown, two public water supply well fields are located within stratified drift deposits on the Pootatuck River. These deposits are irreplaceable and therefore a key component to the town's natural resource inventory.

The distribution of Newtown's surficial geology is illustrated on the map titled *Surficial Geology*.

B. SOILS

The soil covering Newtown's landscape is a complex matrix of varying slope, depth, texture, permeability and fertility. Understanding the distribution and general characteristics of the town's major soil types can be helpful in planning for and siting community development projects. Included in this analysis are "specialty" soils such as wetland or prime / important farmland soils. These soil types receive special attention due to the specific attributes they contain.

According to the Natural Resource Conservation Service (NRCS) Detailed Soil Survey, the soil in Newtown is made up of 32 different soil types, which are listed in Appendix A. Of these, four main soil types or soil type combinations comprise almost 60% of the town's land area, and are described in brief below. The distribution of these soil types is illustrated on the map titled *Soil Types*.

Hollis-Chatfield Rock Outcrop Complex

This soil complex, found commonly on hills and ridges, is well drained with a moderate to excessive permeability. Well-drained soils with adequate permeability are important to ensure on-site septic systems function properly. Most areas in this complex are wooded but some small, less severely sloped areas have been used for community development or agriculture. The major limitations to community development in areas with this soil type include steep slopes, shallow depth to bedrock, stony soil and exposed bedrock. The Hollis-Chatfield Rock Outcrop soil complex covers approximately 18% of Newtown's land area.

Paxton & Montauk Soils

This soil complex consists of well-drained soils of varying slope. Most areas in this complex are wooded, but some areas have been cleared for agriculture or community development. These soils have fair potential for development primarily due to the moderate to poor permeability of the substratum. The NRCS cautions that on these soil types, on-site septic systems be carefully planned, located, designed and installed to ensure proper functionality. The Paxton-Montauk soil complex covers approximately 14% of Newtown's land area.

Canton & Charlton Soils

This soil complex consists of well-drained soils of varying slope and stoniness. Like the Paxton & Montauk soils, most areas in this complex are wooded, as the soil type is excellent for forest production. These soils have good potential for community development; however, stoniness and slope can pose problems in some areas. The NRCS cautions that in some areas, on-site septic systems need to be carefully planned, located, designed and installed to prevent effluent from seeping to the surface. The Canton & Charlton soils cover approximately 14% of the town's land area.

Charlton – Chatfield Complex

This soil complex is classified as well drained to excessively drained soils of varying slope. Surface runoff is medium to rapid. Most areas in this complex are wooded with a

diverse mix of species including white and red oaks, sugar maple, beech, and hemlock. These soils have fair potential for community development, primarily due to relatively shallow depth to bedrock. The Charlton – Chatfield Complex covers approximately 13% of the town's land area.

Wetland Soils

Wetlands in Connecticut are defined by soil type. Those soils that are classified by the NRCS as Poorly Drained, Very Poorly Drained, or Alluvial and Floodplain are by definition classified as a wetland and protected under the town's inland wetland regulations. While most wetlands are associated with watercourses, some exist as isolated systems.

Wetland Complex
Currituck Road

In total, approximately 5650 acres[2] or 15% of the town's land area is designated as wetland soil. These areas are illustrated on the map titled *Wetland Soils*.

Within the town, a variety of very large and productive wetland complexes can be found. These include the Pine Swamp in Botsford, an area along Deep Brook, south of Tauton Pond, and an area along the headwaters of the North Branch of the Pootatuck River (between Key Rock Road and Boggs Hill Road). Other significant wetland complexes include the area along the railroad tracks in Hawleyville, and an area between Phyllis Lane and Hattertown Road. In addition to these large wetland complexes, other small wetland systems can be found throughout the town.

[2] Calculated from Natural Resource Conservation Service Detailed Soil Mapping, Digital Soils Data, 1995

The protection of wetland soils is important for a variety of reasons including:

Wetland Complex
Boggs Hill Road

- Wetlands are among the most biologically productive natural ecosystems in the world;

- Wetlands provide habitat that is critical to a variety of plant and animal species, including threatened and endangered species;

- Wetlands function like natural sponges, storing water (floodwater or surface water) and slowly releasing it thus reducing the likelihood of flood damage to personal property or agriculture by controlling the rate and volume of runoff;

- Wetlands help improve water quality by intercepting surface runoff and removing or retaining its nutrients, processing organic wastes and reducing sediment before it reaches open water;

- Wetlands provide outdoor recreational opportunities such as wildlife viewing / photography, and nature study.

Some of the more sensitive wetlands are those found on Alluvial and Floodplain soils. Due to the excessive permeability of these unique soils, these areas are susceptible to rapid infiltration of pollutants, which can have devastating effects on groundwater drinking supplies. In addition, these areas are dense with nutrient-rich sediments, which produce some of the most productive farmlands.

The Newtown Inland Wetland & Watercourse Agency is authorized to promulgate regulations for the protection of inland wetlands and watercourses within the town.

Activities in wetlands or watercourses that include excavation, grading, clear cutting of wooded wetlands, dredging or any alteration of the indigenous character of either a wetland or watercourse are regulated by the Commission.

Prime and Statewide Important Farmland Soils

Prime farmland is defined by the NRCS as the land that has the best combination of physical and chemical properties for producing food, feed, forage, fiber and crops, and is also available for these uses. Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to modern farming methods.

Additionally, statewide important farmland soils are those areas that are nearly prime farmland and that economically produce high yields of crops. Some may actually produce as high a yield as prime farmland if conditions are favorable.

Prime Farmland Soils
Castle Hill Farm

Statistics indicate that the quantity of farmland, and consequently the quantity of prime and important farmland soils, has been rapidly decreasing in the State. According to University of Connecticut Cooperative Extension System, farmland has decreased from almost 50% to only 11% of the State's total land area since 1950.[3] Due to these statistics and the desire to keep farmland an integral part of a community's character, farmland preservation strategies have become more common across the state. In identifying appropriate locations for such protection, an inventory of the NRCS designated farmland soil types is a logical place to begin. Therefore, the distribution of these soil types is illustrated on the map titled *Prime and Statewide Important Farmland Soils.*

[3]Jim Gibbons, University of Connecticut, Cooperative Extension System, Natural Resource Areas To Be Considered When Preparing Natural Resource Inventories And Open Space Plans, 1999.

Soils with a Shallow Depth to Bedrock

Bedrock depth varies considerably depending on factors such as elevation and slope. In some areas of town, the soil depth is well over 5 feet. In others, bedrock is exposed as outcroppings. Understanding what area of town has shallow soil depths is important in planning development, especially on-site septic systems. The areas of town that have shallow soils, or soils with an average depth of less than 5 feet, are illustrated on the map titled *Shallow Depth to Bedrock.* These areas comprise over 20% of the town's land area.

