

**Town of
Goffstown,
New Hampshire**

Open Space Conservation Plan

Prepared by

**Goffstown Conservation Commission
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Table of contents

INTRODUCTION.....	7
CHARTER	7
OVERVIEW OF THE PLAN.....	7
FOUNDATIONS OF THE OPEN SPACE PLAN.....	9
DEFINITION OF OPEN SPACE	9
GENERAL GOALS OF THE OPEN SPACE CONSERVATION PLAN	9
GUIDING PRINCIPLES FOR THE OPEN SPACE CONSERVATION PLAN	10
EVALUATING THE BENEFITS OF OPEN SPACE	11
ECONOMIC IMPACTS	11
<i>Benefits.....</i>	<i>11</i>
<i>Adverse Economic Impacts.....</i>	<i>13</i>
<i>Mitigation of Adverse Economic Impacts.....</i>	<i>13</i>
ENVIRONMENTAL AND ECOLOGICAL IMPACTS.....	14
SOCIAL BENEFITS	15
CONSERVATION SUCCESSES IN GOFFSTOWN.....	15
<i>Goffstown Reservoirs.....</i>	<i>16</i>
<i>Conservation Efforts in the 1970's.....</i>	<i>16</i>
<i>Rails-to-Trails Project ("The Greenway").....</i>	<i>16</i>
IMPLEMENTING THE OPEN SPACE CONSERVATION PLAN.....	18
GOFFSTOWN OPEN SPACE COMMITTEE.....	18
PROTECTION AND FINANCE OPTIONS	18
<i>Protection Options.....</i>	<i>19</i>
Fee Simple Land Acquisition.....	19
Easements	20
Transfer of Development Rights.....	21
Development Restrictions.....	21
Option and Right of First Refusal	21
Deed Restrictions	22
MANAGEMENT OF THE CONSERVATION FUNDS.....	22
<i>Conservation Capital Reserve Fund.....</i>	<i>22</i>
<i>Land Use Change Tax Conservation Fund.....</i>	<i>23</i>
<i>Land Protection</i>	<i>23</i>
<i>Land Protection Assistance.....</i>	<i>24</i>
<i>Evaluating Potential Expenditures from the Conservation Funds</i>	<i>24</i>
OTHER POSSIBLE REVENUE SOURCES.....	25
<i>Town Forest Management Plans</i>	<i>25</i>
<i>Special Articles/Appropriations.....</i>	<i>25</i>
<i>Grants</i>	<i>26</i>
<i>Private Fund Raising.....</i>	<i>26</i>

STEWARDSHIP FUNDS	26
<i>Land Maintenance Budget</i>	27
ADMINISTRATIVE CONSERVATION MEASURES	27
<i>Town Planning</i>	27
Open Space Subdivision plans	27
Lighting Ordinance	28
Goffstown Master Plan	28
Focus on Redevelopment	28
Zoning Regulations	28
Current Use Assessment	29
<i>Regional Planning</i>	29
PROJECT ELIGIBILITY AND EVALUATION PROCESS	30
PROJECT REVIEW AND APPROVAL PROCESS	30
<i>Individual project identification</i>	30
<i>Comprehensive project inventory identification</i>	30
<i>Qualitative Review Criteria</i>	30
LAND PROTECTION CATEGORIES	31
<i>Water Resource Protection</i>	32
Aquifer Recharge Area	32
Surface Waters	32
Wetlands	33
Floodplain Preservation	33
<i>Significant Ecological Areas</i>	34
Exceptional Forest (or Plant Community)	34
Unique Areas	34
Wildlife Habitat	35
<i>Recreational Opportunity</i>	35
Town Parks & Shorelines	36
Natural Parklands	36
Trailways & Greenways	36
Waterway Access	37
<i>Distinctive Character</i>	37
Historic Preservation	37
Heritage Areas	38
Scenic Resources	38
Educational Value	39
<i>Enhancement of Open Space Lands</i>	39
Access	39
Buffer Zones	40
Consolidation and Inholdings	40
Linkage Corridors	40
<i>Preservation of Agriculture</i>	41
Productive Soils	41
Working Landscapes	41
STEWARDSHIP OF PUBLIC AND PRIVATE LANDS	43

PRIVATE LAND STEWARDSHIP	43
PUBLIC LAND STEWARDSHIP	43
<i>Management of town-owned conservation properties</i>	44
<i>Monitoring of conservation easements on private properties where the town is the easement owner</i>	45
<i>Monitoring of conservation easements required as a condition of planning board or zoning board approval</i>	46
<i>Keeping an inventory of all conserved properties including data on their conservation status and third party easement monitors</i>	46
PHYSIOGEOGRAPHY	47
GOFFSTOWN’S PHYSIOGEOGRAPHY	47
CURRENT CONSERVATION LANDS	52
GOFFSTOWN REGIONAL FEATURES AND NEEDS ANALYSIS	54
I. <i>Gorham Brook Regional Features</i>	55
Boundaries	55
Description	55
Prime Wetlands	55
Aquifer Considerations	55
Wildlife Habitat	56
Agriculture	56
Historical and Cultural Features	56
Recreational and Aesthetic Features	56
Adjacent Conservation Lands	56
Recommendations	56
II. <i>Harry Brook Regional Features</i>	57
Boundaries	57
Description	57
Prime Wetlands	57
Aquifer Considerations	57
Wildlife Habitat	57
Agriculture	58
Historical and Cultural Features	58
Recreational and Aesthetic Features	58
Adjacent Conservation Lands	58
Recommendations	59
III. <i>Black Brook Regional Features</i>	59
Boundaries	59
Description	59
Prime Wetlands	60
Aquifer Considerations	60
Wildlife Habitat	60
Agriculture	60
Historical and Cultural Features	61
Recreational and Aesthetic Features	61
Adjacent Conservation Lands	61

