CHAPTER 7

CONSERVATION AND PRESERVATION

Exeter Master Plan
2004 Update

September, 2004

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Conservation and Preservation

1. INTRODUCTION

The purpose of the Conservation and Preservation chapter of the Master Plan is to determine and prioritize steps to protect, preserve and manage the land and natural environment of Exeter. The subject matter will focus on the Town's natural resources, archeological / historic resources and open space and conservation lands. Ongoing development may lead to the loss of forests, farmland and wildlife habitat, water supply, decreased recreation opportunities as well as the loss of historic character and scenic quality. At the same time, we know that further growth and development in Exeter is inevitable, necessary and many respects, beneficial. It is important, therefore, for the Town to have a strategy that adhere to all Federal, State and local regulations to protect the natural resource and open space assets of the community– those essential qualities that make Exeter a desirable place to live in a manner which respects the rights and concerns of impacted property owners. The Conservation Preservation chapter will lay out that strategy, including recommendations on what should be prioritized for preservation as well as how best to integrate conservation/preservation objectives with future development.

The Chapter includes eight sections, including this introduction, Goals and Policies, Natural Resources Inventory, Conservation Land Inventory, Priorities for Conservation and Natural Resources Protection, Management of Conservation Lands, Techniques for Conservation and Protection, and Recommendations. The current chapter updates and expands upon resource and conservation inventories and recommendations included in the 1984 Master Plan. It also incorporates a goals and objectives section, derived from public comments made during the January 2003 Master Plan Visioning sessions and from meetings with local and regional conservation groups, and identifies specific priorities for the acquisition and management of conservation land.

2. GOALS AND OBJECTIVES

The following goals and objectives are identified to establish the intentions of the Town regarding the identification, evaluation and protection of natural resources. They are intended to represent the goals and ob-

jectives of the Town in general, and do not necessarily tie specific goals and objectives to any individual Board or Commission.

NATURAL RESOURCES: Identify, evaluate and protect critical natural resources.

- Maintain an accurate, comprehensive and up-to-date inventory of Exeter's natural resources;
- Identify areas within the Town that have high natural resource value both to the general health and welfare of the community and to the ecological systems on which we depend;
- Identify and promote best management practices to minimize impact from development and maximize the benefits of good resource stewardship;
- Integrate the consideration of ecological integrity and wildlife habitat in Town planning, zoning and site review.
- Protect undeveloped land with high natural resource value through the acquisition of conservation lands;
- Preserve parcels of land that add to large contiguous blocks of open space;
- Create and/or maintain green ways to connect and enhance the value of open space lands for habitat and recreational purposes;
- Protect Exeter's remaining farmland and prime agricultural soils from development;
- Achieve the most efficient and sustainable use of land and water resources practical;
- Establish benchmarks regarding the state of the natural environment and monitor these for change.

WATER RESOURCES: E**nsure adequate supplies of clean water to satisfy both the needs of the community and of the natural environment.**

- Prevent inappropriate development of land within the watershed and recharge areas of the Town's public water supplies;
- Protect the quality and quantity of the area's groundwater resources through pollution prevention, conservation, and appropriate regulation of uses within watershed and recharge areas of the Town's public water supplies;

- Remain actively involved in regional efforts to protect the water quality of the Exeter River (ERLAC; State Rivers Protection Program)

- Ensure that water withdrawals from the Exeter River are sustainable and do not exceed that which will cause significant or lasting damage to the natural environment;

- Promote the conservation of water by the Town, its residents and businesses.

AIR QUALITY: Support the region's attainment of national air quality standards

- Encourage energy efficient building siting and design;

- Encourage the conversion of high emission sources of air pollution, especially those that contribute to fine particulate emissions and ozone pollution to less polluting fuels and technologies;

- Encourage compact and mixed use development with good pedestrian and bicycle facilities to provide realistic and safe alternatives to automobile use.

ZONING AND LAND USE REGULATIONS: Develop, adopt and enforce zoning ordinances, land use regulations and building codes which support resource conservation and preservation.

- Support zoning and land use regulations, including environmental resource overlay districts, to mandate protection of critical natural resources;

- Ensure thorough and consistent enforcement of all Town zoning, land development regulations and building code which protect natural and historic resources.

- Discourage further development in areas with high natural resource value; use zoning incentives to achieve low density open space development and compact land uses in such areas to minimize resource impacts.

STEWARDSHIP: Ensure the sustainable use and careful management of Town conservation lands and resources.

- Encourage appropriate multiple uses of the Town's Conservation Land to provide maximum public benefit consistent with conservation objectives;

- Establish management and use plans for the Town's major conservation land holdings; employ best management practices.

- Monitor the status of important natural resources assets of the town, including the Exeter River.

- Ensure that Town owned land currently identified, used or managed for conservation purposes is permanently protect from development.

EDUCATION: Provide for the education of all Exeter residents about the value and importance of protecting, conserving and preserving the Town's natural and cultural resources.

- Public information about conservation issues and events should be widely communicated though a variety of media;

- Comprehensive information about the town's conservation lands, including trail maps and resource guides should be published.

- An environmental education curriculum should be made an integral part of K-12 education in the Exeter School District and the Cooperative School Districts.

- Promote greater awareness about the historic and cultural assets of the Town through adult and school aged oriented educational programs and community events.

AESTHETICS & COMMUNITY CHARACTER: Retain important scenic vistas and others areas that are important to the aesthetic quality and visual character of the Town.

- Create an inventory and visual catalogue of the major scenic vistas and historic and cultural assets in the Town;

- Designate local scenic roads where appropriate; participate in and promote the American Independence Scenic Byway.

- Consider scenic character and aesthetic values when prioritizing open space land for acquisition or easement;

3. INVENTORY OF NATURAL RESOURCES

A. Topography, Geology and Soils

Topography

Topography refers to the general form of the land surface, with elevation and slope as the defining components. Elevation is the measure of the height of a given point of land relative to mean sea level. Slope is a measure of the pitch, or grade of land between two points.

Exeter's topography is a result of the underlying bedrock, the effects of glaciation, and further erosion since the most recent glacier activity. Erosion and deposition caused by the glacier are the primary factors in determining our topography. Exeter is characterized as having predominantly rolling terrain with gentle slopes of 0-8 percent. The topography varies in from flat tidal river valley along the Squamscott River, with elevation just a few feet above sea-level, to somewhat hilly terrain in other parts of town with elevations typically ranging between 50 and 200 feet. There are no mountains or major prominences in Exeter. The two highest points in town are at Perkins Hill (230 feet) at the southwest edge of town (partially located in Kingston) and at an unnamed hill (232 feet) to the east of Watson Road in the north central part of town. **Map CP-1 – *Topography and Scenic Vistas*** provides a contour map (25 foot interval) and graphic depiction of Exeter's topographic features.

Slope is an important limiting factor when determining the development potential of land. Slope is generally evaluated in conjunction with the other environmental factors such as geology, soils and hydrology. Slope is especially important relative to siting septic systems to ensure adequate drainage and filtration and when constructing roads to ensure proper drainage and erosion control.

Increases in slope result in corresponding increases in the difficulty and cost of site development:

- Slopes of 0 to 3 percent may be poorly drained and are often associated with wetlands.
- Lands with slopes of 3 to 8 percent and good soil conditions are usually considered ideal for development because constraints are minimal.
- Development on slopes of 8 to 15 percent requires additional planning to provide proper drainage and soil stabilization.
- Area with slopes of 15 to 25 percent may be developable in certain circumstances, however, shallow soils and increased erosion

potential require site specific considerations and sophisticated site development techniques to alleviate negative impacts.

According to the NRCS Soil Survey for Rockingham County the following distribution of slope classes exists in Exeter:

Table CP-1
Slope Classes of Land in Exeter, N.H.

Slope Class	Total Acres	% of Total
Gradual -- 0-8%	9102.4	72.5%
Steep -- 8-15%	2202.4	17.5%
Steep -- 15-25%	33.7	0.3%
Severe -- 25+%	65.7	0.5%
Not Rated	1147.6	9.1%
Total	**12551.7**	**100.0%**

Source: NRCS Soil Survey for Exeter

Bedrock Geology

In southeastern New Hampshire, the predominant bedrock was formed from layers of sea bottom sediments deposited and compacted over millions of years into formations of sedimentary rock. These formations were transformed through uplifting, folding, and tremendous heat and pressure into metamorphic rock.

According to the "Geological Map of New Hampshire, prepared by the US Geological Survey and the NH State Geologist in 1986, there are three major bedrock types in Exeter, all of the metamorphic variety. These bedrock types include: the Exeter pluton formation which covers the majority of the Town's northern half, plus a small strip located in the Town's southeast corner; the Kittery formation which appears as a strip covering the downtown area, as well as two small strips located in the southeast corner, and; the Elliot formation which covers the majority of the Town's southern land area. For a graphic depiction of Exeter's bedrock geology, please review the map entitled, "Flood Hazards and Bedrock Geology" found within the Water Resource Management and Protection Plan chapter.

Surficial Geology

The information presented is based on the surficial geology mapping efforts of the US Geological Survey (USGS) prepared as part of their reports, Geohydroloqy and Water Quality of Stratified Drift Aquifers in the Exeter. Lamprey and Oyster River Basins, Southeastern New Hampshire (1990), and Geologic and Groundwater Quality Data for Stratified Drift Aquifers in the Exeter, Lamprey and Oyster River Basins, Southeastern New Hampshire. The upper layers of geologic materials above

the bedrock formations are known as surficial deposits, or more easily understood as the earth's surface. In southeastern New Hampshire, these geologic materials were deposited by a glacier more than 10,000 years ago. Within Exeter, there are five types of surficial materials: till, marine silt and clay deposits, contact deposits, freshwater swamp and marsh deposits, and, alluvium deposits. These materials are described in more detail below.

1. Till

As the mile thick glacier advanced from the northwest, it deposited layers of debris made of sand, clay, and gravel, which is collectively known as till. Roughly one third of the Town's surficial geology is characterized by till. Exeter's till areas are found primarily in the northeast corner, as well as the western portion of Town along both sides of the Little River and Dudley Brook. Till usually provides adequate loading capacity for building foundations, thus indicating that till areas are suited for general development purposes. However, if hardpan (an impermeable layer) is located within 18 to 24 inches below the surface, conditions may not be adequate for the placement of on-site septic systems.

2. Marine Silt and Clay Deposits

Silts and clays were deposited as marine sediments on the bottom of an ancient sea which overspread southeastern New Hampshire during the last period of glaciation. As the glacier melted and retreated the land elevation gradually rose as the weight of the glacier decreased, and the sea level retreated to its present position, leaving the marine deposits in what are now upland areas.

In Exeter, marine silt and clay deposits are the dominant feature in the Town's surficial geology, constituting over fifty percent of the land area. These areas are found in the Town's southern half (including the downtown area), as well as the northwest and southwest corners of the community. Generally, these materials are unsuitable or marginally suitable for development because of a high water table with poor drainage and unstable conditions. In some areas these limitations can be overcome with the provision of adequate drainage facilities and special engineering and design considerations.

3. Contact Deposits

As the glacier melted and retreated, materials it had scoured were released forming layers of sand and gravel called ice contact deposits. These deposits, which are relatively course grained, have good drainage and permeability characteristics with a high water bearing capacity. These areas are easily excavated and are usually the sites of a community's sand and gravel pits. This material also goes by the name "*stratified drift*". There are two large stratified drift areas within Exeter: a large area in the Town's southeast corner and a smaller deposit in the southwest corner. There are also two smaller aquifers located along the Exeter-Stratham boundary line. Such deposits often contain large quantities of

groundwater, thus making them potentially suitable sources for public water supplies. In fact, one of the smaller aquifers contains a well-field used as a supply source for the Town's municipal water system. A graphic depiction of the Town's stratified drift aquifer areas can be seen in the Aquifer Map found within the Water Resources chapter of the Master Plan.

4. Swamp and Marsh Deposits

These areas consist of muck, peat, silt, sand, and small amounts of gravel, underlying poorly drained low-lying areas. Thickness ranges from a few feet to over twenty feet in some places. These areas are primarily located within the Town's wetland, floodplain, and shoreland areas.

5. Alluvium Deposits

Alluvium deposits are materials deposited over time by running water. They consist of sand, silt, and a little gravel located beneath floodplains and existing streams. Deposits are usually ten feet thick or less in most places, and are underlain by marine silt and clay. These areas are usually located in close proximity to swamp and marsh deposits where the water table is at the surface. In Exeter, these deposits are located along the shore lands of the Town's most significant watercourses.

Soils

Soil information is critical in making sound land use decisions and are a principal determinant of land development capability, particularly in areas that rely on subsurface waste disposal (septic systems). Other important physical factors affecting development suitability are depth to water table and bedrock, susceptibility to flooding, slope and permeability.

Knowledge regarding soil suitability can help a community direct building activity away from poorly suited lands to areas with greater capacity to sustain development. This is especially important in areas outside the sewer district where soils conditions must have adequate characteristics to support septic system placement. Poor soil conditions and steep slopes cause severe limitations for on-site sewage disposal systems, hence restricting development. Concentrations of poor soil conditions are scattered throughout Exeter, however, significant areas can be found both north and south of the downtown area, especially along the Town's riverbanks and stream corridors. **Map CP-2** ***"Soil Potential Ratings for Low Density Development"*** provides a graphic depiction of Exeter's suitability for development where on-site septic systems will be utilized.