Shallow Soils
Hanover Road

In areas where the soil depth is shallow, septic systems are difficult to install and operate because waste effluent cannot percolate through the impervious bedrock layers. Expensive, highly engineered solutions must be implemented in these situations to ensure proper functionality of these systems. The Connecticut Health Code requires that leaching fields be at least 4 feet deep (above bedrock), or else the entire system must be constructed on fill. Due to the problems of siting septic systems on shallow bedrock areas, some planning and zoning commissions in CT (i.e. Town of Glastonbury) have adopted regulations requiring a minimum of 4 feet of soil above bedrock as a requirement to approve building lots.

Steep Slope Soils

Areas of steep slopes are important to identify due to their effect on development. While the stability of a slope is dependant on many variables including vegetative cover and the underlying geology, as a general rule it can be expected that slopes in the range of 15% - 20% pose constraints to development due to the difficulty of building foundations and

siting septic systems. In addition, these areas pose additional hazards such as increased erosion, surface runoff, siltation and flooding. Therefore, identifying areas of steep slopes is an important component to the natural resource inventory.

For the purpose of this report, steep slopes were identified based on the NRCS Detailed Soil Survey and are illustrated on the map titled *Steep Slope Soils*. The NRCS soil survey calculates a slope range for each soil unit ranging from 0 to 45 percent. This slope range is expressed as a minimum and maximum slope and is averaged across each soil unit, which is mapped at a minimum of one acre. This method of calculating slope is good for town wide planning purposes in which general areas or patterns of steep slopes are identified, but it is not suitable for site-specific studies, which would require a detailed survey and slope analysis. This is because of the possible variation in slope within each soil unit. This is particularly important in a town like Newtown, which contains significant variation in the overall topography.

C. WATERSHEDS

Watersheds define the natural drainage system in the town. The river, streams, lakes, ponds, wetlands and floodplains are the components of the watershed that contain the attributes to support a variety of plant and animal life, attenuate flood conditions, and provide the residents of the region with a plentitude of potable drinking water. Managing these watersheds in a sustainable manner is critical to ensure that the attributes they contain and the benefits they provide will be around for years to come.

The Department of Environmental Protection (DEP) delineated the States watershed areas in 1982. The purpose of the delineation was to prepare for the management of a variety of natural resources through a system in which each drainage basin was classified based upon the watershed area. This management organization has recently taken hold on the State level as each major drainage basin has been assigned a watershed coordinator through the DEP. This person is responsible for administering watershed management techniques for the purpose of protecting the water quality of the States watercourses.

For the most part, Newtown is located within the Housatonic Major Basin with most surface waters flowing to the Housatonic River. A major drainage divide located in Poverty Hollow separates the Housatonic from the Southwest Coast Major Basin. This is illustrated in the map titled *Newtown Watersheds*.

Multitudes of waterways are located within the Town of Newtown. Each watercourse has its own associated watershed. For the purposes of the Plan of Conservation and Development, these watershed area are described on the Subregional level with a focus on the overall water quality and land use patterns found in each.

Water Quality

The purity of water in a stream to a great extent correlates with the overall level of development and activity that exists upstream in the drainage basin. Activities that contaminate water supplies are divided into two categories, point and non-point. Point sources of pollution are those that are confined to a single, identifiable source. Non-point sources are diffuse, indefinite and general sources of pollution. Potential types of non-point source pollution include contaminated surface water runoff from impervious surfaces such as roads and parking lots, or contaminated runoff from agricultural fields.

In September 1980 (revised in 1997), the State adopted water quality standards and criteria representing policies for surface and groundwater resources. This system established water quality goals and general criteria limits for the control of the States water resources (i.e. potable water supply, habitat for fish, other aquatic life and wildlife, recreation and waste assimilation). The water quality classifications establish designated uses for surface and groundwater and identify the criteria necessary to support those uses. The purpose of the standards is to provide the clear and objective statements for existing and projected water quality and the general program to improve water resources. They also serve to qualify the State and its municipalities for available federal grants for water pollution control. These water quality classifications will be used to help describe and assess the environmental health of the watersheds within town.

There are eight subregional watersheds located in the Town of Newtown that provide drainage for the following watercourses: Aspetuck River, Deep Brook, Halfway River, Housatonic River, Limekiln Brook, Pequonnock River, Pond Brook and Pootatuck River. These watershed areas are briefly described in the following section. The only exception is the Pequonnock River watershed due to the fact that it drains such a small area of town.

Aspetuck River Watershed

The Aspetuck River flows through Poverty Hollow on the southwest corner of town and drains approximately 3 square miles or 5% of the town's land area. The Aspetuck River originates in Newtown (off Arthur's Court) and flows through the towns of Redding, Easton and Westport on its way to Long Island Sound. Development in this portion of the watershed is primarily forest land with a mixture of low density residential and agriculture. According to the DEP Surface Water Classification System, water quality along the majority of the Aspetuck is high with a surface quality index of "A"[4]. This water quality classification states that the river has uniformly excellent character and is suitable for all water uses including potential drinking water supply. A small portion of the Aspetuck, in the vicinity of Poverty Hollow Road has been classified as "B" with a goal of "AA" indicating that it is currently not meeting criteria for the target class. Class B indicates that the water is suitable for swimming and is excellent fish and wildlife habitat, but is not suitable for potential drinking water supply, which requires at least an "AA" classification. The Aspetuck River Watershed within Newtown is part of a watershed tributary to the Bridgeport Hydraulic Company's Aspetuck Reservoir in Easton.

Aspetuck River
Poverty Hollow Road

[4] See appendix B for a description of the DEP Surface Water Classifications (1997)

Deep Brook Watershed

Pond on Deep Brook
Point O'Rocks Road

The Deep Brook watershed is relatively small and the only subregional watershed contained entirely within the Town of Newtown. The brook originates just north of the Partridge Lane / Scudder Road intersection and flows east into the Pootatuck River shortly after its confluence with County Club Brook. The watershed drains approximately 5 square miles or 9% of the town's land area. Development in the watershed is a mixture of low-density residential, agricultural, institutional and forest land including some small pockets of commercial and industrial property. A significant wetland complex is located just south of Sugar Lane. A portion of the Fairfield Hills campus is located within the watershed. Water quality within the watershed is generally good with a classification of "A" along most of the main stem of the Deep Brook. However, water quality has been compromised along the unnamed tributary that runs behind the commercial/industrial properties east of Route 25. This tributary, along with Deep Brook Pond and Queenies Pond are classified as "B" with a goal of "A" indicating that the water currently is not meeting the criteria for the targeted class.