Recommendations.....	61
<i>IV. Bog Brook / North Mountain Regional Features.....</i>	<i>62</i>
Boundaries	62
Description.....	62
Prime Wetlands.....	62
Aquifer Considerations	62
Wildlife Habitat	62
Agriculture	63
Historical and Cultural Features	63
Recreational and Aesthetic Features	63
Adjacent Conservation Lands	63
Recommendations.....	63
<i>V. South Mountain Regional Features</i>	<i>63</i>
Boundaries	63
Description.....	64
Prime Wetlands.....	64
Aquifer Considerations	64
Wildlife Habitat	64
Agriculture	64
Historical and Cultural Features	64
Recreational and Aesthetic Features	64
Adjacent Conservation Lands	65
Recommendations.....	65
<i>VI. Mystic Brook Regional Features</i>	<i>65</i>
Boundaries	65
Description.....	65
Prime Wetlands.....	66
Aquifer Considerations	66
Wildlife Habitat	66
Agriculture	66
Historical and Cultural Features	66
Recreational and Aesthetic Features	66
Adjacent Conservation Lands	66
Recommendations.....	66
RECOMMENDED ACTIONS TO SUPPORT THE OPEN SPACE PLAN	68
GENERAL RECOMMENDATIONS.....	68
MAINTAIN A NATURAL RESOURCE INVENTORY	68
PROMOTE PUBLIC ENVIRONMENTAL AWARENESS AND EDUCATION	69
CONSERVATION PROTECTION OF TOWN-OWNED LANDS	70
APPENDIX 1: REFERENCES.....	71
DOCUMENTS:	71
ORGANIZATIONS/PROGRAMS:	71
CONSERVATION ASSOCIATIONS:	72
OTHER RESOURCES:.....	72

Introduction

Goffstown, along with the rest of Southern New Hampshire, is going through a fundamental and permanent change in its traditional land use. Instead of farming and small town industry, rural fields and woods are experiencing accelerating land conversion into single and multi-home developments. This onrush of land use conversion means that there will never again be as many planning options for our community as there are today. Concern for losing Goffstown's New England rural character prompted the establishment of a Conservation Capital Reserve Fund (RSA 35:1) in March 2003, for the purpose of protecting remaining undeveloped lands.

Charter

The purpose of this Open Space Plan is to establish guidelines that will encourage the town to use all available techniques to permanently protect targeted lands in Goffstown, preserving them for future generations in an undeveloped state. These protected lands will forever enhance the quality of life in our town by preserving natural and historic resources, wildlife habitat, recreational opportunities, traditional landscapes and scenic sites.

It is the intention of the Conservation Commission that acquisition or protection of land for the purpose of implementing this plan should be accomplished only with the cooperation of willing landowners. This plan is ambitious in its multiple goals and its impact on our landscape, with the realization that the final result will not include every goal. Its implementation will take many years.

Overview of the Plan

The definition of Open Space, for the purposes of this plan, is defined in the section ***Foundations of the Open Space Plan***. This section also includes the general goals and guiding principles behind the plan.

The justification for the plan is outlined in the section ***Evaluating the Benefits of Open Space***.

There are three sections that cover the mechanics of the plan's implementation. The section ***Implementing the Open Space Conservation Plan*** is focused on establishing an Open Space Committee to implement the plan, and offers suggestions for possible sources of funding, land protection mechanisms and administrative actions. Guidelines for selecting projects with a rational priority, free from personal bias, are proposed in the section ***Project Eligibility and Evaluation Process***. Once a project is completed, there is an ongoing stewardship responsibility which is discussed in ***Stewardship of Public and Private Lands***.

An important part of the document is an overview of the remaining resources in Goffstown. ***Goffstown Resource Summary*** presents a brief outline of the towns natural features. It then divides the town into six regions and discusses the specific features worthy of protection within each region. The final decision of which projects to pursue will be made by the Open Space Committee. The intent of this section is not to supersede that committee, but to provide an initial analysis to help the committee begin its work.

Other suggestions to facilitate the plan are discussed in the final section, ***Recommended Actions to Support the Open Space Plan***.



Foundations of the Open Space Plan

Definition of Open Space

Open space is defined as land that is not intensively developed for residential, commercial, industrial or institutional use. Open space can be publicly or privately owned. It includes agricultural and forest land, undeveloped shorelines, undeveloped scenic lands, public parks and preserves. It also includes water bodies such as lakes, ponds, streams and wetlands. When a parcel of land is very small, whether the land is defined as open space depends on its surroundings. A vacant urban lot or narrow pathway for walking is open space when developed areas surround it. And while not strictly open space, this Plan also discusses cultural and historic resources, which, along with open space, are part of the heritage of Goffstown.

General Goals of the Open Space Conservation Plan

The Open Space Conservation Plan adopts the following goals for conservation of open space and cultural resources in Goffstown.

- Protect the quality of surface and underground drinking water supplies.
- Protect the quality of lakes, streams and wetlands needed to sustain aquatic ecosystems and water-based recreation.
- Provide high quality outdoor recreation opportunities, on both land and water, accessible to all Goffstown citizens, regardless of where they live, their financial status, or their physical abilities.
- Protect and enhance those scenic, historic and cultural resources which are readily identifiable as valued parts of the common heritage of Goffstown's citizens.
- Protect habitat for the diversity of plant and animal species to ensure the protection of healthy, viable and sustainable ecosystems, as well as the conservation and preservation of biological diversity within the town.
- Protect habitats that sustain the traditional pastimes of hunting, fishing, and viewing fish and wildlife.
- Protect in-town open spaces for residents of more densely developed areas.

- Maintain the critical natural resource based industries of farming, wood products, and tourism.
- Provide places for education and research on ecological, environmental and appropriate cultural resources to provide a better understanding of the systems from which they derive.
- Preserve open space, particularly forest lands, for the protection and enhancement of air quality.

Guiding Principles for the Open Space Conservation Plan

The Open Space Conservation Plan is built upon the following guiding principles and statements of responsibility.

- The Town should work in partnership with private landowners and not-for-profit conservation organizations to establish and achieve land conservation goals.
- There can be multiple strategies for conserving open space and cultural resources. The key to the success of this Plan is fitting the appropriate strategy to the resource.
- Given limited public and private dollars and overall economic concerns, it is essential to establish clear priorities for town action to conserve specific open space parcels and cultural resources.
- Such priorities ought to be established through the combination of objective measurements of land conservation needs, project eligibility, and broad based citizen opinion.
- In pursuing open space conservation goals, the Town must deal fairly and openly with property owners, all organizations involved in the transactions, and the citizens who have entrusted the Town with their tax dollars.
- When proposals are made, the plan should define costs of implementation and propose methods for meeting those costs.
- When conveying land for public purposes, the cost of adequate management and stewardship must be taken into account.