Much of Exeter's rural, undeveloped land is not served by the Town's municipal sewer and water systems. (See Map CP-2 for location of sewer service area.) For these areas, the importance of soil-based information in the land use planning process is critical. The viability of on-site

sewage disposal facilities depends on a careful evaluation of soil conditions. Soils should be reviewed in terms of their ability to handle wastewater disposal without adversely affecting groundwater resources. Table CP-2 shows the distribution of soil in Exeter according to their soil potential rating.

Table CP-2
Soil Potential Rating for Septic Systems, Exeter NH
(Low Density Development)

Soil Potential Rating	Total Acres	% of Total
Very High	991.9	10.2%
High	1184.4	7.9%
Medium	3408.6	27.2%
Low	1147.5	9.4%
Very Low	1276.0	36.2%
Not Rated (developed areas, gravel pits, etc.)	4543.3	9.1%
Total	12551.7	100%

Soil information has proven to be an excellent indicator not only of general development suitability, but also of critical resource areas such as wetlands, prime agricultural land, forest land, and wildlife habitat. Suitability for these uses is examined further in the sections which follow.

B. Agricultural Resources

Important agricultural soils include "prime farmland" and "farmland of statewide importance". As defined by the US Soil Conservation Service (SCS), "prime farmland" has the soil quality and moisture content needed to produce sustained high yields when managed according to modern farming methods. Prime farmland can be farmed continuously or nearly continuously without degradation of the environment; produces the highest yield for the least amount of energy used; requires the least investment to remain productive; and is not susceptible to leaching from fertilizers or pesticides (source: Soils of New Hampshire, Sid Pilgrim and N. Peterson, University of New Hampshire and the SCS, 1979). "Farmland of statewide importance" has many of the same attributes of "prime farmland." Although it is of somewhat lesser quality, good agricultural soils are relative scarce in New Hampshire, so these soils are of nearly equal importance and value.

Map CP-3 ***"Farmland Soils, Active Agricultural Uses and Tree Farms"*** indicates that Exeter contains several significant concentrations of important farmland soils. These areas are widely scattered, with concen-

trations found along Hampton and Newfield's Roads, and along the Exeter, Little and Squamscott Rivers. located along the banks of the Exeter River, Squamscott River, along both sides of Hampton Road, within the northwest corner of Town, and a large area located just north of the downtown area.

The SCS has also evaluated soils according to their suitability for timber production. In general, soils which are suitable for growing crops are suitable for growing trees as well. Thus, the farmland soils depicted on **Map CP-3** are also suitable for timber stands. The soils information for this section comes from soil survey sheets of the publication Soil Survey of Rockingham County, New Hampshire, prepared by the NRCS.

Aside from its obvious importance for growing food, agricultural land has value as wildlife habitat, groundwater recharge, and if maintained as open field, as a scenic resource. Farming also provides economic benefits, especially to the local and regional economy. The loss of farmland has a direct impact on the landscape and may have an indirect negative impact on the local tax rate if, for example, a residential subdivision on former farmland costs more to serve than the increased property tax revenue it generates).

Exeter, like other communities in southeastern New Hampshire has seen farms diminish in both number and size over the past 50 years. Exeter's few remaining commercial agricultural uses include 2 retail greenhouse/nursery and several former farms which continue to be used for hay production by farms in neighboring communities. **Table CP-3** lists Exeter's principal commercial agricultural operations, including their general classification and contiguous land area.

TABLE CP-3
Principal Agricultural Operations in Exeter as of 2003

Operation Name	Type	Ownership	Active Acreage
Ellison Nursery	Nursery	Private	2
Churchill Garden Center	Greenhouse	Private	2
Stone Farm	Hay/Vegetables	Private	41
Raynes Farm	Hay	Exeter	48
Conner Farm/Wildlife Management Area	Hay	NH Fish & Game	220
Hanson Farm	Pasture/Livestock	Private	33

Source: Rockingham County Cooperative Extension Office of the University of New Hampshire; Exeter Conservation Commission, and Town tax records.

It should be noted that, in contrast to most decades since the 1930s, the number and total acreage of farms in Rockingham County has shown an increase in the most recent agricultural census. From 1992 to 1997, the number of reported farms in the County increased from 339 to 407 (a

20% increase), and the number of acres in agricultural production increased from 34,292 to 35,465 (3.5%). This reversal is attributed primarily to an increase in the number of specialized and small local produce agricultural operations. Although Exeter has yet to experience this trend, we should anticipate an increase in the number of small, specialized agricultural operations and thus an increase in the demand for suitable agricultural lands.

Wherever feasible, important agricultural soils should remain undeveloped. The Town can help ensure this outcome by strongly encouraging or even requiring conservation development practices where pending development will otherwise result in the loss of these irreplaceable resources.

C. Forest Resources

Forest land is a major renewable resource, providing both commodities (e.g., wood products and maple syrup), and non-commodity benefits (e.g., water resource protection, air quality maintenance, energy conservation, wildlife habitat, recreation and scenic quality). In general, forested lands have values similar to those of agricultural lands. Forested areas also benefit us by:

- Building soils;
- Attenuating noise;
- Providing shade, reduce 'heat island' impacts of development and promote energy conservation;
- Slowing stormwater runoff and mitigating flood potential
- Preventing soil erosion;
- Promoting water quality protection;
- Reducing air pollution;
- Providing important wildlife habitat, and
- Increasing property values.

According to an inventory maintained by the Rockingham County branch of the UNH Cooperative Extension Service, there are three listed tree farms within Exeter. The term "tree farm" refers to the National Tree Farm Program sponsored by the American Forestry Association (AFA). In order for a woodland to receive tree farm certification, the owner must prepare a long-range forest management plan approved by a professional forester, and submit the plan to the AFA.

It should also be noted that Exeter has five “champion" trees which are part of the AFA's Big Tree Program. Initiated in 1940, this program was designed to promote protection of the nation's oldest and tallest trees.

The AFA publishes the National Register of Big Trees every four years, listing the vital statistics of all trees in the program. In New Hampshire, the Registry of Big Trees is administered by the UNH Cooperative Extension Service and the NH Division of Forests and Lands. Please contact these organizations for more information on how to nominate a tree. Exeter's champion trees include: a magnolia tree located along Cass Street; a Norway spruce located behind the Main Street School and the Lincoln Street School, and: a pin oak and river birch located along the Swasey Parkway, and a crack willow and yellow popular (locations not listed). Exeter's active tree farms and champion trees are depicted on **Map CP-3 *"Farmland Soils, Active Agricultural Uses, and Tree Farms".*** Many of these parcels contain prime forest and farmland.

D. Wildlife and Plant Habitat

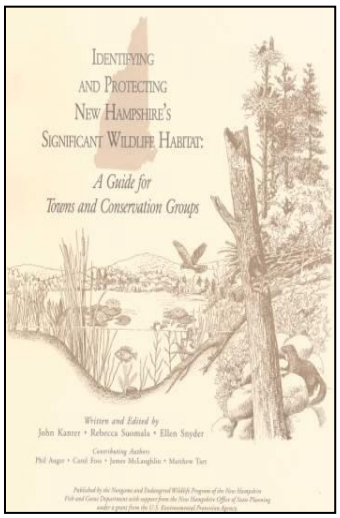
A diverse community of plants and animals depends on the availability of diverse unspoiled habitats in sufficient quantity, connectivity and quality to allow for the successful propagation of indigenous species. A high quality natural environment is crucial to the health and well being of those natural communities. Biological diversity (or "biodiversity") itself is increasingly understood to be important to maintaining a healthy and ecologically stable environment for us to live within as well. The network of conservation lands, protected buffers and undeveloped natural areas provide the "green infrastructure" that supports human life as well as many important ecological functions necessary for all life. Biodiversity and habitat, therefore, should be considered as important and valuable natural resources.

Habitats are as diverse and interconnected as the plants and animals they support. Fish, amphibians, and waterfowl require the presence of water for spawning and egg-laying. Vegetation provides necessary cover to serve as nursery habitat. Water also serves as spawning grounds for insects which are a source of food for a variety of fish and animals. Furbearers such as muskrat, otter, and beaver utilize wetlands as habitat. Coastal and inland marshes serve not only as breeding grounds for waterfowl, but also as critical resting and feeding areas during spring and fall migration.

The value of an area as habitat depends on a number of factors including size, contiguity with similar areas, and the amount of edge. Edge is the transitional area between habitat types. It often consists of understory plants and early successional types of vegetation which provide both forage and cover for numerous species of birds and mammals. Edge can be created by utility transmission rights-of-way, crop and pasture lands, re-grown old fields, and similar types of clearings. The habitat value and edge effect of an area may be significantly reduced if adjacent land uses and encroachments create barriers or threaten the area's integrity.

The natural systems in Exeter are complex, dynamic, and important to sustaining life. Yet, without question, throughout the Town, the region, and well beyond there are ample indications that many biological systems are in a state of imbalance, rapid change and general degradation. At least some of this change results from the loss of habitat. Land development is often a major influence on such change. Ironically, lower density suburban style development, which people may assume has less impact on the environment, is more destructive to wildlife habitat than urban development in that it requires the development of more land for each housing unit constructed. Development much of southern New Hampshire during the past several decades has spread widely into previously undeveloped areas, causing extensive fragmentation of habitat. To stem the tide of these changes it is important to develop ways of preserving habitat as development occurs.

It should be noted that Exeter's portion of the tidal Squamscott River is connected to the Great Bay which is a federally designated National Estuarine Research Reserve. On the State level, a comprehensive management plan has been developed for the estuary by the NH Estuaries Program. This plan entitled the *New Hampshire Estuaries Project Management Plan* was adopted in 2000 and contains an extensive list of actions that should be taken to protect the integrity of the estuary – including habitat.



The Estuaries Project Management Plan makes municipal action in habitat protection a high priority recommendation and specifically encourages municipalities to incorporate wildlife habitat protection into local master plans. The Plan recognizes that local land-use officials are in a position to guide future development in such a way that can protect wildlife habitat—at least to some extent. A regional habitat evaluation has been completed by the Great Bay Resource Protection Partnership, but more information specific to the local level will be useful in developing specific recommendations for the master plan. An important first step is community-based habitat evaluations to identify and prioritize significant habitats that should be identified and protected. A new publication, Identifying and Protecting Significant Wildlife Habitat: A Guide for Towns (2000) from the New Hampshire Fish and Game Department's Non-game and Endangered Species Program, provides guidance to local conservation commissions and planning boards in identifying and prioritizing habitat. Community-specific wildlife information will strengthen a town's ability to address habitat protection and balance this need with growth.

Although the afore mentioned guide has not been used in identifying and prioritizing habitat in this edition of the Master Plan, the regional analysis of important habitat prepared by the Great Bay Resource Protection Partnership has been used in prioritizing lands to be protected for conservation purposes, as discussed in Section 5 of this chapter (see **Map CP-9 "*Candidate Areas for Conservation Zoning & Additional Conservation Land*"**).

General information about the wildlife species found in Exeter is provided as follows:

Species Common to the Great Bay Estuary

The estuary provides prime habitat for many wildlife species. More than 90,000 birds reside in the estuary (source: Inventory of the Natural Resources of the Great Bay Estuarine System; NH Fish and Game Department, 1981). Thousands of Canada geese and black ducks rest and feed within the area during autumn months. Osprey are common during the spring and fall migration cycles. There are three rare and endangered species which live in the estuary: the bald eagle, common tern, and common loon.

Terrestrial mammals which utilizing the bay include: raccoons, whitetail deer red fox, woodchuck, muskrats, chipmunks, grey squirrels, cottontail rabbits, mink, otter, and beaver. A complete inventory of all animals (and plants) which reside in the Great Bay can be found in the NH Fish and Game inventory cited above, as well as in the Great Bay National Estuarine Research Reserve Management Plan (prepared by the NH Office of State Planning in 1989).

Species Common to other Habitats in Exeter

In addition to excellent coastal habitat, Exeter also has important inland habitat areas. Examples include: wetlands, river and stream corridors, forests (coniferous, hardwood, and mixed woodlands), and open lands (meadows and fields). These habitat types support a wide range of animals including game species such as deer, coyotes, raccoons, rabbits, and turkeys. Exeter's prime wildlife habitat areas include: the wetland areas located in the Town's western half between Brentwood Road and Epping Road, the corridors of the Squamscott River, Exeter River, Little River, and the forest lands of the Town's northern sector. There also are quite a variety of wildlife and plant types located in the wetland area known as "The Cove", located in the Town's southeast corner. This large wetland area extends into Hampton Falls and Kensington.

The Town's major watercourses are also the sites of fish stocking efforts by the NH Fish and Game Department. The Exeter River is stocked with brook trout, rainbow trout, brown trout, and American shad. The Squamscott River is stocked with herring, smelts, bluebacks, and American shad. The Little River is stocked with brook trout, brown trout, and rainbow trout. Natural plant communities in Exeter are typical of coastal New Hampshire, with vegetative patterns reflecting soil and moisture conditions.