A portion of the Deep Brook, from Wasserman Way downstream to the confluence with the Pootatuck River, plays host to a Wild Trout Management Area managed by the DEP. This specialized management area is managed under year-round catch-and-release regulations and is intended to enhance recreational fishing in the State by providing and opportunity for anglers to fish wild brook and brown trout

Halfway River Watershed

The Halfway River originates in Newtown, just north of the new subdivision off Marlin Road, and flows east creating the border with Monroe before flowing into Lake Zoar. The watershed drains approximately 5 ½ square miles or 10% of the town's land area. Development in the watershed is primarily low-density residential and forest land. Water quality along the river is generally good with a classification of "A". The only exception to this is a small reach just south of the Route 34 / Great Quarter Road intersection that has been classified as "B" with a goal of "A" indicating that the water currently is not meeting the criteria for the targeted class.

Housatonic River Watershed

Housatonic River

The Housatonic River is a major regional watercourse that originates in western Massachusetts. Following a south to southeasterly direction, the river passes through western portions of Massachusetts and Connecticut before reaching its destination at Long Island Sound at Milford Point. The total Housatonic River watershed encompasses almost 1,950 square miles, of which approximately 12 square miles are located in Newtown. This represents approximately 21% of the town's total land area. The river is a major regional recreational outlet. This has a lot to do with the fact that much of the Housatonic as it borders Newtown is contained by two dams, which create Lake Lillinonoh and Lake Zoar. These two lakes have developed into residential lake communities that focus recreational activities on the river. Development patterns within the watershed are primarily forest land with the exception of the medium density residential uses along the river. The river's water quality has been classified as "D" with a goal of "B" indicating that the water currently is not meeting the criteria for the targeted class.

Limekiln Brook Watershed

Limekiln Brook
Taunton Hill Road

The Limekiln Brook originates in the Dodgingtown section of Newtown. The wetland complex in the vicinity of Flat Swamp Road and Hollow Road serve as the headwaters. The brook flows to the west through the Town of Bethel where it meets the Still River in Danbury. The watershed drains approximately 2 ½ square miles or 4% of the town's land area. Development in the watershed is low / medium density residential and forest land with a few small commercial uses along Route 302. Water quality within the watershed is generally good with a classification of "A" along the main stem and the tributaries of the Limekiln Brook.

Pond Brook Watershed

The Pond Brook originates at Taunton Pond, the former water supply reservoir for the Town of Newtown. The brook flows to the north through Hawleyville where it meanders through a large wetland complex off Route 25 and flows east along Pond Brook Road where it ultimately meets with the Housatonic River just north of Paugussett State Forest. The watershed drains approximately 10 square miles or 17% of the town's land area. Development in the watershed is primarily low / medium density residential and forest land, however small pockets of commercial uses are found along Route 6 and Route 25 in the Hawleyville section of town. Water quality within

Pond Brook
Pond Brook Road

the watershed is generally good with a classification of "A" along the main stem and the tributaries of the Pond Brook. The only exception is Taunton Pond, which has a classification "B" with a goal of "A".

Pootatuck River Watershed

The Pootatuck River, originating just over the town line along the Easton and Monroe border, is the largest watershed in town draining approximately 19 ½ square miles or 33% of the town's land area. The river flows northeast from Monroe between Botsford and Hattertown, continues just east of the Fairfield Hills campus and continues in a northerly direction through Sandy Hook eventually flowing into the Housatonic River just north of Rocky Glen. The watershed plays host to the town's public water supply. Two public water supply well fields tap into the Pootatuck Aquifer, a federally designated Sole Source Aquifer located in the stratified drift deposits below the river. These well fields are illustrated on the map titled *Groundwater Resources*. Development in the watershed is mix of land uses with all major categories represented. Low density residential and forest land can be found in the upper reaches (Hattertown), industrial / commercial / institutional is located in the middle section (Botsford) and medium density residential and commercial is located in the lower reaches (Sandy Hook / Rock Glen). Surface water quality in the watershed has been compromised as most of the river is classified as "B" with a goal of "A" indicating that the water currently is not meeting the criteria for the targeted class. However, groundwater classifications are excellent with "GA" or "GAA", the highest classifications given.

Pootatuck River
Glen Road Footbridge

A portion of the Pootatuck River, upstream and downstream from the confluence with the Deep Brook, as indicated by signs posted by the DEP, is a designated Wild Trout

Management Area (WTMA). This specialized management area joins the Deep Brook WTMA, is managed under year-round catch-and-release regulations, and is intended to enhance recreational fishing in the State by providing an opportunity for anglers to fish for wild trout. DEP reports that the deep pools and good cover in this section of the river harbor unusually strong numbers of large wild brown trout during the summer months.

Tributaries

There are numerous lakes, ponds, brooks and streams that are located within the watersheds described above. These important hydrologic features, as identified by the United States Geological Survey (USGS) are listed in Appendix C.

D. FLOODPLAINS

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) designed to encourage communities to adopt and enforce a floodplain management program that will regulate activities in flood hazard areas. The objective of the local program is to reduce flood loss by ensuring activities will not increase the potential for flooding and that new buildings will be protected from future flood damage.

FEMA Produces a series of flood maps for communities to utilize in enforcing regulatory standards, which are the basis for floodplain management. These maps delineate flood hazard areas and floodways and include information such as the water elevation during a base flood. The map titled *FEMA Flood Hazard Areas* illustrates the designated 100-year floodplain.

A local flood control ordinance was adopted in 1983 and updated in 1988. The ordinance controls any activity and development within special flood hazard areas identified on the federal flood maps. The Conservation Director administers the ordinance and acts as a liaison between the town and FEMA.

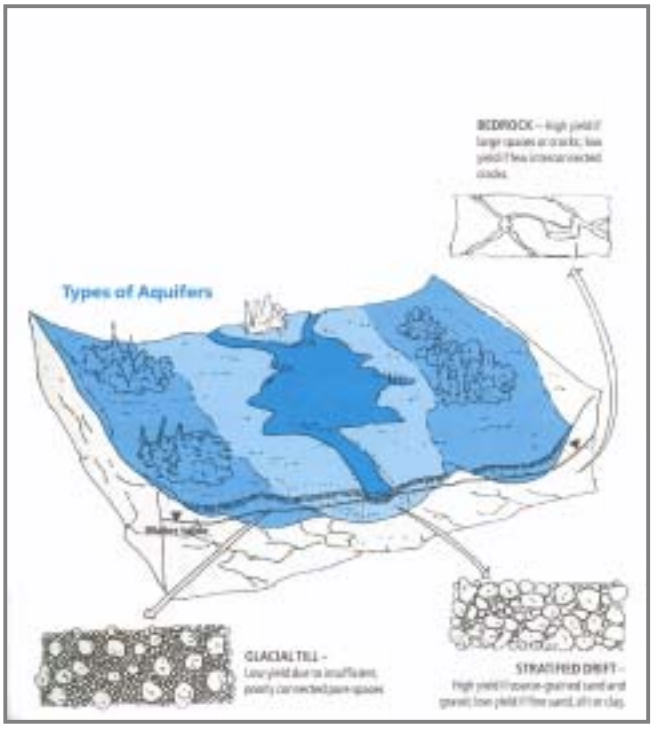
Aspetuck River Floodplain
Hopewell Woods Road

Flood hazard areas are generally considered those areas that can be expected to flood during the occurrence of a base storm. These areas provide for water storage while floodways, which include the channel of a watercourse and adjacent stream banks, allow floodwater discharge. Any activity that will restrict or increase floodwater flows are specifically prohibited. As with the protection of wetlands, flood hazard areas and floodways are vital elements in storm water management. Unregulated activities and development within these hazard areas could result in large loss of life and personal property. Therefore policies affecting land use activities are critical to assuring the maintenance of floodplains and floodways for storm water discharge and protection of public health.