Evaluating the benefits of open space

When asked, most citizens state that they favor preservation of open space, and that such preservation is beneficial to the town. However, to identify and select appropriate and cost-effective conservation strategies we need more than a general impression. Qualifying and quantifying the benefits, and potential impacts, is not always easy. Nonetheless, this plan attempts to do both.

Economic Impacts

Benefits

Benefits of open space conservation include the following.

- A number of recent studies have demonstrated that undeveloped open space, including forest and agricultural land, generates more in real property tax revenue than it requires in municipal services – representing a net economic benefit to local governments (See references [D1], [D2], and [D3] in Appendix 1). New residential development in previously undeveloped areas, on the other hand, usually results in a net loss to municipal finances. In other words, the costs for local services (schools, police and fire, roads, solid waste and sewer treatment, etc.) outweigh the increased tax revenue produced by new residential development. Targeting development through careful land use planning and redevelopment of areas already served by existing infrastructure and thereby protecting open space areas, makes economic sense for local governments and helps revitalize urban areas.
- Parks and open space can enhance the property values of nearby residences.
- Open land, scenic and historic sites and the availability of recreation are important to New Hampshire attributes frequently cited among the reasons for choosing our state for business expansion. We need to manage our growth in a manner that does not destroy the resources attracting the investments.
- Open land, scenic and historic sites and the availability of recreation are what make tourism New Hampshire's largest industry. With the quality of Goffstown's natural and cultural resources, and our proximity to the population center of Manchester, Goffstown could reap a substantial tourism benefit with proper planning and management. If the town loses its open spaces to housing subdivisions, we will lose our tourism

attraction.

- Although the importance of traditional agriculture has declined in New England, there is a positive resurgence in farmer's markets and pick-your-own produce operations. Preserving agricultural lands in Goffstown will keep that possibility alive, and work in a synergistic fashion with the tourism potential of the town.
- Timber harvesting on forested lands generates additional revenue to landowners, public and private alike. Harvests on private lands generate tax revenues through the Timber Harvest Tax.
- Timber resource quality in New Hampshire is generally high, compared with other states and regions. New Hampshire grows top-quality hardwoods in high demand globally, such as black cherry, sugar maple, red oak, white oaks, walnuts and white ash; and high quality straight white pines. This demand presents great economic potentials for land owners and managers, timber harvesters and wood products manufacturers.
- Conserving open land is the least expensive approach to environmental protection. For example, protecting our high quality sand aquifer along the Piscataquog River from destructive development practices avoids the necessity of constructing expensive treatment facilities.
- Conserving open space can help shape growth in a way that saves money on public services. Clustered development can reduce the costs of utilities, transportation and public works construction and maintenance. Protected open space requires fewer community-supplied services while providing recreational benefits to the community.
- Open space and trees in urban environments can significantly reduce residential and commercial heating and cooling costs, reduce air pollution, lower consumption of non-renewable fossil fuels, and make our town more livable at the same time. Air quality in New Hampshire already suffers, in large part from external sources. Without our extensive forest cover, the situation would be far worse, as would the costs of remediation.
- The protection of open space is vital to conserving and sustaining fish, wildlife and plant species, as well as the overall biological diversity of the town and local regions. The economic value associated with protecting open space for the purposes of conserving and sustaining the diversity and richness of the state's fauna and flora species is staggering. Many critical economic goods and services provided by the preservation of open space and the species and habitats contained within serve as an important source of food, fuel, fiber and medicine. Other critical economic services or benefits associated with the conservation and preservation of

these species through open space protection include pollination, recycling, nitrogen fixation and homeostatic regulation. Biological and ecological research continues to find benefits our ancestors never could have imagined, and it is likely that trend will continue.

Adverse Economic Impacts

Few would argue that privately owned farm or forestland has adverse economic impacts, but from some perspectives the protection of open space may have negative impacts. Most of the negative impacts relate to economics.

- Lands owned by government entities or non-profit organizations are taken off the property tax roll. Similarly, farm and forest tax laws may shift taxes from those lands to other properties or landowners in the community.
- Conservation acquisition precludes development of that parcel, and may, through limitations on resource availability, limit economic development in the affected or nearby communities. This impact may be more significant in municipalities with a high percentage of publicly owned land or in those rural communities with fewer residents to share the tax burden.
- While the purchase of development right easements on farms or forest land may help maintain these economic uses in the short run, easements will preclude economic uses of the land that are inconsistent with farming or forestry.
- Public acquisition of land or land rights involves expenditure of public funds, raised either through taxes or sale of long-term bonds.
- Additional public acquisition requires additional expenditures for management and stewardship, increasing the permanent burden on the taxpayers.
- Creation of preserves with scenic value may raise land costs in adjacent areas.

Mitigation of Adverse Economic Impacts

The adverse economic impacts from open space protection can be addressed and minimized during the project selection and evaluation process and in the implementation strategies as listed below.

- The use of conservation easements, rather than fee acquisition of the property title, can be designed to minimize the negative economic impacts of land conservation on resource-dependent industries.
- Property owners often donate conservation easements. They can then receive economic reimbursement in the form of income tax and inheritance tax reductions, effectively shifting the tax revenue offsets away from the local government and diluting its impact.

- Programs have been designed to encourage, educate, support and motivate private landowners to practice long-term stewardship of their forests, farms and other open space. This can include outreach, technical assistance and cost sharing for conservation practices.
- Conservation of open space resources, whether through fee simple acquisition or through the use of conservation easements, can help funnel growth and economic development in areas where it is more appropriate and less costly on the overall finances of a community.