Rare and Endangered Species

According to the NH Natural Heritage Inventory (NHNHI), there are five (5) rare and endangered plant species and one (1) rare and endangered bird species located in Town. Rare and endangered plant species in Ex-

eter include the slender blue flag, climbing hempweed, robust knotweed, water-plantain spearwort, and stout bulrush. All of these plant species, with the exception of the water-plantain spearwort, are considered by the NHNHI as "imperiled in New Hampshire because of rarity". The water-plantain spearwort is considered "critically imperiled in state because of extreme rarity."

The only rare and endangered animal species is the common moorhen. The common moorhen is also considered by the NHNHI to be "critically imperiled in the state because of extreme rarity. The terms used by the NHNHI are explained more fully in Table CP-4 (Rare and Endangered Plants). The general location of the endangered species habitats in Exeter listed with the NHNHI are depicted as the circled areas **Map CP-4 – "*Natural Heritage Areas*"**. The center of the circle does not imply the location of the species.

TABLE CP-4
Rare and Endangered Plant Species
Town of Exeter, NH

Scientific Name	*Common Name*	*S Rank*	*G Rank*	*State*
Gallinula Chloropus	Common Moorhen	S1	G5	ST
Iris Prismatica	Slender Blue Flag	S2	G4, G5	ST
Mikania Scandens	Climbing Hempweed	S2	G5	ST
Polygonum Robustius	Robust Knotweed	S2	G3, G5	ST
Scirpus Robustus	Stout Bulrush	S2	G5	ST
Ranunculus Ambigens	Water-Plantian Spearwart	S1, S2	G4, G5	ST

Key "S Rank" – State Element Rank
"G Rank" – Global Element Rank
The ranking system was developed by the Nature Conservancy and used by all State Natural Heritage programs for "elements" of natural diversity. Definitions follow.

STATE ELEMENT RANKS:

S1 = critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor of its biology making it especially vulnerable to extirpation from the state. (Critically endangered in state).
S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors demonstrably making it very vulnerable to extirpation from the state. (Endangered in state).
S3 = Rare in state (on the order of 20+ occurrences). 54 = Apparently secure in state.
S4 = Apparently secure in state.
S5 = Demonstrably secure in state.

GLOBAL ELEMENT RANKS (used symbols only):

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

E. Water Resources

Water resources are acknowledged to be one of the most important of our natural resources. These resources, including surface waters, wetlands and groundwater are extremely important to the heath and well being of our community. While Water is certainly a "natural resource" in need of conservation and thus appropriate subject matter for this chapter, it represents such a large and complex subject matter; it is handled as a separate chapter in the Master Plan. Please see the **"Water Resources"** chapter for a complete description of this subject.

F. Aesthetic/Scenic Resources

Open spaces help define a community's character by providing pleasant scenery and visual relief from developed environments. They provide natural buffers against noise and reduce the "over-crowded" feeling one can get from an urbanized area. In general, scenic resources contribute to the quality of life for Exeter residents, and are an important element of the region's tourist economy. Exeter needs to protect the scenic views which serve as "gateways" to the Town. As people enter into Exeter, the scenic quality of the immediate surroundings greatly influences the observer's impression of the Town as a whole.

Scenic Areas and Vistas

While some of Exeter's scenic resources are publicly owned, others are scenic vistas which encompass private land. Thus, there is no guarantee that all of the existing scenic resources will remain so in the future. One way the Town can help sustain it scenic qualities is to specifically consider the impact of new development on identified scenic areas. Often measures can be taken to mitigate the impact of such development on scenic resources, including modifying building location or configuration, screening and buffering.

Map CP-1– ***Topography and Scenic Vistas*** identifies 15 scenic area that are especially noteworthy. This is not intended to be an exclusive list of such areas, though it includes those most often cited. Exeter's primary scenic vistas are located along the Town's major waterways, especially the Squamscott River which has a wide floodplain. Henderson Swasey park the Powder House and the Stewart Park provide a wonderful view of the Squamscott River to the north, as well as the Town's waterfront park to the south. Travelers on NH 101 are treated to beautiful views north, including tidal marshes and the oxbow and south (excepting the sewage lagoons) along the Squamscott. The nature trails which ring the Exeter Country Club's golf course also provide excellent viewpoints of

the Squamscott River, as does the Allen Street Woodland Park. The newly acquired Raynes Farm off of Newfields Rd. also provides wonderful views of rolling farm fields and the tidal Squamscott River tidal marshes. The Conner Farm, located immediately adjacent to Route 101, also offers a unique scenic vista of open fields and forested lands. Trails along the Exeter River on the McDonnell/Perry property provide for refreshing walks along the water's edge. The new DownEaster train service provides numerous scenic views of the Squamscott and other areas that were unseen by the public for many years.

Scenic Roads

State law (RSA 231:157-158) provides for the voluntary establishment of scenic roads by a municipality. Roads are designated (or rescinded once established) as 'scenic' by Town Meeting vote. Once established, the cutting, damage or removal of trees over 15" circumference, or the destruction of stone walls is prohibited except with the prior written consent of the Planning Board (or other official municipal body designated by the Town Meeting). The Planning Board (or designated body) must conduct a public hearing prior to granting such approval. Exeter has four roads currently designated as Scenic under RSA 237-157, as shown in Table CP-5. In addition, Jolly Rand Road, which was previously designated as a scenic road was removed as a public road and re-designated as a Class A Municipal Trail (RSA 231:A), by Town Meeting vote in 2000.

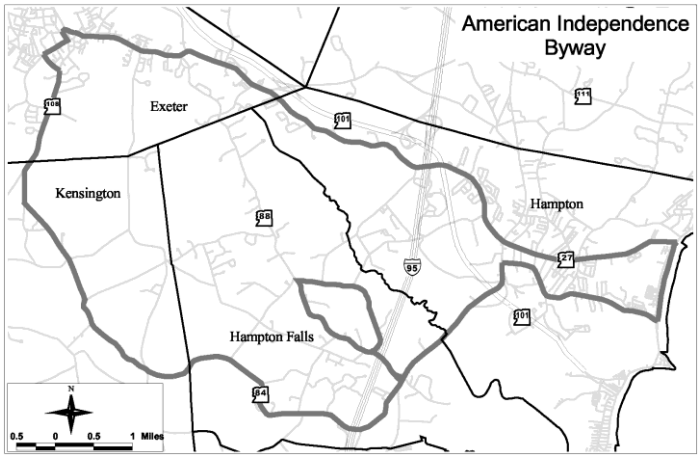
TABLE CP-5
Scenic Roads, Exeter, NH

Road Name	Town Meeting Designation
Pickpocket Road	1974
John West Road	1980 (Article 44)
Garrison Lane	1987 (Article 33)
Birch Road	1992 (Article 53)
Powdermill Rd. (part)	1994 (Article 43)

There may be other roads, or portions of roads, that could benefit from the protection afforded by scenic road designation. Relatively lightly traveled roads that are narrow with extensive tree canopies and/or stone walls, or which have particular scenic value should be considered for such designation.

American Independence Byway

The American Independence Byway is one of 14 State-designated scenic and cultural byways in New Hampshire. It is based on the "Seacoast History Tour," which was identified as a scenic tour in the 1974 Federal Scenic Roads Study. It was formally designated as a Scenic Byway in 1994 by the NH Scenic & Cultural Byways Council. The Byway is a

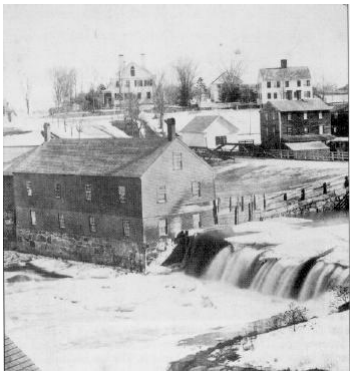


scenic roadway loop that passes through the centers of Exeter and Hampton--two of the original four founding 'plantations' of southeastern New Hampshire, and Hampton Falls and Kensington--two of the second tier towns that were derived from those founding plantations. The Byway travels primarily along NH 108 (Exeter), NH 27 (Exeter and Hampton), Route 1 (Hampton), NH 84 (Hampton Falls and Kensington) and NH 150 (Kensington). A side loop follows NH 88 and Brown Road in Hampton Falls. The Byway totals 29 miles in length, affords many wonderful views and encompasses numerous historic sites and quintessential New England town centers. A key anchor site on the Byway is the American Independence Museum in downtown Exeter.

A management plan for the byway was completed by the Rockingham Planning Commission in 2001, a first step for the Byway to become eligible for Federal Scenic Byway funds. Priorities in the management plan are for the installation of scenic byway signs, development of a self-guided tour brochure, installation of several scenic pull offs with information kiosks, and voluntary coordination of minimum architectural design standards for roadside development in the four communities. The Town of Exeter has been an active participant in the planning process.

G. Archeological & Historic Resources

Historic Resources



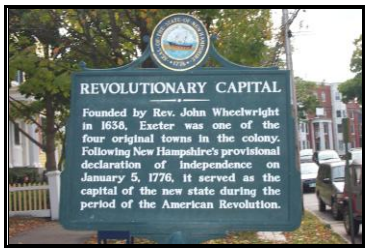
As one of the four first settlements in New Hampshire, Exeter has an accumulated spans most of four Centuries, beginning in the early 1600s. Settled in 1638 by the Reverend John Wheelwright and several exiles from Massachusetts, who purchased the land in the area from the Squamscott Indians, a sub-tribe of the southern NH Penacooks and an Algonquin people. Wheelwright and company were Puritans from Massachusetts, who had been ordered to leave there by the Governor of Massachusetts because their views conflicted with those of the Massachusetts Bay colonists.

The original town of Exeter was a thirty-square-mile tract of land with a significant falls in the center; it included the current towns of Stratham, Newmarket, Newfields and Epping, which were set off later in the 18th century.

Exeter became the capital of the new state of New Hampshire in 1774, before the War of Independence and remained so until 1788. The first provincial congress of New Hampshire met July 21st, 1774 in the chambers of the Gilman Garrison House, which were built specifically for

that purpose. On January 1st, 1776, the New Hampshire Congress adopted the first state constitution in the United States of America. The state's new provincial government then made the first Declaration of Independence from Great Britain on June 11th, 1776 (nearly a month ahead of the official declaration).

Given this rich history, it is not surprising that the town has innumerable historic resources – some more recognized that others. No comprehensive inventory of these resources is found to exist.

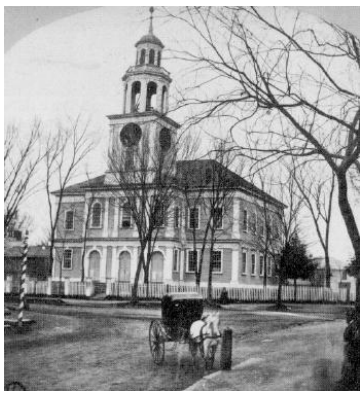


The National Historic Preservation Act of 1966 authorizes the Secretary of the Interior to maintain a National Register of Historic Landmarks and Places. National Register and National Landmark properties include the following:

- First Church/First Congregational Church (listed 1971)
- Dudley House (listed 1971)
- Exeter Waterfront Commercial District (listed 1980; expanded 1986)
- Front Street Historic District (listed 1973)
- Major John Gilman House (Listed June 1988)
- Gilman Garrison House (listed 1976)
- Moses-Kent House (listed 1985)
- Edward Sewall Garrison (listed January 1980)
- Ladd Gilman House (listed 1974)
- Samual Tenney House (listed 1980)

In addition to these, there are many others which are likely to be eligible for listing on the National Register. As part of the environmental impact statement (EIS) for the various Route 101 expansion projects the NHDOT completed Town Area Forms which identified the Conner Farm site, the Rose Farm site, the Eastman Brothers Farm and the George Stockell House to be eligible for listing.

As noted in the register listing, Exeter maintains two historic districts are depicted on the Town's existing Zoning Map: the Front Street Historic District, established in 1971, (containing over 40 structures), and the Waterfront/Commercial Historic District established in 1979 (containing 79 structures). Both districts display an excellent variety of architecture, including styles from the Georgian, Federal, Greek Revival, Gothic, Victorian, and Colonial periods. The Town has established Historic District provision in the Zoning Ordinance, and an Historic District Commission whose purpose is to "safeguard the heritage of



the Town as it is represented in structures of historical and architectural value located in an historic district." The District is also intended to conserve property values and to promote the use of the town's history for the education of its residents. The District regulations govern the architectural style of structures within the districts including exterior facades, color, materials, scale, signage and other details.

Archeological Resources

New Hampshire contains a wide array of historic and prehistoric archaeological sites worthy of protection. Such sites represent nonrenewable resources that contain the unique record of human achievements spanning well over 10,000 years of history. This period followed after the retreat of the glaciers through the displacement of Native peoples by European colonists.

Archaeological sites are the only source of information we have about the prehistoric period. Even for the historic period, archeological sites provide an important dimension for understanding history. Archaeological sites balance, corroborate, or contradict the written and oral record of history.