E. AQUIFERS

While groundwater can be defined simply as water lying below the surface of the ground, an aquifer is more specifically defined as "any geologic formation that allows for the withdrawal of useable amount of water[5]". In most cases, the use of this water involves drinking water supply.

[5] Understanding Groundwater, Protecting a Natural Resource, Connecticut Department of Environmental Protection, 1998.



Protecting Connecticut's Groundwater: A Guide For Local Officials, Connecticut Department of Environmental Protection. DEP Bulletin No. 26. 1997

Newtown is mainly comprised of two types of aquifers: bedrock-till formations and stratified drift formations. Bedrock-till aquifers, found throughout town, are comprised of many different rock types (including till) and can yield as much as 10 gallons of water per minute (14,400 gallons per day). Stratified drift aquifers, in contrast, are comprised of layered deposits of sand, gravel, silt and clay and are located primarily in river and stream beds. Stratified drift aquifers can yield millions of gallons per day wherever deep saturated deposits of porous materials are found. These high yield conditions have the capacity to be developed into municipal water supplies. In Newtown, the South Main Street and Fairfield Hills well fields are examples of stratified drift wells that have been developed into active water supply.

Eight major aquifers are located wholly or partly within Newtown. These aquifers include land areas of unconsolidated stratified drift comprised of at least 100 acres and possessing saturated thickness of 10 feet or greater. Aspects of the major aquifers are identified in Table 1.

Table 1
Major Aquifers

Name	Saturated Hypothetical Thickness (ft)	Recharge Area (sq. mi.)	Hypothetical Well Yield (mgd)
* Upper Aspetuck	70	0.8	0.7
*Limekiln Brook	30	1.0	n/a
Deep Brook	30	0.8	0.1
Pootatuck Valley	100	8.7	1.4
North Branch, Pootatuck	30	0.7	0.1
Pond Brook	30	1.9	n/a
Housatonic	100	0.8	0.1
*Dibbles Brook	60	3.1	0.3

*Recharge area partially in Newtown
n/a – not available
Source: Newtown Water Resources Atlas, HVCEO Bulletin 37, June 1985, as cited in 1993 POCD

Most modern wells are six-inch diameter holes drilled or driven 100 feet or more into the ground. The area immediately surrounding a well is of critical importance because this is the area from which groundwater is drawn towards the well, creating what is know as a cone of depression in the water table. The land area that contributes water to the cone of depression is called a well recharge area and varies in size and shape depending on the type of aquifer tapped and the yield of the well. Because the recharge area of the well is so important to the overall purity of the well water, special care must be taken to protect this land area from contamination.

The Pootatuck Aquifer is a federally determined sole source aquifer for the public water supply in Newtown. The Environmental Protection Agency (EPA) defines a sole source or principal source aquifer as "one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer"[6]. EPA guidelines also stipulate "these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water". The location if the Pootatuck Aquifer recharge area is in the most densely developed area of the town, which emphasizes the importance of protecting this resource.

[6] United States Environmental Protection Agency, Office of Water, Sole Source Aquifer Protection Program Overview, http://www.epa.gov/OGWDW/swp/ssa.html.

Aquifer Protection Areas

Many aquifers across the state are threatened by contamination due to potentially contaminating land uses. To address this problem, Connecticut has established the Aquifer Protection Program (C.G.S § 22a-354a et. sec.). The purpose of this program is to identify critical water supply areas and to protect them from pollution by managing land use. To satisfy their statutory mandate, the DEP, in conjunction with the local/regional water authorities, have identified over 120 Aquifer Protection Areas (APA) across the State, two of which are located in Newtown.

APA's must meet the criterion of containing a public water supply well that is located in stratified drift and services more than 1000 people. DEP is in the process of drafting regulations that would limit the types of land uses that could be sited in the "protection area," which coincides with the well recharge area of the aquifer. The protection areas have been delineated by the local/regional water authorities and submitted to the DEP for review. The distribution of the APA and the public water supply wells in Newtown are illustrated on the map titled *Groundwater Resources* (see page 19). Also included on this map are the stratified drift deposits in Newtown. These areas have the potential to contain other high yield aquifers that may be suitable for public water supply.

F. FARMLAND & FOREST LAND

Farmland

Agricultural areas have been rapidly declining in the state over the past 100 years. According to the Connecticut Department of Agriculture, the amount of land in the state devoted to agricultural has dropped in the last century from 80% to 12%[7]. Between 1983 and 1993, the state lost 80,000 acres of farmland and continues to lose land for farming at a rate of 8,000 acres per year.[8] The qualities that make certain soils prime for farming also make them the easiest areas to develop for residential and commercial use.

[7] Connecticut Department of Agriculture, Farmland Preservation Program, 2001.
[8] Connecticut Department of Agriculture, Farmland Preservation Program, 2001.

When compared to other towns in the state, Newtown may not appear to be much of an agricultural town. However, a drive through the town will illustrate that agriculture is very much a part of the town's identity and character.

Castle Hill Farm

Due to increased operating costs and stagnant farm income, farmers have found it increasingly difficult to keep their farms viable. One state program that has helped ease the burden of increasing property taxes is the P.A. 490 program. This program allows qualifying parcels containing farms, forests or open space, to receive lower local property taxation based on the land's current use and not on its market value. "Use value" is based on what the land is actually used for, and not what the land might potentially be worth on the real estate market. This program has assisted many farmers across the state to dramatically decrease their tax burden and, as a result, keep their farms active. While this does not guarantee that this land will remain in an agricultural use (the owner maintains the right to sell the property, albeit with a conveyance tax requirement), it does provide incentive to keep farming the land. Currently, there are 68 parcels of farmland totaling approximately 1,350 acres participating in the P.A. 490 program in Newtown.

Forest Land

One of the largest components to the state's open space network is forest land, which represents approximately 60% of the state's total land area.[9] In addition, 80% of Connecticut's forests are in private ownership and 55% of those holdings are in tracts of 10 acres or less.[10] The fact that the average age of the forest land owner in the state is 66 years old implies that over the next 20 years, the decisions that these land owners make

[9] See Gibbons
[10] See Gibbons

regarding the use of their forest land will have a dramatic effect on the landscape of the state.