Environmental and Ecological Impacts

Healthy natural systems play an important role in environmental and ecological protection:

- Wetlands filter and process polluted water.
- Forested areas remove carbon dioxide and pollutants from the atmosphere.
- Trees and parks in urban settings reduce noise.
- Trees moderate weather extremes by lowering temperatures in the summer and blocking winds in the winter, reduce the consumption of nonrenewable fossil fuels for residential and commercial cooling and heating.
- Forests are a primary source of clean water; protecting and feeding stream headwaters. Similarly, undeveloped land protects the quality of underground water supplies and aquifer recharge areas.
- Open, undeveloped land is essential to retain a diversity of plant and animal species. These habitats benefit both local species and migratory species. Ecosystems elsewhere may depend upon protecting habitat here in Goffstown.
- Certain species depend on habitats that are rapidly disappearing as many open lands revert to forests and these forests mature. Retaining the ability to manage such lands, to sustain critical cover types and habitats, is essential for many species of birds, animals and plants.
- Open space systems such as wetlands and shorelines buffer settled areas from inland and coastal flooding.

Social Benefits

Open space, historic and cultural sites form the heritage of the Town. These places have substantial social benefits to all Goffstown residents:

- Parks and preserves can provide the opportunity for escape and relaxation for everyone in Goffstown. Outdoor experiences are an important and inexpensive form of relaxation.
- Open space, in and of itself, provides perceptible benefits to our society. It provides the visual and sensory space that people need to feel comfortable, providing quiet buffers from roads, traffic, buildings or other human-made structures. These benefits are universally regarded as features that enhance the quality of life.
- Any society needs food, shelter and a host of manufactured products in order to survive. Goffstown's productive open spaces - farmlands and forests – can provide sustainable food and wood products that contribute to the needs of present and future generations.
- Parks are sites for athletic recreation, which is important for childhood development. Goffstown's currently has very limited opportunities for court and field sports, or even passive recreational facilities, north of the Piscataquog River.
- Goffstown's natural and historic landmarks are our common heritage; they provide common ground, bind us together, give us a sense of belonging, teach us about the past, and are the foundation for the future. If we can succeed in making parks and other public lands accessible to all Goffstown residents, they can provide meeting places which bridge differences among the residents and across generations.
- Open spaces, including forests, fields, ponds, wetlands, historic sites and heritage areas, all offer unique opportunities for education of people about our environment and our history.

Conservation Successes in Goffstown

Concerned citizens and town officials have previously recognized conservation needs and opportunities, even when development pressures were comparatively minor when contrasted to the current state. These actions are now proven to be extremely effective, and illustrate how conservation pays large dividends back to society. Goffstown citizens enjoy a higher quality of life, health and safety thanks to the vision of those who preceded us. And thanks to the generous contributions of individual and collective contributions.

Goffstown Reservoirs

In 1934, the Goffstown Village fire precinct purchased approximately 90 acres on North Uncanoonuc Mountain, which includes the summit. A private conservation partner, the Society for the Protection of New Hampshire Forests, contributed half of the \$1000 purchase price.

In 1938, Frank Parker donated 250 acres on the east side of Mountain Road to the Village Fire Precinct. In 1953, Annie S. Parker donated funds to the Village Water Precinct (successor to the Fire Precinct) to purchase an additional adjacent 190 acres. These acquisitions were followed by 2 subsequent purchases, approximately 20 acres in 1970 and 15.6 acres in 1991. These acquisitions have conserved nearly 590 acres of watershed above the Goffstown Reservoirs, protecting an important public water source. Much of this land is also open to the public for low-impact outdoor recreation.

Conservation Efforts in the 1970's

Significant efforts were made by the Town's citizens during the 1970s to increase conservation lands in the Uncanoonucs. In 1973, voters decided to put \$5000 into a Conservation Capital Reserve fund, and continued to do so for four additional years. In 1978, the Town appropriated an additional \$25,000 and purchased 110 acres on South Uncanoonuc Mountain – the remaining tracts of the Uncanoonuc Incline Railway Company. Other smaller lots in the vicinity were donated by various citizens.

Also, in 1977, the Town voted to purchase 55 acres at the Glen Lake waterfront, with much of the funding coming from a matching Federal grant.

In 1979, Carl and Ada Barton donated 137 acres on the southwest side of North Uncanoonuc to the town. Thanks to all these efforts much of the Uncanoonucs is open land today, and is the Town's most popular outdoor recreation site.

Rails-to-Trails Project ("The Greenway")

In March of 2004, the Goffstown Board of Selectmen announced an agreement to acquire the 5.9 mile B&M railroad corridor running from the Manchester line to Goffstown village. After many years of effort, this was the first step in creating a Goffstown rail-trail. In May, the Piscataquog River Local Advisory Committee funded a design charrette for the trail, popularly known as the Greenway. Both issues and opportunities were identified along the trail corridor. In the past year, three trail cleanup sessions have been held. The recent Route 114/114A Corridor Management Plan identifies the rail-trail as an important facility for the town.

The primary goal for the trail is to provide a non-motorized alternative transportation and recreation path connecting the Pinardville, Grasmere, and

village areas of Goffstown. This will provide many possibilities to improve public safety and health. Access to public natural areas along the trail will create more awareness and opportunity for their protection. Businesses along the trail will benefit from trail users. In the longer term, there may be secondary trails branching off the Greenway to extend trail benefits even further.



Implementing the Open Space Conservation Plan

Goffstown Open Space Committee

An open space committee is appointed by and working under the auspices of the Conservation Commission. Its purpose is to establish criteria to identify the most important valued resources, then to identify land for possible protection that include parcels likely to contain significant portions of the important resources. After evaluating those parcels, the Committee recommends actions to acquire or protect, and manage them.

According to RSA 41:14-a, acquisition of land, buildings, easements and/or land rights for conservation purposes requires approval of the Board of Selectmen. Thus, the Open Space Committee will recommend action to the Conservation Commission who in turn will make recommendations to the Board of Selectmen.

This open space committee ideally should be comprised of seven interested community citizens, with at least one being a member of the Conservation Commission. Participation of all residents is encouraged. The Open Space Committee meetings will be noticed and open to the public.