William White is responsible for the discovery of most of the sites currently reported in Rockingham County as well as Exeter. Eugene Finch, with the help of William White, carried out excavations at many of these sites. According to the New Hampshire Site files located at Department of Anthropology at Phillips Exeter Academy, there are 32 reported prehistoric sites located in Exeter. Evidence uncovered at these sites demonstrates that human habitation in the Exeter area dates to the Early Archaic period.

9,000-8,000 BP	Early Archaic
8,000-6,000 BP	Middle Archaic
6,000-3,000 BP	Late Archaic
3,000- 500 BP	Woodland

Generally speaking, prehistoric sites are found near bodies of water and on well-drained soils with level ground. Raw materials (suitable lithic material) and food sources (estuarine environments, falls and rapids and freshwater marshes and thickets) were also important. Even sites found at some distance from existing bodies of water were probably associated with water sources at the time of their occupation.

Prehistoric sites in Exeter tend to be shallow in depth owing to the slow build up of top soils. Furthermore, sites lack vertical stratigraphy that would indicate multiple occupations. More commonly, a general area was occupied by different groups over a period of time with little overlap. This created a pattern of horizontal stratigraphy.

Because of the acidic nature of New Hampshire soils, few organic remains have been found. Only where this acidity has been neutralized by some chemical agent do these materials survive. For example, bones are generally rare unless found in shell middens. Therefore, inorganic materials form the bulk of the archaeological record. Lithic artifacts comprise the bulk of the archeological record. These consist of flaked tools-such as projectile points, drills, knives, scrapers, and fish hooks and ground stone tools such as axes, adzes, gouges, abraders, and plummets. The most commonly used lithic materials were quartz, rhyolite, felsite and hornfels. These materials were recovered locally either from river beds or nearby quarry sources.

These societies were intensely conservative by our standards. There were long periods spanning tens of generations, when there were few or no innovations in their tool technology. What change did occur was probably perceived as an insignificant deviation from traditional practices.

Both the Exeter Historical Society and Phillips Exeter Academy have archaeological materials from Exeter on display.

General Needs

The Exeter Historical Society has identified several needs with respect to future protection of the Town's Historic and Archeological resources, including the following:

- A comprehensive inventory of historic sites and structures, including a list of properties that should be considered for the National Register listing;
- A list of general areas or sites for which archeological investigations should be undertaken;
- The identification of candidate areas for expansion of the Historic District;
- Better signage or monumentation on various historic sites and building (including Parks, statues, monuments, sculptures, cemeteries, industrial sites, examples of different types of architecture, famous birth sites, historic sites) so both residents and visitors can learn of their value and understand their history.

H. Contiguous Undeveloped Lands

Large blocks of undeveloped land are an important natural resource in a rapidly developing region. They are important to sustain diverse communities of plant and animal species in that they serve as critical 'islands' of habitat for species that would otherwise not be able to survive here. What is considered "large" varies, depending on the context of the block. If it is the midst of a highly developed urban setting, 250 acres is a considerable block of undeveloped land that has special value, both

for conservation, recreational and scenic value. In a rural setting, on the other hand, even 500 or 1000 acres of contiguous undeveloped land may be unremarkable. In our community, which is extensively developed, 250 acres can be a significant amount of contiguous undeveloped land, depending on the uses and habitats of interest. As part of the master plan update, we used existing land use and road information to identify contiguous undeveloped land in three size classes: over 250 acres; over 500 acres and over 1000 acres. The analysis included lands beyond the Town borders that were continuous to areas within Exeter. The results are shown on **Map CP-5** ***-- "Contiguous Undeveloped Land"***.

Table CP-6
Protected Lands and Open Space

Total land area in Exeter:	12, 500 acres
Total Lands protected as of 1986:	1300 acres
Total Lands protected as of 1992:	1825 acres
Total Lands protected as of 2002:	**2990 acres**
Percentage of protected land:	**24%**
Lands Administered by the Conservation Commission:	
Conservation Land:	1450 acres
Conservation Easements	375 acres
Lands Administered by the Recreation Department:	
14 Parks	50 acres
Lands Administered by the State of N.H.:	
Connor Farm	235 acres
Cubie Rd.	250 acres
Lands Administered by the Trustees of Swasey Parkway:	
Swasey Parkway	5.5 acres
Lands Administered by the Trustees of Gilman Park:	
Gilman Park	15 acres
Privately Owned Open Space:	
Phillips Exeter Academy Land	500 acres
Riverwoods	66 acres
Various Homeowner Assoc.	70 acres

Exeter is fortunate to still have several large unfragmented blocks remaining. As of 2002, five areas of blocks with over 1000 acres are observed, including:

(1) The area encompassing the Oaklands Town Forest and north into Newfields (in addition, the Henderson Swasey Town Forest, is also connected via a pedestrian tunnel under Rt. 101 but not considered 'contiguous because of the highway);

(2) The Little River Conservation Area which is created by 308 acres of town owned land, 89 acres of private conservation easement and the 235 acre state owned Connor Farm is the single largest parcel of contiguous undeveloped land in Exeter;

(3) An area in the northwest corner of Exeter, and including land in Epping and Newfields, which includes a 450 acre tract (300 acres in Exeter) east of Cubie Rd. managed by The State Fish and Game Department (This area will be reduced in size following construction of the Exeter Cooperative High School.);

(4) An extensive area of river lowlands east and west of Drinkwater Road extending into Kensington and Hampton Falls, including over 250 acres conservation land along the Exeter River between Court St. and Drinkwater Rd owned and managed by the Phillips Exeter Academy;

(5) An area in the southwest corner of town in the area surrounding the Pickpocket Dam. Most of this block is located in Brentwood and is privately owned. It includes one managed tree farm in Exeter.

In addition, there are two to three areas in the 500 to 1000 acres class that have significant resource value. These include: the area in Exeter and Newfields from Cubie Road east to Watson Road; the Henderson-

Swasey Town Forest and surroundings. The area between 111A and Pickpocket is technically included in block category at present, however following construction of several developments that have been approved, it will not longer qualify.

4. Conservation Lands in Exeter

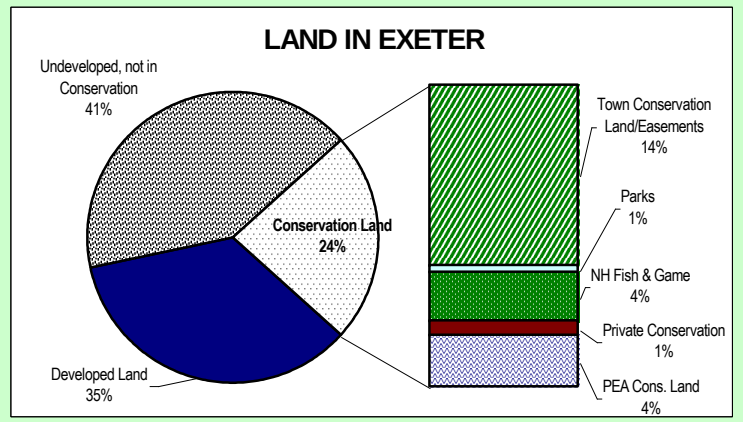
This section briefly describes the existing publicly and privately-owned open space lands protected from future development. There are many ways to categorize these lands. In this chapter we have organized the lands by ownership (e.g. town, state, private). Also important to consider are the type of protection provided as permanent open space as well as the management of the land, including what uses that are permitted. Sections A. through C. inventory the land that is expressly protected for open space, conservation or outdoor recreation purposes, as well as PEA land that is explicitly managed for conservation purposes. Section D. accounts for Current Use lands which, although presently undeveloped and important as open space assets, may be developed in the future. Open space lands (either publicly or privately-owned) are not necessarily protected forever unless such a conservation restriction or easement is written into the property deed.

As of December 2002, slightly over 2500 acres of Exeter's 12,500 acres is defined as protected open space. When the privately held PEA conservation land is added, it can be said that about 3000 or approximately 23 % of Exeter's land area is in some form of protected open space. **Tables CP-6 and 7, and Figure CP-1** breakdown these totals.

A. Town Owned Conservation & Recreation Land

For the purpose of this report, Exeter's existing protected lands and open spaces have been broken down into six categories: lands administered by the Exeter Conservation Commission, lands administered by the Recreation Department, other Town-owned lands, lands administered by the Trustees of Swasey Parkway, lands administered by the Trustees of Gilman Park.

Figure CP -1



1. Lands Administered by the Conservation Commission

This category consists of lands and/or easements acquired by the Town for open space/ conservation purposes. These lands are administered by the Exeter Conservation Commission in accordance with RSA 36-A. The Conservation Commission is actively involved in acquiring new parcels and/or easements through direct purchase or by gift. Currently, the Conservation Commission administers approximately 1450 acres of conservation land. In addition, the Commission administers seventeen conservation easements consisting of roughly 385 acres.

A current inventory of lands and easements administered by the Exeter Conservation Commission is presented in **Table CP-7**, and a graphic depiction of these areas, as well as state and federally owned lands can be seen on **Map CP-6** ***"Conservation Lands & Trails"***. (For an updated version of this map, see ***Chapter 6, Map PR-3: Conservation Land and Trail Networks***.) An inventory of the town owned or administered parcels in included in the annual Town Report. Comparing the areas shown **Map CP-6** and the various natural feature maps indicates that both Exeter and other conservation organizations have made a concerted effort to acquire land containing critical natural resources with an eye toward providing large, inter-connected habitat areas. These same principals will likely guide future conservation land acquisition.

2. Lands Administered by the Recreation Department

This category includes the active recreation areas described in Chapter 6 (Parks and Recreation), as well as smaller parks, common areas, and cemeteries. The most accurate depiction of the lands administered by the Recreation Department can be seen on *Map PR-1 – Recreational Facilities***.**

3. Other Town-Owned Lands

This category includes the land and buildings used by the various municipal departments for the daily operation of the Town. Facilities included in this category include: the Town Hall, municipal office building, fire station, police station, Town library, the senior citizen center, Town garage, wastewater treatment plant, landfill, and the waterworks complex. For the location of these Town owned lands, see *Chapter 5, Map CF-1 - Community Facilities*.

4. Lands Administered by the Trustees of Swasey Parkway

Swasey Parkway's land was given to the Town by Doctor Ambrose Swasey. Dedicated and officially opened in 1931, Swasey

Parkway was designed by the Olmsted Brothers landscape architectural firm of Boston. It is administered by an elected board of trustees who work to maintain and improve the park solely with the interest of the trust fund originally provided by Doctor Swasey for this purpose. The site, located between Water Street and the Squamscott River, is approximately 5.5 acres in size and is used for passive recreation and many town and privately sponsored activities. A long pedestrian walkway is provided, as well as a number of park benches. The Trustees have recently completed many improvements to the park. In 1998 and 1999, a large section of the seawall was rebuilt. In 2000 the retaining walls at Norris Brook were rebuilt as was the outlook and wharf. In 2001 the roadway was repaved and curbed, and 'speed tables' (to slow traffic) were installed. The next major project approved by Town Meeting will be the replacement of the light poles and the installation of new underground wiring. This site is depicted on *Map PR-1 – Town Recreational Facilities.*

5. Lands Administered by the Trustees of Gilman Park

The land for Gilman Park was given for use of the Town to the Trustees of Gilman Park by Daniel Gilman in 1891. This is an 11-acre recreational park located on the Exeter River at the end of Gilman Lane. Facilities at this site include: a basketball court, baseball field, boat launch, foot-bridge, and playground area, plus a picnic area. The Park is leased to the Town by the Trustees for $1.00 each year, "for the enjoyment of the public…and …with due caution to protect the natural resources and constructed amenities of the park from harm." Maintained by the Department of Parks and Recreation, Gilman Park is administered by an independent board of trustees. This site is depicted in *Chapter 6, on Map PR-1 – Town Recreational Facilities.*

B. State and Federally Owned Conservation Land

The State of New Hampshire, through various means, has acquired several sizeable parcels of land in Exeter for the purpose of open space. The Connor Farm site along Route 101 has been purchased by the State of N.H. to preserve the historic and open space resources of that 235 acre parcel. The Webb parcel consisting of 300 acres east of Cubie Rd. in the northwest portion of town has also been acquired through Federal funds. Both are owned by the State and managed by the N.H. Fish and Game Division of DRED for wildlife management, hunting and recreation.

C. Privately-Owned Open Space Areas

This category includes two types of land: the open space lands owned by Phillips-Exeter Academy, and open space lands associated with residential subdivisions or homeowner associations. The Academy has an abundance of land between Court Street and Drinkwater Road which

contains several athletic fields and managed conservation lands (including an extensive trail system) along the Exeter River. In the case of residential subdivisions being built under the Town's "Open Space Development" ordinance, such developments have set aside open space areas to be owned in common by landowners within the subdivision. Both types of privately-owned open space areas are shown on **Map CP-6 *"Conservation Lands & Trails"***. An excellent recent example of a privately-owned open space area is the 66.9 acre conservation easement associated with the Riverwoods residential development. The land is still owned by the tenants in common, however, the easement is administered by the Rockingham Land Trust, a non-profit land conservancy organization.