Protected Forest Land
Castle Hill Road

The trees and forests of Newtown are essential components to the town's character. Forests provide many benefits to the town including improving the community's appearance, and air quality, providing wildlife habitat and recreational opportunities. However, the land use trends across the town and the state appear to be rapidly fragmenting the forests, which can have a devastating effect on wildlife habitat, timber production and water quality[11].

Maintaining land as forests and minimizing their fragmentation is an important component to a municipal strategy to protect its natural resources and preserve its open space character. As with farmland, the P.A. 490 program can assist landowners in maintaining land, particularly large tracts of land, as forest by minimizing the tax burden. Currently there are 130 parcels of forest land totaling approximately 5,300 acres or 14% of the Town's land area participating in the P.A. 490 program in Newtown.

With the help of the State DEP, the Newtown Forest Association, and other land conservation organizations, Newtown has a successful record of accomplishment in protecting many of its forest resources. The DEP owned Paugussett State Forest and Rocky Glen State Park account for over 1,900 acres of forest land, while the Newtown Forest Association has protected over 1,000 acres of property in its 79 years of land stewardship. However, other large, unfragmented forest lands exist that can play an

[11] Forestland Conversion, Fragmentation and Parcelization Report, Yale Forest Forum Review 2001

important role in the town's future open space strategy. The distribution of the town's forest resources is illustrated on the map titled *Forestry Resources*.

G. WILDLIFE HABITAT AND LISTED SPECIES

The combination of Newtown's varied topography, forested tracts, abundant rivers, streams, lakes, ponds, and wetlands provides exceptional habitat for a variety of plants and animals. The following describes some of the specialized habitats that warrant special attention:

Vernal Pools

Vernal pools are seasonal depressional wetlands that have no permanent above ground inlet or outlet. They form in shallow depressions in areas that have poor drainage and impenetrable substances such as rock or clay. They also occur in floodplain areas and close to other wetland systems. They are covered by shallow water for variable periods, typically in the spring but may be completely dry in the summer months. These small wetlands may range in size from small puddles to shallow lakes.

Potential Vernal Pool
Birch Hill Road

Vernal pools are considered valuable wildlife habitat because of the wide range of species that depend on them for life and breeding. Dependant species include salamanders, frogs, turtles, toads, fairy shrimp, snails, and a variety of insects. The pool's seasonal nature eliminates the possibility for fish establishment thus protecting vernal pool organisms from fish predations. Some organisms have adapted well to the seasonal habitat of the vernal pool. For example, the eggs of the fairy shrimp can remain in "suspended animation" in which the eggs lie dormant in dried-out conditions for years.

Currently, no vernal pool inventory exists from either state or local sources. However, due to the varied topography and geologic characteristics, many areas in Newtown contain the right combination of conditions in which the formation of vernal pools would be favorable. The future identification and protection of these important natural resource areas should be incorporated into the town's overall open space strategy.

Endangered, Threatened, and Special Concern Species

In Connecticut, the protection of unique biological communities is held to a high standard. In support of this, the Connecticut DEP has inventoried sites across the state that contain habitats of endangered, threatened, and special concern species. These habitat areas are perceived as unique and receive special protection status from the State. The DEP has identified these sites in a special survey called The Connecticut Natural Diversity Database, which is a centralized inventory of these unique habitat locations and represents the findings of years worth of biological surveys.

The Natural Diversity Database breaks down the sites into the following taxonomic groups: mammals, birds, reptiles, amphibians, fish, invertebrates and plants. Within these groups, the species are further categorized as being endangered, threatened, or special concern. According to Connecticut Public Act 89-224, these categories are defined as follows:

"Endangered Species" means any native species documented by biological research and inventory to be in danger of extirpation throughout all or a significant portion of its range within the state and to have no more than five occurrences in the state, and any species determined to be an "endangered species" pursuant to the federal Endangered Species Act.

"Threatened Species" means any native species documented by biological research and inventory to be likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state and to have no more

than nine occurrences in the state, and any species determined to be a "threatened species" pursuant to the federal Endangered Species Act, except for such species determined to be endangered by the Commissioner (DEP) in accordance with section 4 of this Act.

"Species of Special Concern" means any native plant species or any native non-harvested wildlife species documented by scientific research and inventory to have a naturally restricted range or habitat in the state, to be at a low population level, to be in such high demand by man that its unregulated taking would be detrimental to the conservation of its population or has been extirpated from the state.

Information from the DEP's database was transcribed onto maps, represented by circles a half mile in radius. These sites are represented ambiguously because of the many threats they face. These threats include collection, because of their beauty, uniqueness or purported medical or economic values. Even well intended observers and photographers have been known to accidentally destroy sites.

The location of sites within the town identified by the Connecticut Natural Diversity Database is illustrated on the map titled *Significant Habitats and State Listed Species*. In addition to generalizing the exact location of these sites, the category in which the sites are located has also been removed. This is to further ensure the protection of these unique resources.

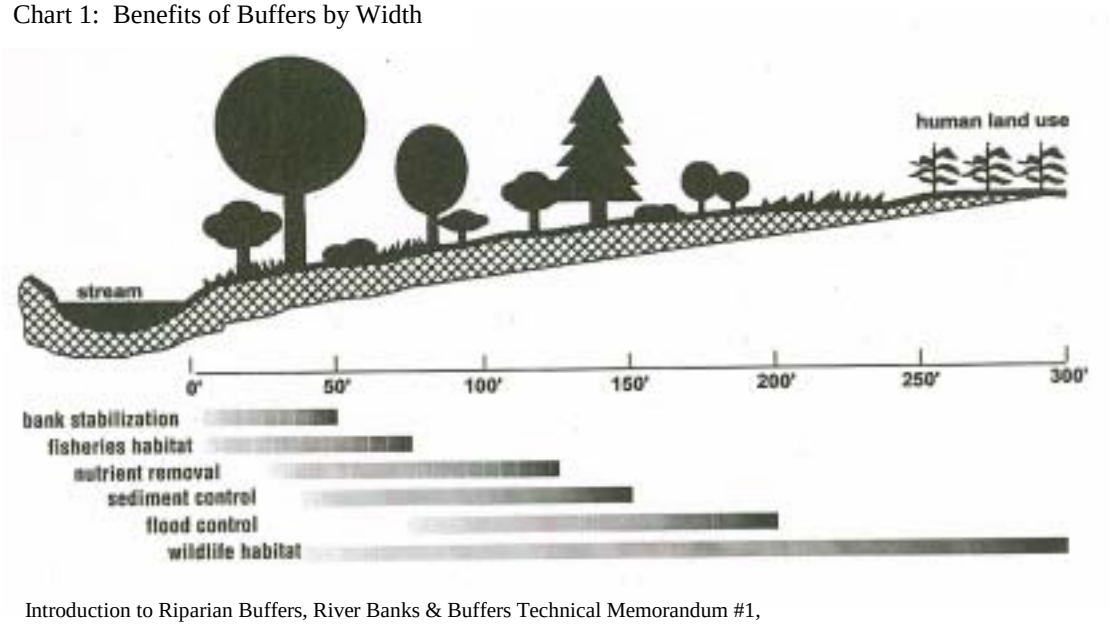
Riparian Corridors

Riparian corridors, or riparian buffers, are undisturbed, naturally vegetated areas contiguous with and parallel to rivers and streams. The benefits of riparian buffers are well documented. To summarize, riparian buffers protect our water resources by improving water quality through filtering pollutants and sediments, stabilizing stream banks and river beds, and improving wildlife habitat by providing travel corridors and improving aquatic habitat.