Protection and Finance Options

Just as motivation for open space preservation varies from person to person and circumstance-to-circumstance, protection techniques vary to meet differing needs. Landowners may give or sell part or all of their interest in property. By means of easements, they may restrict some uses of a piece of land for a stated time span or in perpetuity. In some situations, development rights may be transferred from one site to another distant site owned by another party. The town can often zone or regulate to meet public needs. State and local tax codes may also assist in meeting open space protection objectives. In Goffstown, there is the additional option for purchase or assistance, provided by the establishment of the Conservation Capital Reserve Fund (March, 2003.)

The most effective way to meet the objectives of this open space plan will be to utilize a variety of protection techniques available to private landowners, non-profit organizations and the town. The techniques most commonly used in New Hampshire and elsewhere are described below.

Protection Options

Fee Simple Land Acquisition

Real estate is more than a piece of property. It carries with it a complex bundle of rights, including the right to improve the property, to mine the property, to take water from the property, to graze animals, to prevent others from visiting the property, and to simply enjoy the property, to name a few examples. The bundle of rights and responsibilities that comprise land ownership may remain intact or may be allocated among a number of parties.

- Outright purchase - Often the first step in open space protection is for the town or conservation organization to become the owner of the land. This is a relatively simple open space protection technique and is also the most secure, as control of the property and how it is used is the responsibility of the owner. Acquisition of fee simple means a person, or group of people, acquires the complete bundle of rights of the property. Purchase may be necessary when the land is threatened and the landowner is not willing or able to give the property to an entity interested in land conservation.
- Donation may provide the landowner with significant income tax benefits because the value of the real estate donated to a governmental or non-profit conservation organization is recognized in the tax code as a charitable contribution. Part of or all of the value of the land may be tax-deductible.
- Bargain sale purchase at a less-than-market-value price is a financially attractive variant of an outright purchase. It benefits the buyer (the town or conservation organization) because the cost of purchase is less. It can also benefit the landowner because the difference between the bargain sale price and the fair market value may be considered a charitable contribution and therefore qualify as an income tax deduction.
- Donations for resale - Landowners may receive charitable gift tax deductions for donations of land having little conservation value if they authorize the town to sell the property and use the income for other land acquisition projects. The town may sell the land with or without conservation restrictions, but must first obtain town meeting approval to dispose of the land.
- Acquisition by tax default - Towns often acquire lands on which taxes have not been paid. Lands acquired by a town by tax default may be retained by the town for public purposes, including conservation, if the action is approved by town meeting vote.

Easements

Landowners interested in conserving their property, but retaining ownership, often utilize easements. A town might purchase a partial interest in the land, such as the right of public access. Acquisition of partial interests in land may occur by purchase, donation, or bargain sale. The acquisition of partial interests in land is usually less costly than the acquisition of the land fee simple, both in the short term and the long term. The long-term municipal costs include the responsibility for monitoring and enforcement in the event of an easement violation. Other considerations include the relative security that comes with ownership, the loss of taxes and the stewardship expenses necessary for managing the land.

In addition to the benefit of protecting the land, a landowner may be eligible for income tax benefits from the donation of a conservation easement to a municipality or conservation organization.

- **Conservation Easement** - Specifying the rights that will be separated from the property in a conservation easement deed, and selling or giving the deed to a conservation group or town is a common method of land protection. Many conservation easements, for example, restrict further subdivision of the property, and residential or commercial development. Commonly, easements may also limit excavation and major disturbance of the natural ground surface. Some conservation easements reserve particular rights for present and future owners such as the right to erect agricultural structures or to allow additions on existing residential structures. Some conservation easements cover only a portion of a lot, leaving the remainder available for development according to the land use controls in effect in the community. Some easements allow use by the public. Many limit it (for example, to foot travel only), and some curtail public use completely. There is no set formula for writing a conservation easement. Every easement is written to reflect the preferences of the landowner and the holder of the easement and is perpetual and runs with the land. Conservation easements encourage good management practices of the land. The landowner may realize tax benefits under IRS as a gift or under inheritance tax laws. Acquisition of a conservation easement by the town or conservation group means receiving a less than fee simple interest in property. Acquisition of a conservation easement is also called acquisition of development rights, because in most cases, conservation easements convey development rights from the owner to another party. In this instance, the development right is extinguished forever.
- **Trail Easement** - Another type of partial interest that is commonly conveyed is a trail easement. Sometimes the Planning Board requests that a trail easement be given to the town to improve the trail system in the process of reviewing a major subdivision or site plan application.

- **Preservation Easements** - A preservation easement is an agreement between an historic property owner and a government agency or preservation organization that gives the latter the right to review any proposed changes to the structure. In return for giving an easement, a property owner may be eligible to make a deduction from his taxes.
- **Right-of-Way Easements** - Right-of-way agreements are appropriate where public access to only a portion of property is desired. Such an agreement may be sold or donated by the landowner and is usually limited to a designated period of time.

Transfer of Development Rights

A market for development rights can be established by creation of a transfer of development rights program. Typically, such a program is implemented in a town's zoning ordinance. Through the Master Plan and zoning processes, sending zones (areas to be less densely developed or conserved by sending some or all of their development rights away) are identified as important parts of the open space system. Receiving zones (areas to be more densely developed) must be designated. Purchasers of development rights can use the transferred development rights in the receiving zones. With a transfer of development rights program the market theoretically creates the open space system by removing the development rights from lands that should be left as open space and placing development in other specified locations.

In order to sell the development rights from land in a sending zone, an instrument similar to a conservation easement is executed. The transfer of development rights is carefully worked out when the system is set up by local ordinance, and subsequently monitored to keep track of the lands from which development rights have been sold.

Development Restrictions

This includes any open space designation or other development restriction which is part of a cluster development, innovative land use controls, or which is lawfully imposed by a local land use board as a condition of subdivision, site plan, variance or other type of approval as defined in RSA 477:45,1.

Option and Right of First Refusal

In cases when there is a parcel of land that should be added to the open space system, but immediate purchase is not possible, an option or a right of first refusal are interim measures that could be arranged with the owner. They guarantee that there will be an opportunity to respond to the owner when the property is available for sale.

An option establishes a price at which the land could be purchased at any point during a specified period of time in the future. It gains time for raising money for the fee simple purchase, for completion of applications for grant assistance, for obtaining town appropriations, or whatever else is necessary to complete the purchase.