TABLE CP-7
Lands and Easements Administered by the Exeter Conservation Commission

EASEMENTS & LANDS	Acreage	Year Acquired	Tax Map-Lot
Atwood Property	3.3	2000	
Bunker Property(Beech Hill Road)	37.0	1995	18-3
Captain's Meadow	27.0	1991	24-3,21-1
Chamberlin Easement	61.5	1991	24-1
Chamberlin Easement	30.0	2002	24-30
Chapman Woods	2.2	1998	15-3.01-3.05
Dolloff Easement	82.7	1996	57-3
Dolloff Easement	2.3	1998	16-21
Edmunds Easement	6.2	2001	47-4,4A
Exeter Country Club	55.4	1989	52-1
McDonnell Property	18.0	1998	104-77
Pine Meadows Condominium(Amberwood Drive)	2.5	1995	87-18
Joseph and Nellie Swasey Land	40.0	1995	79-10
Vaughn-Cusick Land(Newfields Road)	1.7	1994	53-2
Waleryzack Land	4.0	1998	111-1
Mobil Land(Epping Road)	7.9	2000	40-11
Hospital Land	3.2	2001	68-129
Total Easements	**384.9 acres**		

LANDS	Acreage	Year Acquired	Tax Map-Lot
Allen Street Woodland Park	9.0	1990	52-97
Carlisle Land(Walter's Way)	9.6	1999	35-3
Chapman Woods	43.2	1998	15-3
Cheney Land(Greenleaf Drive)	16.5	1983	75-21
Christina Estates	17.1	2002	60-10
Clemson Fabric Land	4.0	1981	102-3
Colcord Pond	3.8	1984	55-16,55-36
Deene Land(Watson Road)	21.0	1991	10-3
Dudley Land(Brentwood Road)	7.0		58-6,58-1

LANDS	Acreage	Year Acquired	Tax Map-Lot
Enwright Land(Hampton Falls Road)	30.4	1986	86-12
FGS Lands	12.0	1999	57-4
Houck/Kazanjian Land(Brentwood Road)	74.3	1987	44-1
Henderson-Swasey Town Forest			
Henderson-Swasey Land	178.0	1973	49-8
Mary Williams Land	7.0		
Arther Plouffe Land	13.0		
Ruth Churchill Land	3.0	1976	
Industrial Park Land	16.0	1967	
Rowell Land	4.0	1992	
Henderson-Swasey TF: Total 221.0 Acres			
Irvine Conservation Area(Powell's Pt.)	13.4	1989	50-1
Irvine-Hayes Marsh	3.3	1989	50-2
Juniper Ridge Land	2.0	1991	101-49
Katz Land-Exeter Falls Estates II	67.3	1998	91-35.1
Lee/Diller Land	13.2	1995	22-6
Leighton Land	16.0	1995	102-5
Hauser Land	27.1	2001	113-5,7
Molloy Land(Great Roundabout) and			
Herman Smith Land(Great Throw)	11.7	1976	38-9
Morgan Realty Land	84.0	2000	13-2
Neal Land	3.4	1984	20-6
Oaklands Town Forest			
Deene Land	141.5	1991	35-2
Chamberlin Land	4.0	1991	20-3
Stockbridge Land	5.0	1991	
Jensen Land	37.5	1991	
Phillips Exeter Academy Land	16.8		35-2
Dawson/Dagostino Land	27.0	1984	25-1
Oaklands TF: Total Lands 231.8 Acres			
Pease Land	4.0	1984	10-8
Phillips Exeter Academy Land (Brentwood Rd)	8.0	1981	44-1
Perry Property	4.0	1984	104-4
Perry Land Extension	0.2	2001	111-7
Prospect Park Marsh	0.2	1995	52-8
Raynes Land (Wiggins Farm)	48.6	2002	24-30,23-1,2
R.E.D.C. Lands	212.0	1999	56-2
Renewable Resources Land	11.8	1995	22-8
Richard Parker Land	3.0		26-8
Shaw Land	3.0	1979	102-5
Smith-Page Conservation Area			
Smith Cove (Drinkwater Road)	46.8	1979	107-3
Page Land (Drinkwater Road)	8.5	1978	93-4
Smith-Page Area: Total Lands 55.3 Acres			

LANDS	Acreage	Year Acquired	Tax Map-Lot
Starry Brook Land	3.5	1998	52-97
Tara Development Co. Land (Riverbend Circle)	6.7	1986	104-23
Tax-Deeded Parcels(adjacent to HSTF)	28.6	2001	40-13,39-2,3
Tax-Deeded Parcels (adjacent to OTF)	71.6	2001	10-various,20-various
Tax-Deeded Land (Brentwood Road/Town line)	1.3	2001	58-8
Tax-Deeded Land (Brentwood/Exeter line)	19.1	2002	44-2,3
Thomas Land	3.7	2002	22-14
Tomilson & Kenick Land	10.3	1978	28-15
Tomilson & Kenick Land	2.5	1998	28-13,28-14
Windemere Land	8.6	2000	70-21
Wilfred Moreau Nursery	4.6	1967	38-13
Total lands	**1452.7 acres**		
Total lands and easements	**1837.6 acres**		

D. Current Use land

New Hampshire's Current Use law (RSA 79-A) allows qualifying land to be taxed according to its current, rather than its potential use. Without the Current Use program, all open land, regardless of the owner's intent for future use would be assessed and taxed at full market value. In many cases this would have the effect of forcing landowners to sell their property to escape high property taxes. Inevitably this would mean losing much of this land to development -- mostly in the form of residential subdivisions. The Current Use program assists those who wish to hold on to large parcels of land to do so and thereby helps preserve open space and conserve the accompanying agricultural, forest water and wildlife resources.

The Current Use program is utilized extensively in Exeter. According to the Tax Assessors records as of January 2003, over 2,450 acres were enrolled as current use land. This accounts for nearly 20% of the town's land area. The Town's GIS parcel map and database indicates that there are some 69 individual parcels are in the current use program itself, not including deeded conservation land and condominium or open space development common land. Parcels with current use designation are depicted on **Map CP-7 –** "***Tax Lots Under Current Use"***. In comparing CP-6 and CP-7, several large parcels, most notably the PEA conservation area, is shown as private conservation land.

The current use program is an extremely important mechanism for keeping open land open. It does not, however, provide any long term protection from the future development of this land. This is because current use land can be taken out of the program. If the land is converted to a non-qualifying use (e.g. subdivided for development) it is subject to a penalty tax equal to 10% of the land's full value assessment at the time of the change. During 2001, 2002 and the first half of 2003,

the Town collected $436,400 in current use penalty fees, or an average of $175,000 per year. In 1994, the Current Use Law was amended to allow the current use penalty tax (land use change tax) to accrue to a special account that can be used for conservation purposes. To date, Exeter has not elected to take advantage of this change in the law, but does appropriate funds each year for conservation land acquisition.

E. Trails – Existing and Planned

The Town of Exeter is fortunate in that there are a multitude of trails throughout the town. The trails range from old woods roads to meandering paths through the thickly covered forests. In addition, Jolly Rand Road, which is an historic Class A municipal trail connecting Brentwood Rd. and Pickpocket Rd.

Map CP-6 – *Conservation Lands and Trails* depicts the major trails that are extensively utilized. (For an updated version of this map, see Chapter 6, Map PR-3: Conservation Land and Trail Networks.) Some of these are on private property. [A note to trail users: please respect the rights of property owners who are gracious enough to allow use of their land.] Both the Town Forests have extensive trail systems that are marked and blazed. Color maps depicting these trail networks are available at the Planning Office. The Conservation Commission intends to develop more detailed maps of trails on its other major properties.

5. Priorities for Conservation and Natural Resources Protection

Exeter has been active in protecting its natural assets. Not only does it have a comprehensive set of zoning and land use regulations designed to protect wetlands, water resources, shorelines and to encourage the preservation of open land, it also has acquired a substantial amount of conservation land. Inevitably though, as the Town grows, more open land and the resource values they contain is lost. Therefore, the Town, (and to some extent, state and private organizations) have stepped up efforts to actively protect land by acquiring key conservation land and easements. At the time of the 1986 Master Plan, about 1300 acres were protected as conservation land. By 1992 that had increased to 1825 acres, and today that number is approaching 3000 acres.

Nevertheless the participants at the Master Plan Visioning Session strongly recommended that more open space be acquired. Shortly after, at the 2003 Town Meeting, an initiative called Exeter, A Special Place, received a 73% affirmative vote to bond three million dollars to purchase conservation land and/or easements. With that vote a seven member Open Space Committee was formed to prioritize and identify possible lands for open space acquisition.

A. Conservation Land Criteria

The approved conservation bond and related effort will work toward preserving additional undeveloped land that is of especially high value to the community. In beginning the process of prioritizing which land areas are most important to protect for conservation, resource protection and open space, the following criteria are recommended:

- Land that protects our water quality and quantity;
- Land that builds on prior conservation acquisitions and adds to contiguous areas of undeveloped land;
- Land that provides linkages between major conservation areas or otherwise protects important wildlife habitats;
- Land that has high resource value for agriculture or forestry
- Land that provides opportunities for public enjoyment and education through trails, parks, scenic areas, etc.
- Scenic and historic landscapes and properties of historic significance.

The New Hampshire Estuaries Project conducted a "Critical lands Analysis" in 1999 in which a number of important natural resources based criteria were combined in map form to show the "co-occurrence" of important resources values. The criteria selected are similar to that emphasized in the master plan and included factors for water quality (surface and groundwater), important wildlife habitat, existing conservation lands, and unfragmented areas. The result of this co-occurrence analysis, shown on **Map CP-8 – "*New Hampshire Estuaries Project Critical Land Analysis"*** applies directly to the question of identifying important conservation areas for future protection. Four major areas display as high co-occurrence areas, including many those described in the unfragmented lands analysis. Utilizing these maps and the Natural Resource Inventory we are able to identify and prioritize those undeveloped lands that can be pursued for additional protected open space.

B. Candidate Areas for Future Conservation

Based on this process the Master Plan Committee has identified a number of candidate areas within which additional conservation protection is warranted. Such protection could come in the form of acquiring conservation easements or fee simple ownership, in instituting special conservation zoning and site development provisions, or combination of these methods.

Three levels of candidate areas were identified and are defined as follows:

"A" – Land areas containing large blocks of unfragmented land with highest value for water supply protection and resource co-occurrence.

"B" -- Land areas with large and mid-sized blocks of unfragmented land with high to moderate resource value and contiguous with existing conservation land;

"C" - Land areas with mid and smaller sized blocks of unfragmented land with high to moderate resource value but not contiguous with existing conservation land.

These candidate areas are depicted on **Map CP-9 –** "***Candidate Areas for Conservation Zoning and Additional Conservation Land".*** The areas are shown circles which are meant to generally indicate the areas to be further investigated. They are intended both to assist the Exeter Open Space Committee in making an initial identification of priority areas, and to assist the Planning Board in identifying areas that may be appropriate to further define as conservation zones.

6. Techniques for Conservation and Natural Resources Protection

A. Open Space Protection Techniques

Options for open space protection can be broken down into three categories: voluntary land protection techniques, land use planning techniques, and public and quasi-public programs which support open space and conservation land retention. These options are further described in the following pages.

1. Voluntary Land Protection

Under this category, there are a number of methods to choose from which can help to permanently protect suitable open space areas, including: fee simple purchase, purchase and leaseback, purchase and resale or lease, purchase of development rights and conservation easements, donation of land, bargain sale, transfer of development rights, plus options and right of first refusal.

The recent Exeter Special Places Initiative and bonding authority establishes an important source of funding for all such techniques that involve purchase. By establishing the fund ahead of time the town can act quickly to acquire identified property when opportunities arise unexpectedly; in additional, prior bonding authority allows the town to show local matching funds commitment when applying for grant funds for open space protection through the New Hampshire Land and Community Investment Program (LCHIP) the Land and Conservation Fund (LWCF) or other such programs.

- *Fee Simple Purchase*

Most lands are commonly held in fee simple, that is, the holder of the title possesses all rights associated with the property. The most common method of protecting open space areas has been through direct purchase of property. An important consideration to remember is that open space lands are often purchased at their market value based on their development potential. Purchasing open space lands at full market value can be prohibitively expensive. The total cost of borrowing, including principal and interest must be carefully studied.

Land purchased for conservation purposes will generate no property taxes, however, it will not demand much in the way of public services. There are two options which can be used to recover the costs associated with a fee simple purchase: purchase and leaseback, and purchase and resale with covenants. The first option allows the community to lease the land back for a particular use compatible with open space preservation (such as farming or forestry), thus recouping a portion of the land's purchase price. Lease agreements should be written in a manner which protects the community while being sensitive to the landowner's needs. The second option allows the land to be resold with a deed committing the buyer to maintain the parcel as open space. As above, the new landowner could use the property for uses which are compatible with open space preservation.