The recommended buffer width of riparian corridors varies depending on the goal of the buffer. There is not one generic buffer width that will keep the water clean, stabilize the bank, protect fish and wildlife habitat, and satisfy human demands on the land. The minimum acceptable width is one that provides acceptable levels of all needed benefits at an acceptable cost. The basic buffer recommendation is 50 feet from the top of the bank; however; as illustrated on Chart 1, you gain more benefits with every additional foot.

To protect wildlife habitat and provide wildlife corridors along waterways, the

Chart 1: Benefits of Buffers by Width



Introduction to Riparian Buffers, River Banks & Buffers Technical Memorandum #1,
Connecticut River Joint Commissions of NH & VT, September 2000

recommended buffer width varies depending upon the desired species. For example, some songbirds only require a buffer width of 40 feet while larger birds such as cavity nesting ducks require a buffer width of 600 feet. On average, it is recommended that a buffer width of 300 feet would adequately provide a functional corridor for most wildlife species. Protecting a 300-foot buffer along all the river and streams in Newtown is not a realistic objective.

The United States Forest Service, in a publication titled "Riparian Forest Buffers-Function and Design for Protection and Enhancement of Water Resources," suggests a minimum buffer of 95 feet, which is composed of the following three zones: Zone 1 begins at the top of the stream bank and occupies a strip of "undisturbed forest" of 15 feet. Zone 2 begins at the edge of zone 1 and occupies an additional 60 feet of "managed forest." Zone 3 is composed of 20 feet of natural or controlled grazed grassland whose main function is to control runoff. The 95-foot buffer is a minimum. Actual widths should vary depending on 1) the nature of the stream protected; 2) soils, topography and vegetation; and 3) land use of concern that may impact stream. Even though this approach is not specific to wildlife, it could provide some level of protection to wildlife in the town.

While this approach may not be feasible for the entire town, buffer implementation may be feasible in specific areas of the town. These areas are identified as riparian corridors on the map titled *Significant Habitats and State Listed Species*.

H. SCENIC VIEWS

As an amendment to the 1993 Plan of Conservation and Development, scenic views and vistas from public vantage spots that merit protection were inventoried and are incorporated herein by reference[12]. These scenic vistas are recognized by the town as being important components to the town's rural character. Viewsheds for each of the 17 vistas have been delineated and viewpoint coordinates are described A descriptive narrative of each of the sites is provided and photographs depict the view from each site. The unique rural character, visual quality and significant landscapes of Newtown can be experienced from these vistas.

Scenic Vista
Old Castle Drive

[12] "The Views of Newtown", Newtown Planning and Zoning Commission, December 1998 as adopted by the Newtown Planning and Zoning Commission and amended to the 1993 Plan of Conservation and Development, March 3, 1999; effective March 15, 1999.

IV. POLICIES, GOALS AND OBJECTIVES

POLICY: ENSURE THE PRESERVATION AND PROTECTION OF NEWTOWN'S NATURAL RESOURCE FEATURES.

GOAL 1: Preserve and protect Newtown's unique bedrock and surficial geological features.

Objectives:

1. Identify and protect Newtown's significant bedrock outcroppings. These geologic formations create specialized habitat for some plant and animal species and well as contribute to Newtown's scenic character.
2. Continue implementation of the Aquifer Protection Overlay District to preserve and protect the stratified drift deposits that comprise the Pootatuck Aquifer.
3. Identify, preserve and protect Newtown's other significant stratified drift deposits as part of a comprehensive aquifer protection program.
4. Discourage development on sites with bedrock depths less than 10 feet.

GOAL 2: Preserve and protect inland wetland and watercourses within the community from potential sources of contamination or development.

Objectives:

1. Maintain a policy of no net loss of wetlands in the review of subdivisions and site plans.
2. Support actions that continue the ability of wetlands to function as water storage areas, natural habitat, groundwater recharge areas, and water purifiers.
3. Where feasible, create a network of greenways along watercourses that will allow for public access and resource protection. Focus should be placed on the Housatonic and Pootatuck rivers.
5. Support enforcement of soil erosion and sedimentation control regulations by encouraging the adoption of penalties for violation.
6. Support enforcement of wetland regulations by encouraging the adoption of penalties for wetland violations.
2. Where feasible, create a network of stream buffers along key watercourses to discourage activities that would diminish water quality.

GOAL 3: Preserve and protect the high water quality classification throughout the community

Objectives:

1. Continue to monitor land use and conservation practices within critical aquifer areas.
2. Continue the implementation of a local aquifer protection program within the local Aquifer Protection Districts.
3. Support pollution discharge standards that do not allow degradation of water quality.
4. Support sewer expansion to control pollution to groundwater resources.
5. Ensure that storm water management practices in new developments include provisions for minimizing the use of impervious surfaces and encouraging infiltration as a means to control run-off.
6. Continue to preserve open space land in perpetuity as a means to protect the town's water quality.
7. Assist the DEP in measures to help improve the water quality of rivers and brooks that are not currently meeting State targeted classifications.

GOAL 4: Preserve and protect flood hazard zones to ensure the safety of Newtown's residents and their property.

Objectives:

1. Maintain and enhance as necessary flood hazard controls that assure continued participation in the National Flood Insurance Program (NFIP).
2. Support actions that guard against increased downstream runoff.
3. Support actions that limit the use of flood prone areas.
4. Support actions that protect natural drainage ways.

GOAL 5: Preserve and protect Newtown's finite groundwater resources and their surrounding recharge areas.

Objectives:

1. Protect vital existing and potential water supply aquifers from land uses that pose a high risk to maintaining high water quality.
3. Continue to monitor land use and conservation practices within critical aquifer areas.
4. Continue the implementation of a local aquifer protection program within the local Aquifer Protection Districts.
5. Continue review of all site development with regard to separation of water and septic.
6. Where feasible, create a network of stream buffers along key watercourses to discourage activities that would impact water quality.

GOAL 6: To protect and promote agriculture and farming as a viable natural resource industry and as a component of the town's community character.