A right of first refusal is less specific. It guarantees a future opportunity to purchase the land at a price equal to a bona fide offer from another party. It buys time, but does not establish a fixed price or date of purchase.

Options and rights of first refusal provide legal ways for eventual property ownership while providing time for organization and assembly of financial resources. In cases in which the town is interested in purchase, neither obligates the town to making the purchase, but the town should not employ these options unless there is a high probability it will exercise the option. Options and rights of first refusal can be obtained at no cost, but are typically sold by the landowner. These mechanisms are appropriate for key parcels threatened by immediate development or parcels with no definite development plans yet, but which would represent significant resource loss if sold.

Deed Restrictions

An individual landowner may choose to attach deed restrictions to his or her property prohibiting certain types of development. The restrictions "go with" the property upon sale, binding any subsequent owner. Restrictions apply in perpetuity. Deed restrictions may be nullified if a court finds that conditions have changed. The primary drawback of deed restrictions is the absence of a clearly identified party responsible for monitoring and enforcing the restrictions.

Management of the Conservation Funds

Conservation Capital Reserve Fund

At the 2003 Town Meeting, Goffstown voters created the Conservation Capital Reserve Fund, hereafter referred to as the "Conservation Fund". Money in the Conservation Fund may be expended by Board of Selectmen at the request of the Conservation Commission for any purpose authorized by the state of New Hampshire in by RSA 36-A:5.1. The Memorandum of Understanding between the Conservation Commission and Board of Selectmen imposes limitations. Typically, these funds will be used by the conservation commission for land acquisition and the costs associated with donation, purchase and management of land, as well as support of joint projects with land trusts or other towns to permanently protect conservation lands. This section of the Open Space Plan

sets forth guidelines for management of Goffstown's Conservation Fund, including implementation of this open space plan.

At present the fund consists of \$240,000. Voters approved \$80,000 in each of the last three town meetings in 2003, 2004 and 2005. If the Town continues to support the Conservation Fund over the next five years, a total of \$560,000 could be available for conservation projects over the next 6 years.

Land Use Change Tax Conservation Fund

In March 2005 Goffstown voters approved depositing 50% of all revenues collected from the Land Use Change Tax into a separate conservation fund to be used for conservation land and easement acquisition and associated costs. Under RSA 79-A:25, this tax is imposed when land that has been in current use no longer qualifies for current use tax treatment. State law authorizes a municipality to vote to deposit all or a portion of this tax in a conservation fund when it is collected. Over 50% of the towns in New Hampshire have chosen to allocate these tax receipts to their conservation funds in varying amounts, ranging from 10% to 100% of receipts.

Land Protection

The major portion of both conservation funds should be available for supporting land protection initiatives that have high resource value. In every case where the fund will be used, the Commission should seek to leverage the fund's assets by working with other conservation organizations to complete the project. The PWA, Five Rivers Land Conservancy and Society for the Protection of New Hampshire Forests are all active land trusts that may have an interest in participating in land protection in Goffstown. Non-land trust conservation partners include the Audubon Society of New Hampshire, the Connecticut River Joint Commissions, The Nature Conservancy, New England Wildflower Society, NH Cooperative Extension and NH Coverts Project.

In the case where a purchase of a conservation easement is more appropriate than outright acquisition, the costs and responsibilities of long-term monitoring enforcement must be considered. One option is for the town to hold the easement; another is for the town to seek a conservation organization or land trust to hold the easement. Yet, another is for the town to hold the easement, but seek a conservation organization to hold a back up interest. In any case, public funding of a conservation easement will probably necessitate, at a minimum, some limited public access to a portion of the easement area.

Depending on the projects that are developed or come to the attention of the Conservation Commission, the Commission should decide in any given year whether to spend the entire amount on a single project or to divide this money for land protection among many projects. To make the limited Conservation Fund

dollars stretch further, there should be an attempt to leverage support from neighbors, conservation partners, other government agencies, foundations and/or the general public. This match could also take the form of a bargain sale from the landowner.

Land Protection Assistance

One excellent way for open space to be protected is for a landowner to voluntarily donate a conservation easement to a land trust or governmental entity. Landowners who have decided to generously give up development rights on their property are often surprised and dismayed by the costs associated with donation of a conservation easement.

These may include a property survey (if one does not already exist), a title search, legal counsel for preparation and/or review of the easement deed, stewardship fund fee, appraisal (if the easement is to count as a charitable contribution), and often land planning and/or financial planning assistance. Although the tax savings to the landowner resulting from the donation of a conservation easement typically exceed the associated costs, even the most willing and generous landowner can experience "sticker shock".

In order to encourage voluntary donations, the Conservation Commission should make funds available annually to assist property owners with defraying the costs of easement donation (except for the landowner's appraisal and professional counsel fees solely for the landowner's tax deduction purposes), whether to the town, a land trust or to another governmental entity. The terms of the conservation easement must meet clear professional writing and legal standards and be agreeable to the Conservation Commission in order for the project to qualify for these funds.

Evaluating Potential Expenditures from the Conservation Funds

In its approach to spending limited conservation dollars, the Conservation Commission must be at once opportunistic and flexible, but also guided by the lands, objectives and criteria identified in this plan. Having established a structure for the open space network, it is a goal of the Commission to have that network become reality. Thus, the lands described in this plan are considered to be initial priorities for protection.

However, should specific properties outside those mentioned in this plan, but exhibiting outstanding open space benefits, come to the attention of the Commission, they should be considered for inclusion as a rational part of the open space system. For example, the availability of an undeveloped lot that could become an addition to the Village Water Precinct whose location is not specifically cited in the plan may be an excellent addition to open space holdings in Goffstown. Likewise, a neighboring community might run a trail to the

Goffstown town line. A specific piece of property in Goffstown may be necessary to link the trail to Goffstown trails. This type of opportunistic purchase would provide clear open space benefits to Goffstown residents.

For every property whose protection might be funded by the Conservation Funds, natural and historic resources must be identified, and an assessment of the open space benefits must be completed. The willingness of the land owner, the threat of development or disturbance of the natural systems, and the costs and price all need to be considered. These measures should be used to evaluate the benefit of conserving one piece versus another piece of property. The Open Space Conservation Committee or the Conservation Commission may wish to review the criteria used by other conservation organizations to further evaluate high priority areas.