- *Purchase of Development Rights and Conservation Easements*

This method operates on the assumption that the right to develop a parcel is separable from the ownership of the land. Thus, the right to develop can be purchased by the community. In this case, the buyer pays the owner the difference between the open space value of the land and its appraised value for other types of uses (residential, commercial, etc.). For example, if a parcel is appraised to have a fair market value of $5,000 per acre and an open space value of $1,000 per acre, then the development rights are worth $4,000 per acre.

Once the development rights are sold, the owner still retains the other rights associated with property ownership. Unless a right-of-way or conservation easement has been purchased, the owner can prevent the public from entering the land. The owner is still responsible for property taxes, which must be assessed by giving consideration to the rights which have been removed. Purchasing development rights allows the land-owner to receive the land's development value without having to convert the land to other uses. Thus, in a sense, the landowner is paid for not developing the land.

Development rights are also referred to as scenic, conservation, or development easements. Easements which allow the holder (the public for example) to use the land for conservation or recreational purposes are called "affirmative" easements. Easements which prevent the landowner

from doing something with the land (such as develop it) are termed "negative" easements.

There are four methods by which the Town can acquire development rights: direct purchase of development rights, purchase and resale with restrictions, purchase and lease with restrictions, and donation of development rights and/or easements. By donating development rights, the landowner can receive a reduction in local property tax, federal income tax, capital gains tax, and estate tax. With all of these methods, the restrictions on development run with the land, and are written into the deed which is binding on future landowners.

- *Donation of Land*

In terms of monetary expense, the outright donation of open space lands is the preferable option. The benefits to the landowner are reductions in a variety of federal, state, and local taxes. There are five methods of donation: fee simple, less than fee simple, donation with a reserved life estate, donation of an undivided interest in the land, and donation by bequest. These methods are briefly described below.

The fee simple method is a gift of the entire interest in the property. Full legal title passes by deed to the beneficiary (the community in this case), and the landowner no longer possesses any control over the land. However, the landowner may specify in the deed that the land is to be used solely for a specific purpose (such as tree farming or agriculture). Less than fee simple is a gift of partial interest in the property. The landowner retains legal title to the property, but gives up some of the rights to its use.

The donation with a reserved life estate is when a landowner donates property to the community but retains possession and use of the property for his own lifetime and/or the lifetime of other family members. A donation of undivided interest in land is a gift of a percentage interest in the land, not any specific, physical portion. As a result, the land as a unit will be owned as tenants in common by those parties who have interest in the property. Donation by bequest is when a landowner donates land in his or her will to the community. In such cases, the donated land is not subject to estate or inheritance taxes.

- *Bargain Sale*

This is the sale of property for less than full market value. It can be considered a combination land sale and charitable contribution. The amount deductible for income tax purposes is the difference between the land's fair market value and the actual sale price. For example, a landowner has a property worth $500,000 based on a real estate appraisal. The land is sold to the community for $200,000. The difference of $300,000 is the value that the owner is contributing as a gift. This value is considered a tax deductible donation, however, current tax law

limits the deduction to 30\ of the owner's adjusted gross income (AGI). Thus, if the landowner has an AGI of $50,000, the deduction in anyone year would be $15,000. The landowner can carry forward any unused amount for five additional tax years.

In addition to a charitable deduction, the landowner can receive the following monetary benefits: cash from the sale, a capital gains tax reduction, avoidance of brokerage fees, and the avoidance of a higher tax bracket which could otherwise result from a full value sale of the land. Any transfer of property, either in fee-simple, development rights, or a conservation easement may be the subject of a bargain sale.

- *Options and Rights of First Refusal*

If the community cannot afford to purchase a site immediately, perhaps an option or right of first refusal can be obtained. An option establishes a price at which the community could purchase the land during a specified period of time. A right of first refusal is less specific; it simply guarantees the community the opportunity to purchase a site for a price equal to a bona fide offer from another interested party. Once another offer has been made, the community has the opportunity to match the offer.

2. Land Use Planning Techniques

Zoning as well as subdivision and site plan review regulations can be used to protect critical environmental resources where limits to development are necessary to protect public health and welfare by prohibiting certain land uses. Zoning can also be used as a 'carrot' to encourage certain types of development and to direct development away from areas where environmental impacts are greatest.

- *Environmental Overlay Zoning*

Environmental Overlay Zoning is used to restrict development in areas where environmental conditions make the land unsuitable for development. For example, the Town prohibits development in wetlands areas and significantly limits development in shoreline, floodplains and aquifer recharge areas. Although zoning protects specific areas of Exeter from development, it is not designed to achieve the broader goals of open space and land conservation – including the preservation of wildlife habitats, scenic vistas, farmland and forest resources and the protection of large contiguous areas of open space. In most cases, zoning protection, particularly resource based overlay zones, acts to reduce the location and extent of development, rather than eliminate it. In general, the Town's environmental overlay zoning attempts to direct development away from areas where it will lead to harm and is not intended to protect open space. It results in a fine patchwork of small areas where development is restricted, not a network of open space.

- *Open Space Development*

The Town's Open Space Development Ordinance is a cluster development technique (an 'innovative land use control' as listed in RSA 674:21) that attempts to combine the purposes of protecting environmentally sensitive areas from development, preserving open space, and making development more cost efficient. Essentially a variation on the cluster principle, this ordinance allows for homes to be arranged closer together in groups or clusters on smaller lot sizes than those normally required under conventional zoning. Such placement allows greater variation in lot size, shape and placement, and facilitates the location of buildings in a way that avoids environmentally sensitive areas and consolidates undeveloped land without increasing the overall density of the development. By clustering housing units one or two small sections of a large parcel, large open space areas can be preserved.

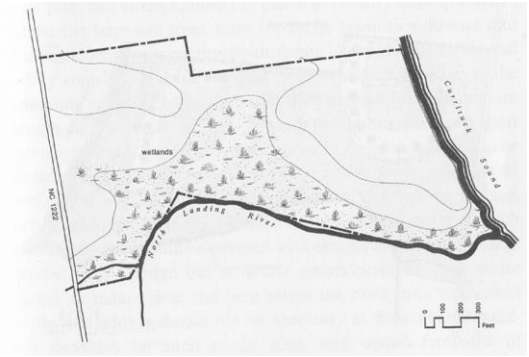
Even though Open Space Development is optional, the Town has been relatively successful in encouraging this alternative development form. Several Towns in New Hampshire have, or are considering, making Open Space Development mandatory at least in areas that have especially high conservation or natural resource value, or that are in close proximity to environmentally sensitive areas.

Combining mandatory Open Space Development with relatively large lot zoning can be particularly effective in protecting meaningful open space. For example, in a zone with 3 acre zoning and the ability to cluster dwelling units on half acre lots could be fully developed and yet set aside 80% of the land area as open space; at quarter acre lots, nearly 90% could be set aside.

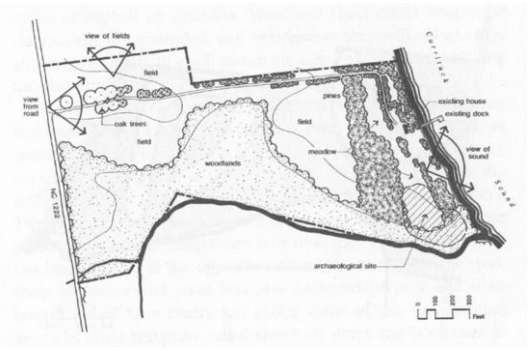
- *Conservation Subdivision Design*

Conservation Subdivision Design (CSD) is an extension of the Open Space or Cluster Development concept already in use in Exeter. It is intended to for use in areas and under circumstances where natural resource and open space protection is a principle objective in the regulation of development – such as in areas where significant agricultural lands, managed forests, important habitat or scenic views are present. This approach may be especially appropriate for the conservation areas discussed in Section 5 of this Chapter.

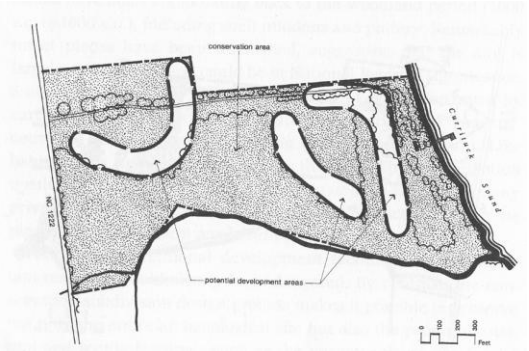
Conservation Subdivision Design involves a relatively simple process to identify the most significant natural and cultural resources on a given tract of land, and thereby determine the most suitable "building envelopes" from a preservation viewpoint. A four or five step conservation subdivision design technique can be applied within any residential zoning category, and is 'density neutral'; i.e., the density permitted by right within a particular area is not affected by this method.



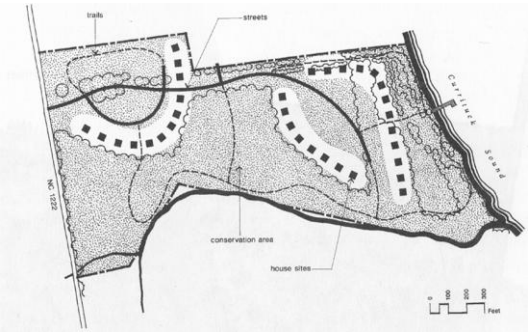
Step 1: Identify Primary Conservation Areas



Step 2: Identify Secondary Conservation Areas



Step 3: Identify Potential Areas for Development



Step 4: Locate building sites, lots (if applicable), roads and trails

The accompanying figures to the left (Source: Randall Arendt *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*) illustrate the four step process.

Step 1: Identify Primary Resources. The first step in the CSD process is the identification of critical resources and primary development constraints on the site. The definition of these can be tailored to the Town. In Exeter's case they might include which should include: steep slopes and unsuitable soils, wetlands and perhaps water supply related resources and critical habitat.

Step 2: Identify Secondary Resources. The next step is to identify secondary resources areas. These might include shoreline and wetland buffers, aquifer recharge areas, wildlife corridors, good agricultural soils, historic sites or structures, scenic vistas, etc.

Step 3: Identify Potential Development Areas. Next the areas not identified in the first two steps are examined for potential building area. If insufficient area remains to accommodate the allowable density, the secondary resource area may be reduced, or a reduction in density negotiated or purchased.

Step 4: Locate building sites, lot lines, roads and trails. This may occur in more than one step. The objective is to site building within potential development areas, configure lots to meet subdivision and siting standards with regards to setback, well and septic locations (if applicable). For this to work, it is important that dimensional requirements be modest and flexible.

- *Conservation Easements as Voluntary Development Mitigation*

As another means of creating protected open space lands, the Planning Board and Conservation Commission have in recent years moved to obtain conservation easement agreements during the development review process for various types of development. Such agreements have typically been made to ensure protection of environmentally sensitive portions of lots.

- *Transfer of Development Rights (TDR); Transfer of Density Rights*

This technique is similar to the purchase of development rights in that the right to develop is separate from the concept of ownership. A TDR program can protect critical

resource areas by shifting development potential from one part of a community to another. Such a program requires the zoning of a community to have a transfer zone (consisting of lands designated for protection) and a receiving zone (consisting of a portion of a community more suited for intensive development). A landowner would sell a property's development rights directly to a developer or indirectly through a public agency that would then transfer the development rights to the community's receiving area. The property to be protected would then be subject to deed restrictions barring future development. The success of a TDR program depends on a vigorous real estate market. Without strong and constant demand for development rights, compensation for the seller of the conservation property at the time they wish to sell is uncertain. Perhaps for this reason, TDRs are rarely implemented in New Hampshire.

A simpler variant of the TDR approach has been developed called Transfer of Density Rights. In this version, a developer contributes to a conservation fund in exchange for the right to increase development density in zones where this is specifically allowed. The conservation funds are accumulated and used by the Town to purchase development rights or reduce development density in designated conservation zones.

3. Public and Quasi-Public Programs and Assistance

There are a number of open space protection programs offered by various State and local agencies, as well as several programs offered by quasi-public groups such as the Audubon Society, the Society for the Protection of New Hampshire Forests and the Rockingham Land Trust. Many of these quasi-public organizations work hand-in-hand with the State, while others work independently. The programs offered by these organizations are described in more detail on the following page.

A. Current Use

Authorized under RSA 79-A, this property tax abatement program provides for reduced property assessments of field, farm and forests lands of ten (10) acres or more in size. Landowners can apply to the program through the local tax assessor. (See Section 4.D. of this chapter for a full description.)

B. Land and Water Conservation Fund

The Office of Recreation Services within the NH Department of Resources and Economic Development administers the federal Land and Water Conservation Fund (LWCF). This fund provides 50% matching grants to municipalities for the acquisition of open space lands. Most successful applications have a strong recreational emphasis. In recent year, LWCF funding, which is generated from the Federal sale by offshore oil and gas drilling rights leases, has been redirected by Congress

to other purposes and little has been available for public land acquisition.

C. County Conservation Districts

New Hampshire has ten County Conservation Districts to assist landowners in sustaining the productivity of their farmland. As part of their effort to protect the land, these organizations accept and monitor conservation easements. A branch office of the USDA Soil Conservation Service can also be found within the local Conservation District office. For Rockingham County, the County Conservation District office is located at the County Complex in Brentwood.