Objectives:

1. Protect valuable prime and important farmland soils as identified in Newtown's Natural Resource Inventory.
2. Assist local property owners who are interested in farmland preservation in working with the Connecticut Department of Agriculture's Farmland Preservation Program to purchase the development rights to local farms.
3. Work with the Connecticut Department of Agriculture and the University of Connecticut Forest Stewardship program to encourage good forest management.
4. Support participation in programs such as the farm and forest land assessment program authorized by P.A 490 (now §12-107e of the Connecticut General Statutes) to maintain agricultural and forest lands in their present condition.

GOAL 7: Preserve and protect Newtown's natural systems and their functions in order to protect the town's indigenous wildlife and plant life.

Objectives:

1. Inventory and protect vernal pools.
2. Identify, manage, and protect all wildlife and plant life habitat areas that are listed as "endangered, threatened, and special concern" by the Connecticut DEP, Natural Diversity Database.
3. Where feasible, create a network of stream buffers along key watercourses to discourage activities that would impact water quality.
4. Identify and protect large undisturbed and contiguous blocks of land to sustain diverse wildlife habitat.
5. Identify existing wildlife corridors and support actions that preserve habitat needed for the survival of indigenous wildlife species.

GOAL 8: Preserve and protect Newtown's Steep Slopes, Ridgelines and Scenic Views.

Objectives:

1. Preserve and protect the key scenic views identified in the report titled "The Views of Newtown", 1998.
2. Identify ridgelines that contribute to the visual character on Newtown's natural landscape. Work with property owners and cooperating conservancy organizations to develop a strategy for the preservation of these priority areas.
3. Restrict clearing and development of hilltops and other prominent high points in Newtown.
4. Support actions that protect slopes of 15 percent or greater.

V. BIBLIOGRAPHY

American Wildlands (1990) *What are Corridors?* Retrieved 8/21/01 from www.wildlands.org/corridor/what_are_corr.html.

Bell, Michael. 1985. *The Face of Connecticut.* State Geological and Natural History Survey of Connecticut. Bulletin 110.

Connecticut DEP. (1998). *Endangered, Threatened & Special Concern Species.* Retrieved 12/13/99 from http://dep.state.ct.us/cgnhs/nddb/species.htm

Connecticut DEP. (1998). *Mapping for Municipalities Project.* Retrieved 12/13/99 from http://dep.state.ct.us/cgnhs/nddb/town.htm

Connecticut DEP. 1997. *Making Connections, The Greenways Assistance Center.* CT DEP Brochure.

Connecticut DEP. (1998). *Natural Diversity Database.* Retrieved 12/13/99 from http://dep.state.ct.us/cgnhs/nddb/info.htm

Connecticut DEP, Water Management Bureau. 1994. *The Aquifer Protection Area Program for the State of Connecticut.* CT DEP Technical Publications.

Connecticut DEP, Water Management Bureau. 1998. *Understanding Groundwater, Protecting a Natural Resource.* CT DEP Technical Publications.

Connecticut DEP. 1997. *Water Quality Standards.* Technical Report.

Connecticut Food Policy Council. (1999). *Farmland.* Retrieved 8/9/01 from www.foodpc.state.ct.us

Connecticut Natural Resource Conservation Service. (1979). *Identification of Wetland Soils.* Retrieved 8/9/01 from www.ct.nrcs.usda.gov/soils/wet_nhvn.html

Connecticut River Joint Commissions of NH & VT. 2000. *Introduction to Riparian Buffers for the Connecticut River Watershed.* River Banks & Buffers Series. Fact Sheet No. 1. www.crjc.org

Dowhan, Joseph J. and Robert J. Craig. 1976. *Rare and Endangered Species of Connecticut and Their Habitats.* State Geological and Natural History Survey of Connecticut. Report of Investigations No. 6.

Gibbons, Jim. 1998. *Open Space Planning Packet.* UCONN Cooperative Extension System.

Gibbons, Jim. 1999. *Natural Resource Areas to be Considered When Preparing Natural Resource Inventories and Open Space Plans.* UCONN Cooperative Extension System.

Hust, Robert and James Murphy. 1997. *Protecting Connecticut's Groundwater: A Guide for Local Officials.* Connecticut DEP Bulletin No. 26.

U.S. Department of Agriculture, Soil Conservation Service. 1982. *Important Farmlands: Connecticut*. Technical Publication.

U.S. Department of Agriculture, Soil Conservation Service. 1979. *Soil Survey of New Fairfield, Connecticut*. Technical Publication.

U.S. Department of Agriculture National Agricultural Statistic Service. (1997). *1997 Census of Agriculture.* Retrieved 8/9/01 from www.nass.usda.gov/census/census97/highlights/ct/ctc005.txt

U.S. Environmental Protection Agency. (1999). *Values and Functions of Wetlands.* Retrieved 8/8/01 from www.epa.gov/owow/wetlands/facts/fact2.html.

U.S. Environmental Protection Agency. (1999). *Economic Benefits of Wetlands* Retrieved 8/8/01 from www.epa.gov/owow/wetlands/facts/fact4.html.

U.S. Environmental Protection Agency. (2001). *Wetlands and Nature.* Retrieved 8/8/01 from www.epa.gov/owow/wetlands/vital/nature.html

U.S. Environmental Protection Agency. (2001). *Fish and Wildlife Habitat.* Retrieved 8/8/01 from www.epa.gov/owow/wetlands/fish

U.S. Environmental Protection Agency. (2001). *Flood Protection.*. Retrieved 8/8/01 from www.epa.gov/owow/wetlands/flood.html

U.S. Environmental Protection Agency. (2001). *Wetlands and People.* Retrieved 8/8/01 from www.epa.gov/owow/wetlands/vital/people.html

U.S. Environmental Protection Agency. (2001). *Mid-Atlantic Integrated Assessment: Wildlife.* Retrieved 8/20/01 from www.epa.gov/owow/wetlands/vital/people.html

U.S. Environmental Protection Agency. (2001). *Vernal Pools.* Retrieved 8/8/01 from www.epa.gov/owow/wetlands/types/vernal.html

APPENDICES

APPENDIX A

Newtown Soil Types

State Map Unit Symbol	State Map Unit Name	Wetland Soil Type	Farmland	Minimum Slope (%)	Maximum Slope(%)	Acres
75E	HOLLIS-CHATFIELD ROCK OUTCROP COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	15	45	6873.011
85B	PAXTON AND MONTAUK SOILS	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	3	8	5312.802
60C	CANTON AND CHARLTON SOILS	NON-WETLAND SOILS	ADDITIONAL STATEWIDE IMPORTANT FARMLAND SOILS	8	15	5261.727
73E	CHARLTON-CHATFIELD COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	15	45	4852.756
38E	HINCKLEY GRAVELLY SANDY LOAM	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	15	45	2706.834
3	RIDGEBURY, LEICESTER AND WHITMAN SOILS	POORLY DRAINED AND VERY POORLY DRAINED SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	3	2157.888
45A	WOODBRIDGE FINE SANDY LOAM	NON-WETLAND SOILS	PRIME FARMLAND SOILS	0	3	1527.673
306	UDORTHENTS-URBAN LAND COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	35	1320.578
32B	HAVEN AND ENFIELD SOILS	NON-WETLAND SOILS	PRIME FARMLAND SOILS	3	8	1278.992
15	SCARBORO MUCKY LOAMY SAND	VERY POORLY DRAINED SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	3	1004.37