This management plan outlines a potential for conservation that far exceeds any revenue sources currently allocated. It is clear that other revenue sources must be identified to implement any significant portion of this plan. Public fund raising to capitalize a long-term land protection fund, or a bond issue, are two potential sources. Establishment of new sources will be a measure of the town's commitment to the open spaces that residents have identified.

Other Possible Revenue Sources

Town Forest Management Plans

Management plans could be developed for some of the town-owned forested tracts that allow timber harvests. Such a plan would recommend a timetable for timber harvest for each tract. Using estimated timber yields from these plans, harvest values could be estimated. Goffstown could investigate how well such plans have worked in neighboring towns. Currently, New Boston has a Forestry Commission and New Boston, Dunbarton and Weare have town forests.

Special Articles/Appropriations

Many towns have approved special warrant articles for raising or designating funds towards purchasing parcels and/or conservation easements. Such articles may be general set-asides for future purchases, or targeted for a specific property. They can be financed directly from existing town budgets, or through the town's bonding authority.

Municipal bonds of 10 to 30-year maturities can be a cost-effective means of financing open space acquisitions, easements, or other conservation goals. Purchasing parcels or easements at current prices protects against future

inflationary or developmental pricing pressures, while a municipal bond spreads out the fiscal impact of purchases over the life of the bond.

Once a parcel is identified as meeting a criterion qualifying it as desirable for town conservation purposes, and a price is determined by market appraisal or other means, it can then be placed on a town warrant for voter approval. The warrant typically authorizes town Selectmen to expend funds or issue a municipal bond designated expressly towards the purchase of the parcel or easement.

Grants

There are a variety of grant sources including, Federal, State, land trusts and other private sources that could serve as primary or matching grant sources. The Open Space Committee should identify possible sources and pursue grants when possible.

Private Fund Raising

Interested individuals, corporations, and other organizations can sponsor fund-raising events or programs for conservation purposes. Such efforts may directly benefit town conservation funding, or realize other benefits that have an indirect yet positive impact on conservation goals.

Stewardship Funds

With conservation easements, of which the town now holds 14 (439 Acres), comes the responsibility to monitor them and to enforce their terms. When an easement violation occurs, consultants may be needed to assist in litigating and remediation of damages. Most land trusts have stewardship funds which support the costs incurred in the event of an easement violation. The Upper Valley Land Trust sets its one-time stewardship fee based on a calculation of the complexity of the easement and estimated future costs, starting with a minimum of \$1800. Many land trusts use their stewardship accounts to support easement-monitoring activities. The Piscataquog Watershed Association (PWA) estimates a minimum of \$1000 per easement increasing as needed if the easement is complicated or has a potential for abuse.

A stewardship fund should be established as a restricted fund within the Conservation Fund, with the recognition that the town's General Fund will also continue to be used for these expenses. Interest from the stewardship fund should flow back into the Conservation Fund for land protection and other projects. Easement monitoring should be done by town staff, paid for out of operations, and volunteers.

Every time an easement is accepted, a stewardship fee should be added to the stewardship fund. This fee could be covered by the Conservation Fund, by donations, or by the easement donor. The amount of the fee should be reassessed periodically.

Land Maintenance Budget

Money should be allocated per year from the Conservation Fund for development of a volunteer stewardship program, trail signs, maps, and other items for managing and publicizing use of town-owned land. (Management planning, hazard tree removal, and trail work, including establishment of new trails, should continue to be funded through the consultant line item in the Conservation Commission's general fund budget.) Volunteer training in easement monitoring and trail and open space maintenance should be offered on a regular basis.

Administrative Conservation Measures

Town Planning

Many of the actions and ordinances adopted by the Planning Board have direct impacts on the preservation of open space and rural character. The Open Space Committee and Conservation Commission need to work closely with the Planning Board to explain our goals and plans, and to listen to the Planning Board to learn more about the other needs of the community. There are many different aspects of town planning that may directly impact or complement the Open Space Conservation Plan, and a sampling of them is listed below.

Open Space Subdivision plans

The Goffstown voters and Planning Board have already adopted an Open Space Subdivision ordinance, which attempts to preserve open spaces within any new subdivision plans. These spaces may protect important small-scale features on their own, but they offer minimal protection for larger ecosystem or wildlife habitats. They also tend to be focused for the use of subdivision residents, and do not enhance recreational opportunities for the general public. However, they may serve a greater benefit if they can be strategically aligned with other conservation lands. They may serve as buffer zones to other conservation areas. Linked together with other protected lands, they may provide wildlife habitat corridors, continuous plant habitats or linear recreational opportunities such as hiking or skiing trails.

Lighting Ordinance

Goffstown voters have also approved a lighting ordinance designed to minimize light pollution effects on the night skies. Seeing the stars in the night sky provides aesthetic beauty and recreational opportunities for astronomical observations. It can also be important for the many nocturnal species that require appropriate natural lighting levels for foraging, hunting and mating activities.

Goffstown Master Plan

The Master Plan helps direct the long term goals and actions of the Planning Board. The Open Space Committee and Conservation Commission should seek to align this Open Space Conservation Plan with the Goffstown Master Plan.

Focus on Redevelopment

Whenever possible, redevelopment plans should be encouraged as a means of minimizing the reduction of open space. Vacant commercial buildings should be revitalized. Mixed uses should be allowed in already developed village areas, if they are done in a manner that preserves the economic activities in the town and does not unduly restrict commercial enterprises.

Zoning Regulations

The establishment of regulations to maintain open space must be reasonably related to the public health, safety and welfare. Otherwise it might be deemed a taking of property without just compensation. Nevertheless, there are a number of ways that land use regulations can successfully contribute to an open space system. Land use regulations, particularly zoning, can be designed to keep open space free from development.

Regulations such as those contained in Section 13.3 (Wetlands Conservation District) of the Zoning Ordinance (wetland and water body protection) effectively restrict development from impacting water resources in a major way, but at times, with review, do allow some development in the wetland and the surrounding buffer. Regulation of lot coverage and setbacks ensure that there is a mix of structures and open space on a lot.