D. N.H. Department of Agriculture

The NH Department of Agriculture works in a variety of ways to protect the State's farmland resources, including the purchase of development rights program, technical assistance on land use issues, conservation programs and efforts to improve the economic return of farm enterprises.

E. Audubon Society of Hew Hampshire

The Audubon Society of New Hampshire encourages the preservation of wildlife habitat and natural areas through education and land acquisition. The Society acquires land through gift, bequest, trust and purchase. In many cases, the Society will accept unrestricted gifts of land having little or no wildlife or natural value for the purpose of resale, thus raising endowment funds to support their land acquisition and management program.

F. Society for the Protection of Hew Hampshire Forests

The Society for the Protection of New Hampshire Forests promotes the conservation and wise use of natural resources and strives to protect productive forest and agricultural lands. The society owns and manages over 18,000 acres of land received by gift or purchase, and monitors conservation easements on over 15,000 acres. The Society also maintains a revolving Environmental Loan Fund (ELF) which makes loans to municipal, conservation, and other agencies to acquire, protect and preserve open space areas.

G. Rockingham Land Trust

The Rockingham Land Trust, located in Exeter, is a non-profit land trust organization which accepts gifts by donation or bequest, and monitors conservation easements on several properties throughout the immediate area. The Trust can provide communities and landowners with a variety of options for protecting open space areas.

H. Land and Community Heritage Investment Program

The Land and Community Heritage Investment Program (LCHIP) was established by the NH Legislature in May of 2000 for the purpose of providing matching grants to communities to help acquire and protect important lands and historic structures. In its first three years of operation, the LCHIP program has had been 3 and 6 million dollars per year available for grants. The program is not permanently funded and depends on general fund appropriations by the legislature. Exeter successfully used the LCHIP program in 2002 to help acquire the Raynes Farm.

B. Natural Resources Protection

As described in the preceding section, the Town utilizes Environmental Overlay Zoning to restrict development in areas where environmental conditions make the land and associated natural resources unsuitable for development. For example, the Town prohibits development in wetlands areas and significantly limits development in shoreline, floodplains and aquifer recharge areas. The evaluation of development suitability is described as follows.

1. Development Suitability

Land not suited for development includes wetlands, buffer areas around wetlands, shoreland buffer areas and, in those areas not served by sewer and water, with soils which have very low potential for the siting of septic systems (such as poorly and very poorly drained soils and steep slopes). The significance of these areas is described as follows:

Wetlands: The importance of preserving and protecting wetlands is well established in the Town of Exeter Water Resources Management Plan (1991). They are generally recognized to contribute vital natural resource and ecological functions, including the following:

- Providing habitat areas for plants, fish and wildlife;
- Absorbing polluting nutrients from adjoining lake and streams;
- Helping to maintain groundwater levels during dry seasons;
- Storing flood waters during wet seasons; and
- Absorbing and settling out silt and other sediments caused by erosion.

In addition to these benefits, wetlands also have aesthetic value for open space and passive recreation. Future land uses should be directed away from wetland areas to the greatest extent possible. It is equally important to prevent building in such areas be-

cause of the potential negative impact on water quality, public health and protection from flood hazards. The Town's existing Wetlands Ordinance will continue to regulate future development with regards to wetlands.

Buffer Areas around Wetlands: A wetlands ordinance which prohibits development in wetlands does not necessarily protect wetlands from harmful uses occurring immediately adjacent to them. For those uses permitted within close proximity to wetlands, adequate buffers are necessary in order to insure the protection of the wetland. In 2000, the Town's Zoning Ordinance was amended to include a protective buffer around prime wetlands of 100 feet. In 2003, the Town's Subdivision and Site Plan Regulations were revised to include a 25 foot "no-cut" setback and a 75 foot setback for structures. Structures that are potentially harmful to wetlands, such as septic systems, waste, and salt storage facilities are excluded from these areas. As much as possible, natural vegetation should be protected or restored in these areas to control erosion and sediment from contaminating wetlands.

Buffer Areas Along River Corridors: The establishment of buffers along rivers and streams is important for many of the same reasons as for wetlands. Protecting river shorelines helps preserve wetlands, reduces flooding damage, serves to maintain important wildlife travel corridors and preserve scenic beauty of the river. In 1989, (and revised in 1999) the Town established the "Shoreland Protection District" which establishes an overlay protection district prohibiting most structures and land alteration between 150 and 300 feet of the shoreline of major rivers, streams and other surface waterbodies. Shorelands need such protection from development for many of the same reasons that hold for wetlands, including water quality protection, flood storage, and wildlife habitat. In 1991, the Comprehensive Shoreland Protection Act (RSA 483-B) was adopted by the State Legislature. The law requires that a 150 foot natural woodland buffer be maintained along public waters. The State ordinance is less restrictive than the Town's in some instances, but allows local ordinances to be more restrictive as necessary.

The Town's ordinance appropriately establishes varying levels of protection depending on the environmental sensitivity of the river or stream. Greatest protection is afforded to waterbodies providing drinking water supply, and having the highest water quality.

Areas with Very Low Potential for Septic Systems: The ability to adequately place a septic system on parcels where sewage disposal will be handled on-site is a critical consideration for determining development suitability. The Rockingham County

Conservation District (RCCD) has developed a system to indicate the relative potential of a soil for siting a septic system. This system objectively and scientifically rates a soil's potential on a five level scale ranging from very high to very low. Any land classified as having *very low potential* is determined to be not suitable for development under any reasonable standard. Area with *low potential* may be unsuitable depending on other factors.

In additional to these areas, other land area has some limited suitability for development but where the value of natural resources dictates limitations in the extent of development that should be permitted. These areas include aquifer recharge zones, 100-year flood hazard zones, areas with low potential for septic systems and water supply protection areas. Poorly-suited areas present difficulties in permitting development without causing harm and therefore are best suited for low density development. Carefully developed land use regulations are required to safely guide future development in these areas.

Aquifer Recharge Zones: In 1988, the Town created an "Aquifer Protection Overlay District" which regulates the type and intensity of development within areas that overly aquifers. The Aquifer Protection Overlay District is designed to protect, preserve and maintain potential ground water supplies and related ground water recharge areas associated with a known aquifer identified by the Town. It is vital to protect these resources for potential use as public water supply for the Town.

Stratified drift aquifers are recharged from precipitation and runoff that infiltrates from land directly above the aquifer. They are therefore not suited for any type of development that carries a high risk of contamination. Stratified drift aquifers are especially vulnerable to contamination from the land above due to the high permeability of the associated sandy soils. Once they have leaked into the ground, contaminants can spread rapidly through an aquifer and destroy it as a water supply. Several of the aquifer's within the Town feed the Exeter River, the Town's principal water supply. Numerous private wells in Town also depend on these aquifers. Therefore it is vital that they continue to receive protection from uses which carry a high risk of contaminating groundwater. In general, development that involves the use of chemicals or materials that could contaminate the groundwater if spilled or discharged, or which creates large areas of impermeable surface should be prohibited from locating in these areas.

100-Year Flood Hazard Zones: Floodplains are undesirable locations for development because the associated risks to life and property. In addition, construction in the floodplains worsens flood hazards downstream and the inundation of subsurface sewage disposal systems can cause water pollution and a public health hazard. As part of its Zoning Ordinance, the Town of Ex-

eter has adopted specific regulations for development in special flood hazard areas, as prescribed by the Federal Emergency Management Agency (FEMA). FEMA has prepared "Flood Insurance Rate Maps" for the Town which depict, among other things, the location of flood hazard areas for the 100-year flood. Development should be limited within these flood hazard areas to those land uses compatible with areas prone to flooding and in conformance to the regulations imposed by FEMA.

Areas With Low Potential for Septic Systems: These areas contain soils that have low potential for the successful siting of septic systems. The soils are limited due to one or more of the following factors: slope, shallow depth to bedrock, depth to seasonal high water table or slow percolation rate. In most instances, these natural limitations can be overcome by modifying the site to comply with minimum state and local septic system regulations, but only at high cost. These areas are suited for low density development only, with densities determined by the soil type lot size requirements.

Public Water Supply Protection Areas: Areas immediately adjacent to the Town's public water supply wells and surface water intake sources should remain free of development to reduce the potential threat of water supply contamination. This includes the state-mandated 400 ft. "sanitary well radii" around municipal wells within which all development is prohibited. In addition, the Town should consider defining broader wellhead protection for active groundwater wells, surface water withdrawals, and for the Dearborn reservoir watershed in which development is limited.

2. Compliance and Enforcement

The visioning session for this chapter identified enforcement of development prohibitions and conditions as an important issue pertaining to natural resources protection. With limited staff and increasing compliance burden, it is difficult to ensure that all such conditions are adhered to. One suggested solution was to provide additional environmental monitoring as a function of a staff person with expertise in natural recourses protection, shared between the planning/building department and conservation commission.

C. Public Education

Outdoor Education and Research

Using the community's forests and other natural environments as outdoor classrooms allows people of all ages to learn about the natural world. Environmentally sensitive lands can serve as areas for scientific research and outdoor educational exhibits which demonstrate the dynamics of ecological relationships.

Exeter's existing outdoor education programs are primarily geared toward its youth. The local schools make use of a number of outdoor areas for environmental education purposes, including the Henderson Swasey Park and the Allen Street Park. The local Boy Scouts also make use of Brickyard Pond.

The Great Bay Estuary, with its connection to the Squamscott River, is one of the primary natural resource education sites in the seacoast region. The University of New Hampshire, which operates the Jackson Estuarine Laboratory at Durham Point, has been conducting research and education activities within the estuary. The Sandy Point Science Center, operated by NH Fish and Game, is located in Stratham and Greenland on the Squamscott. It opened in the mid 1990s as major education center on the Estuary, catering to the needs of the region's elementary and middle schools. Local officials in Exeter have observed that the Conner Farm Property, acquired by The NHDOT as conservation mitigation associated with the NH 101 construction and now managed by NH Fish and Game, could make an outstanding conservation education center.

Outdoor-Oriented Recreation

The importance of outdoor recreation opportunities to a community is widely accepted. Open space recreation offers a great opportunity to understand and appreciate the natural environment and to contribute to overall quality of life in the community.

7. Management of Conservation Lands

While the Chapter on Conservation and Preservation is for the most part the conservation plan for the Town, a more detailed management plan for individual parcels needs to be established. Each area should have an individually designed plan based on the reasons it was preserved and the best uses as determined by natural resource management objectives.

In order to determine proper management objectives for a parcel, one must first determine the specific resource(s) that needs protection, as well as opportunities for use.

Land may be protected for several reasons, such as protection of ground or water supply, agriculture, wetlands, wildlife habitat, scenic enjoyment or passive recreational uses. Once it has been determined which uses are suitable for an area, the next step is to decide which uses to offer. While multiple uses of municipal land are a good objective, a single tract may be unable to accommodate all potential uses. Some uses may be incompatible, such as agriculture use and biking trails; other parcels may have sensitive habitat that is best left undisturbed. If the parcel is

sufficient in size, it may be possible to separate incompatible activities to avoid conflicts.

Once a management plan has been prepared, it will need implementation and stewardship. Proper management of the land may also require some use restrictions. The Conservation Commission has published the following land use policy.

A. General Use Policy for Conservation Land in Exeter

Conservation lands overseen by the Exeter Conservation Commission (ECC) have been established for conservation purposes. To that end, permissible uses will vary, depending on a variety of circumstances and on Exeter Town Ordinances. Unless otherwise noted, passive recreational activities—hiking, cross-country skiing, snowshoeing, birding, nature or wildlife viewing, photography—are the only ones permitted.

General Guidelines

- Motorized vehicles are not permitted at any time on any land managed by the ECC in accordance with Exeter Town Ordinance 711.
- Horses and horseback riding are prohibited on all properties.
- Human-powered wheeled vehicles (such as bicycles) are permitted only on well- established marked trails where noted under specific properties in accordance with Exeter Town Ordinance 711. Off-trail biking is prohibited.
- Leashed dogs are permitted only on trails where noted, and dog owners must clean up after their dogs. As many of the ECC-managed properties contain abundant wildlife, owners must keep constant watch of their leashed dogs. Other animals are not permitted under any circumstances.
- Fires and camping are prohibited on all ECC lands without specific prior written permission from the ECC.
- Hunting is not allowed on any ECC property, except as specifically noted in Exeter Town Ordinance 705. Trapping is allowed only with the specific prior consent of the Exeter Conservation Commission. Those engaging in hunting, trapping, or fishing must be properly licensed for the specific activity underway. Semi-permanent structures, such as hunting blinds or stands, are prohibited.

B. Specific Use Policies for Conservation Properties

HENDERSON-SWASEY FOREST

Bicycles are permitted only on well-established marked trails in accordance with Exeter Town Ordinance 711. Off-trail biking is not allowed, as it destroys vegetation and disturbs wildlife.

OAKLANDS TOWN FOREST

Bicycles are permitted only on well-established marked trails in accordance with Exeter Town Ordinance 711. Off-trail biking is not allowed, as it destroys vegetation and disturbs wildlife.