W	WATER	WATER	WATER	0	0	998.696
18	CARLISLE MUCK	VERY POORLY DRAINED SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	2	724.405
17	ADRIAN AND PALMS SOILS	VERY POORLY DRAINED SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	2	691.936
52C	SUTTON FINE SANDY LOAM	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	2	15	516.907
29B	AGAWAM FINE SANDY LOAM	NON-WETLAND SOILS	PRIME FARMLAND SOILS	3	8	479.014
4	LEICESTER FINE SANDY LOAM	POORLY DRAINED SOILS	ADDITIONAL STATEWIDE IMPORTANT FARMLAND SOILS	0	3	313.098
21A	NINIGRET AND TISBURY SOILS	NON-WETLAND SOILS	PRIME FARMLAND SOILS	0	5	282.347
305	UDORTHENTS-PITS COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	80	270.763
2	RIDGEBURY FINE SANDY LOAM	POORLY DRAINED SOILS	ADDITIONAL STATEWIDE IMPORTANT FARMLAND SOILS	0	3	229.528
13	WALPOLE SANDY LOAM	POORLY DRAINED SOILS	ADDITIONAL STATEWIDE IMPORTANT FARMLAND SOILS	0	3	228.44
34B	MERRIMAC SANDY LOAM	NON-WETLAND SOILS	PRIME FARMLAND SOILS	3	8	134.283
108	SACO SILT LOAM	ALLUVIAL AND FLOODPLAIN SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	2	124.058
103	RIPPOWAM FINE SANDY LOAM	ALLUVIAL AND FLOODPLAIN SOILS	ADDITIONAL STATEWIDE IMPORTANT FARMLAND SOILS	0	3	110.595
76E	ROCK OUTCROP-HOLLIS COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	3	45	86.436
308	UDORTHENTS	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	35	58.607

234B	MERRIMAC-URBAN LAND COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	8	45.247
102	POOTATUCK FINE SANDY LOAM	ALLUVIAL AND FLOODPLAIN SOILS	PRIME FARMLAND SOILS	0	3	33.289
12	RAYPOL SILT LOAM	POORLY DRAINED SOILS	ADDITIONAL STATEWIDE IMPORTANT FARMLAND SOILS	0	3	29.439
260C	CHARLTON-URBAN LAND COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	8	15	16.488
307	URBAN LAND	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	45	9.589
245B	WOODBRIDGE-URBAN LAND COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	8	8.987
250B	SUTTON-URBAN LAND COMPLEX	NON-WETLAND SOILS	NOT PRIME OR NOT STATEWIDE IMPORTANT FARMLAND SOILS	0	8	8.666

Source: USDA, Natural Resouce Conservation Service (NRCS) and the CT Department of Environmental Protection, Environmental & Geographic Information Center 1962-1995

APPENDIX B
Connecticut Surface Water Classifications (1997)

Class	Designated Use	Compatible Discharges
AA	Existing or proposed public drinking water supply impoundments and tributary surface waters	Treated backwash from drinking water treatment facilities; minor cooling water; clean water
A or SA*	May be suitable for drinking water supply (Class A), may be suitable for all other water uses including swimming, shellfish resource; character uniformly excellent; may be subject to absolute restrictions on the discharge of pollutants	Treated backwash from drinking water treatment facilities; minor cooling water; clean water
B or SB	Suitable for swimming, other recreational purposes, agricultural uses, certain industrial processes, and cooling; excellent fish and wildlife habitat; good aesthetic value	Those allowed in Class AA, A; major and minor discharges from municipal and industrial wastewater treatment
C or SC*	May have limited suitability for certain fish and wildlife, recreational boating, certain industrial processes, and cooling; good aesthetic value; not suitable for swimming. Quality considered unacceptable; goal is B or SB	Same as B or SB
D or SD*	May be suitable for swimming or other recreational purposes; certain fish and wildlife habitat, certain industrial processes, and cooling; may have good aesthetic value. Present conditions, however, severely inhibit or preclude one or more of the above resource values. Quality considered unacceptable; goal is B or SB	Same as B or SB

*Designates salt or brackish water

Source:
Connecticut Department of Environmental Protection
Water Quality Standards, 1997

APPENDIX C
Named Rivers, Brooks, Lakes, Ponds and Dams Inventory

Rivers / Brooks		
Aspetuck River	Cavanaugh Brook	Cold Spring Brook
Copper Mill Brook	Corbett Brook	Country Club Brook
Curtis Pond Brook	Deep Brook	Eagan Brook
Dingle Brook	Farrells Pond Brook	East Fork
Gelding Brook	Halfway River	Hattertown Brook
Housatonic River	Ivy Brook	Keating Pond Brook
Lewis Brook	Limekiln Brook	Morgan Brook
North Branch Pootatuck River	Piersons Brook	Pogond Brook
Pole Bridge Brook	Pond Brook	Pootatuck River
Priton Brook	Rockland Pond Brook	Rodericks Brook
Sammis Brook	Sand Hill Brook	Sandy Hill Brook
Tunnel Brook	Tom Brook	Whitlock Brook
Lakes / Ponds / Dams		
Brandywine Dam	Buttonshop Pond	Carp Pond
Cavanaugh Pond	Chapman Pond	Cogers Pond
Cold Spring Pond	Curtis Pond	Curtis Pond Brook Dam
Deep Brook Pond	Dingle Brook Lane Pond	Farrells Pond
Gelding Hill Road Pond	Gilberts Pond	Grays Plain Road Pond
Great Ring Road Pond	Hanover Road Pond	Hattertown Pond
Hawley Pond	Huntington Pond	Irvins Pond
Joes Pond	Keating Pond	Lake Lillinonah
Lake Zoar	Lewis Pond	Livestock Pond
Lowest Pond	Meadowbrook Pond	Meyers Pond
Nichols Sawmill Pond	Nunnawauk Road Pond	Old Hawleyville Road Pond
Old Stone Pond	Palestine Pond	Parmalee Hill Road Pond
Pond Brook Road Pond	Poplwitz Pond	Poverty Pond
Queenies Pond	Rockland Ponds	Rowledge Pond
Sherman Street Pond	Small Pond	Sugar Lane Pond
Swans Pond	Taunton Lake	Taunton Lake Road Pond
Upper Rockland Pond	Valley Field Road Pond	Walnut Hill Pond
Warner Pond	Wellgoto Pond	Wills Road Pond

Source:
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