Hunting in season is allowed in accordance with Exeter Town Ordinance 705.

LITTLE RIVER CONSERVATION AREA

The primary use of the area is for passive recreational activities—hiking, birding, nature and wildlife viewing, photography, and cross-country skiing and snowshoeing in winter.

Fishing is permitted, with the understanding that fishermen will clean up after their catches.

Hunting in season is allowed in accordance with Exeter Town Ordinance 705.

MCDONNELL CONSERVATION AREA

Only passive recreational activities are allowed—hiking, birding, nature and wildlife viewing, and photography, as well as cross-country skiing and snowshoeing in winter.

Fishing is allowed, as long as fishermen clean up after their catches.

SMITH-PAGE CONSERVATION AREA

This area is available for passive recreation such as birding, nature and wildlife viewing, and photography.

Hunting in season is allowed in accordance with Exeter Town Ordinance 705.

In the winter, cross-country skiing and snowshoeing are allowed.

IRVINE CONSERVATION AREA

Only passive recreational activities are allowed—hiking, birding, nature and wildlife viewing, and photography, as well as cross-country skiing and snowshoeing in winter.

On all other lands administered by the Exeter Conservation Commission, the general guidelines and Exeter Town Ordinances apply.

8. Recommendations

Natural Resources

1. The Conservation Commission should maintain a comprehensive GIS based inventory of Natural Resources in the community; a summarized version should be made available to the planning board as needed to update this chapter.

2. The Town Open Space Committee, in cooperation with the Conservation Commission, should develop and maintain a priority list of land areas or specific parcels that have unique or critical natural resource value, including areas that are contiguous to or provide linkage to existing conservation lands. The Town should act, in concert with neighboring towns where appropriate, on those priorities in acquiring land for conservation purposes.

3 The Town should maintain an active and adequately funded land conservation program to ensure that at least 35% of the Town's developable land area is permanently reserved for non-development purposes; toward this end, the Town should:

   a. Town Meeting should authorize that some or all of current use penalty fees be set aside for the acquisition, monitoring and maintenance of Town conservation land;

   b. The Conservation Commission and the Open Space Committee should leverage local conservation funds by regularly applying for funds from the LCHIP, Farmland Protection Program, Land and Water Conservation Fund and others as available;

   c. The Conservation Commission and the Open Space Committee should actively engage an outreach effort with the owners of land with high conservation value; and

   d. The Conservation Commission and the Open Space Committee should continue to work with local land conservation organizations, such as the Rockingham Land Trust and Rockingham Planning Commission to coordinate protection efforts.

4. The Planning Board should further integrate the consideration of natural resource conservation in the siting of new development. (See Zoning and Land Use Section page 51.)

5. The Conservation Commission and Planning Board should cooperatively conduct a community based wildlife habitat evaluation, such as described in *Identifying and Protecting Significant Wildlife Habitat: A Guide for Towns* (NH Fish and Game, 2000) to assist in establishing and refining local conservation priorities.

Water Resources

1. Implement a Wellhead and Source Water Intake Protection Program, per NHDES program guidelines. Implement development restrictions, as well as monitoring and landowner education programs with designated wellhead and water intake protection areas.

2. Implement the recommendations of the Dearborn Brook Management Plan, including:

    a. Town departments and volunteer boards should work with land protection organizations in Exeter and Stratham (and regionally) to protect critical open lands. Pursue conservation easements or land purchase and institute proper management of lands for water quality and quantity protection.

    b. The Planning & Building Departments, in conjunction with the Public Works Department and Conservation Commission, should evaluate and determine if existing land use measures are adequate to watershed protection, including setbacks, density, and prohibited uses, and determine if regulations are being properly enforced. Consider special development restrictions

    c. Educate watershed landowners, Town residents and Town officials regarding the Dearborn Brook watershed role in providing drinking water supplies, and about non-point source pollution threats to the water supply.

    d. Establish quarterly or semi-annual monitoring of the stream in several locations. Evaluation of data should also include water quality data being collected by Exeter Water Department at the spring and the reservoir.

    e. Continue the Town's involvement in the Dearborn Brook watershed advisory committee to implement recommendations in this Plan and to periodically review programs and watershed status.

3. The Public Works Departments should implement Phase II Stormwater Management requirements for Town facilities per EPA regulations. The Planning Board should incorporate developer requirements for Phase II

Stormwater Management compliance into site plan and subdivision plan approval process.

4. The Town Water and Sewer Commission should develop and implement a water conservation program including public education and rate incentives.

5. The Town should maintain active and cooperative participation in regional water resource protection efforts including Exeter River Local Advisory Committee (ERLAC), and the Dearborn Brook watershed management committee and multi-town efforts pertaining to the Squamscott River.

6. The Conservation Commission should continue to participate in the State Volunteer River Assessment Program.

Environmental Quality

1. The Planning Department should undertake a comprehensive review of current best practices of zoning, site design and building codes pertaining to energy efficient design and make appropriate recommendations to the Planning Board;

2. The Cooperative School Board and Exeter School Board should incorporate 'green building" technology and design into future school buildings and renovations, including the new Cooperative High School.

3. The Town should encourage compact and mixed use development where appropriate to encourage the use of walking and bicycling in place of some short distance car trips.

4. The Public Works Department should study the use of coordinated traffic signaling systems on Portsmouth Avenue, and in other locations as needed, as a mean of improving traffic flow and reducing vehicle idling.

5. The Planning Board should consider requiring major building renovations to incorporate updating of heating and electrical equipment to reduce stack emissions and energy consumption.

6. The Planning Department should research methods to improve local regulation of light and noise pollution and recommend their adoption as appropriate.

Zoning and Land Use Regulations

1. The Town should maintain its comprehensive set of natural resource protection overlay districts in furtherance of the general health and welfare of the community, and periodically review the adequacy of such zoning districts.

2. The Planning Department should review natural resource related enforcement problems that occur under the existing ordinances, regulations and codes and recommend changes that will reduce such problems in the future.

3. The Planning Department should review 'minimum impact' best management practices recommended by the NH Minimum Impact Development Project and recommend their adoption as appropriate.

4. The Planning Board should adopt additional incentives and disincentives to more strongly discourage additional development in areas of high resource conservation value. To achieve this objective the Board should consider establishing a conservation overlay zone, based on further refinement of the areas identified in Section 5 of this chapter.

   The following additional provisions should be considered within the overlay zone:

   a. Require open space subdivisions in areas of high natural resource protection value as defined in Section 5 of this Chapter;

   a. Reduce the allowable density of residential development to half that permitted in the underlying zone, unless the development is proposed as an open space development, in which case the density limitation remains the same;

   b. Establish a density rights transfer/acquisition provision allowing the reduction of development density in the conservation zone, to be either transferred to other zones or acquired by the town, land trust or other conservation entity;

   c. Require that development proposed in the conservation zone (or in areas of high natural resource protection value as defined in Section 5 of this Chapter) be subject to submit a resource impact mitigation plan to the Planning Board as part of the approval process.

Stewardship

1. The Town should consider the establishment of the position of Conservation Officer whose duties would include:

   a. Conservation land planning, management and monitoring;

   b. Watershed protection planning and monitoring;

   c. Environmental review of development plans; monitoring construction for compliance;

   d. Developing community conservation education programs;

   e. Preparing grants application for conservation funds;

   f. Providing staff assistance to the Conservation Commission.

2. The Conservation Commission should develop site specific use and management plans for the following properties: *Henderson-Swasey Town Forest; Oaklands Town Forest; Raynes Farm; Little River Conservation Area; McDonald Property.*

3. The Board of Selectmen should recommend to Town Meeting the placement of conservation easements on existing town-owned land that is owned and managed for conservation purposes but not currently restricted for such purpose.

4. The Conservation Commission should develop and publish trail maps for recreational trails on Town conservation lands, as appropriate to the management of that property.

Education

1. The Conservation Commission should work with the Exeter School District and the Cooperative School District to create an environmental curriculum as part of the education system.

2. The Conservation Commission should support school based student environmental organizations.

3. The Conservation Commission and other Town Departments should make broader use of the Town Cable Channel 22 to inform the public about conservation issues.

4. The Conservation Commission and other Town Departments should create information and education materials about conservation issues and disseminate them to the public.

5. The Town should seek a partnership with NH Fish and Game and other conservation organizations to develop a local conservation education center at the Conner Farm site.

Aesthetics and Community Character

1. The Exeter Historic Society and Historic District Commission should develop and maintain a comprehensive survey of significant historic sites and buildings, and known archeological sites in Exeter.

2. Base on the above referenced survey, the Historic District Commission and Planning Board should determine the need for and identify possible expansions of the Historic District.

3. The Planning Board should prepare a new chapter of the Master Plan to specifically address historic and archeological resources preservation and adjust the conservation preservation chapter to address natural resource and conservation space protection only.

4. The Planning Board should develop site plan regulations which will allow Board to require archeological investigations on sites that are determined to contain or deemed likely to contain archeological resources.

5. The Exeter Historic Society and Historic District Commission should develop signage and monumentation to be placed at significant public historic and archeological sites within Exeter and encourage private property owners to do the same.

6. The Planning Board should incorporate the consideration of impacts on scenic vistas and qualities when reviewing development proposals.

7. The Town should add the following as designated scenic roads in Exeter: Brentwood Road, west of Colcord Pond.

8. The Town should designate Cubie Road and undeveloped portion of Birch Rd. as municipal trails.

APPENDIX A

VISIONING SESSION RESULTS

2003 MASTER PLAN VISIONING SESSION
CONSERVATION AND PRESERVATION RESULTS
(Combined Summary)

Topic	Votes	Gold Star Votes	Total Votes
LAND PURCHASE			
Encourage purchase/donation of conservation land - support bond	38	20	58
Annual appropriation for land acquisition	14	2	16
Purchase/acquire more riverfront land -- more public access for boating	7	3	10
Acquire land on east side of river (Powder house area)	5	1	6
LAND PURCHASE / POLICIES			
Create linkages: Link conservation lands for recreation and wildlife corridors. Link open space land with community ie. Emerald Necklace, Link uplands	26	10	36
Conduct land assessment/inventories to target/purchase/donation as part of town land conservation plan. Develop a decision matrix with priority criteria for land acquisition and protection criteria for conservation use - water, trails, wildlife, etc	19	3	22
Plan conservation land use, maximizing use of conservation land, maintain large areas of unfragmented lands	16	5	21
Town to set goal for a percentage of land to be place into conservation, consider studying fully developed communities.	15	3	18
Protect town water supply, buy or acquire easement land for water resource protection	11	5	16
Permanently protect town forest and other conservation land	9	3	12
Think more about wildlife in master plan and land management	4	1	5
Active land management	1	0	1
Property/forest management plans for conservation land	0	0	0
Establish town land use needs list	0	0	0
Recreational use in open space – compare with other towns, how much should be allowed for rec. uses?	0	0	0
Regional integration of open space: integrate local decisions with regional plans.	1	0	1
Address National Air Quality Standards	1	1	2
Determine the kind of growth we want and how to encourage it.	1	0	1
Growth regulations, limit the number of homes that can go into a development.	0	0	0
Town and Fish and Game collaborate on F&G land in town	0	0	0
Study to determine how much space should the town control directly	0	0	0
REGULATIONS			
Require conservation cluster development in target areas	15	4	19
Adherence to regulations and provide fewer waivers	10	5	15
Ordinances should have stronger teeth and support by town officials	7	1	8
Create incentives for land protection as part of development process	5	0	5
Establish natural resource standards in Planning Board Approval	4	0	4

Topic	Votes	Gold Star Votes	Total Votes
Require more usable land in open space development in "trade off"	4	1	5
More conservation considerations in zoning and site regulations	2	0	2
Reduce full parking to preserve green space	1	1	2
Regulation of boat traffic on river	1	1	2
ENFORCEMENT OF REGULATIONS AND APPROVED PLANS			
Third party monitor developer work and provide weekly reports - paid for by developer	5	0	5
Better enforcement of approved plans, additional town personnel to oversee development	6	0	6
Land owner education and enforcement post development	0	0	0
Monitor conservation easements - Ensure adequate enforcement of easement by professionals or town personnel	1	0	1
CONSERVATION COMMISSION SERVICES / RESOURCES			
Create a volunteer land “ambassadorship”, walks, tours, promote education, have conservation land maps	6	2	8
Map integrating conservation lands with critical resources	0	0	0
Corps of volunteers for trail and river maintenance	8	1	9
Raise current use penalty - penalty fees to go to conservation	7	1	8
Form partnerships with state and federal agencies to write and obtain grant funds	5	0	5
Create new conservation/preservation Town Department	0	0	0
Funding to update land use study, cost of funding community services.	0	0	0
EDUCATION			
Harness student involvement to develop curriculum	10	2	12
Education on how to put private land into conservation while retaining "control"	5	0	5
Identify and protect important vistas-- wetlands, upland, barns, etc.	4	1	5
Conservation Commission to create education programs about wildlife in town (Link town web site with NHF&G)	2	0	2
River education center and conservation, archeology, promote Alewife festival	1	0	1
Implement recommendations of American Independence Byway	1	0	1