Planned residential development and open space development regulations are designed to encourage a development plan which sets aside meaningful open space, typically for the use by the residents of the development. The key here is ensuring that the open space also contributes in a logical way to the open space system in town, has some relationship with the town-wide network, and provides some public open space benefit.

Regulatory approaches do not take land from the tax rolls and only require a commitment from the town to administer and enforce the provisions of the land use controls. However, regulatory approaches to open space protection are only a Town Meeting vote away from being abolished or changed to become less (or perhaps more) effective.

Current Use Assessment

Current use assessment is designed to tax land at its "current use" value rather than at its "highest and best use" value. With reduced property tax under current use assessment, landowners may be better able to continue to own their land. As specified in RSA 79-A, current use assessment provides for reduced property assessments on field, farm, forest and wetland parcels which are at least ten acres in size; nature preserves; active farmland generating annual revenues of at least a specific amount; and recreation land of any size. Once in the program, the land cannot be developed without the owner being assessed a land use change tax equivalent to 10% of the fair market value of the land taken out of current use.

While current use does not prevent a property from being developed, it provides an incentive to keep the land undeveloped, since annual taxes are lower.

Regional Planning

The Goffstown Open Space Conservation Plan should be presented to larger regional conservation groups to find where there might be alignments with the goals of those groups. Cooperative projects may present opportunities to share the workload and expenses of the project, which would be a great benefit to the Town. Two organizations already actively engaged in Goffstown are the Piscataquog Watershed Association and the Society for the Preservation of New Hampshire Forests. Other organizations that might be interested in specific projects include the Nature Conservancy, the Trust for Public Lands and the Audubon Society of New Hampshire.



Project Eligibility and Evaluation Process

Project Review and Approval Process

Projects will be nominated, evaluated and approved based on objective criteria. By following a specified approval process, we will assure that projects meet minimum criteria and are not biased by conflicts of interest.

To accomplish this goal, the process mechanisms are required

- to identify specific places with exceptional natural resource or recreational values which may be threatened by land use change or which could serve critical recreational needs;
- to determine the most appropriate strategy for conserving the resource values of those places;
- to evaluate the costs and benefits of individual land conservation actions;
- to establish priorities for land conservation actions given limited public resources;
- to ensure that land is worthy of public investment and clearly meets the goals of this Plan when town acquisition of land is the most appropriate strategy;
- to provide for statutory and general public input into the project evaluation process.

Individual project identification

Any individual or organization can propose a project for consideration. Any Goffstown resident or landowner may make nominations. The source of the proposal will have no impact on the assessment. All proposals will be subject to the same objective evaluation criteria.

Comprehensive project inventory identification

Projects may be proposed as the end products of regional mapping and strategic planning by town committees or regional conservation organizations. The source of the proposal will have no impact on the assessment. All proposals will be subject to the same objective evaluation criteria.

Qualitative Review Criteria

Proposed projects will be inspected, and their assets and potential will be evaluated. Comparing the project against a table of resource conservation categories will make the evaluation. Each category in the table will have a list of

attributes that defines that category. The proposed project must match 1 or more attributes to be assigned to the category. If a proposed project does not have 1 or more categories assigned to it, that project will not be considered. Proposed projects with more categories assigned will be given higher priority when choosing which project to implement.

Land Protection Categories

Open space land usage can be divided into useful and descriptive categories. These categories provide a simple reference to use in conservation needs assessment, analysis of potential conservation parcels and land management planning for conserved lands. This Plan identifies six major resource categories whose protection is a matter of concern. The purpose of these six categories and their subcategories (Table 1) is to identify all of the various types of resources that are the subject of conservation attention. Each represents a discrete resource or a discrete conservation function. Note that overlap may occur for some exceptional sites. For example, land in the exceptional forest subcategory would also fall under forest preservation, and may be important for a water resource category or recreational opportunity.

Table 1. Land Protection Categories and Subcategories

Water Resource Protection	Significant Ecological Areas	Recreational Opportunity	Distinctive Character	Enhancement of Open Space Lands	Preservation of Agriculture
Aquifer Recharge Area	Exceptional Forest	Town Parks and Shorelines	Historic Preservation	Access	Productive Soils
Surface Waters	Unique Areas	Natural Parklands	Heritage Areas	Buffer Zones	Working Landscapes
Wetlands	Wildlife Habitat	Public Hunting Rights	Scenic Resources	Consolidation and Inholdings	
Floodplain Preservation		Trailways and Greenways	Educational Value	Linkage Corridors	
		Waterway Access			

Water Resource Protection

The water supply (both private and public) for Goffstown comes from surface water reservoirs and ground water wells and the Manchester water supply (watershed - rivers, lakes). Protection of the watershed areas is critical to maintaining continued water quality and quantity. Aquifer areas with high potential for yielding sufficient water for public and private wells are easily contaminated and must be protected.

Aquifer Recharge Area

Aquifers are geologic formations of saturated, permeable materials from which significant quantities of water can be drawn through wells and springs. They are important for transmitting and storing water. Aquifer recharge projects protect either lands through which water enters the soil and moves to the water table to replenish the underlying groundwater reservoir or lands needed for wellhead protection zones, which protect water supply wells. Adequate aquifer protection measures are essential because groundwater pollution can be hard to detect. Pollution sources are often difficult to identify and treatment when possible, is very costly.

Attributes for Qualitative Review:

- Land lies within an area identified as an aquifer recharge area.
- Land has surficial drainage to an aquifer recharge area.
- Land lies within a well head protection zone of a public water system.

Surface Waters

Lakes, ponds, streams and brooks provide water supply for people, vegetation, and wildlife, and provide for abundant recreation activity. Protection of surface water from pollution is essential for maintaining water quality - surrounding buffers are essential.

Attributes for Qualitative Review:

- Land adjacent or upstream has direct runoff to water body identified as critical habitat for recreational or ecologically important species.
- Land adjacent or upstream has direct runoff to water body identified as critical habitat for species of concern as identified by the New Hampshire State Natural Heritage Program.
- Land has soils highly prone to erosion into adjacent water body, or into drainage running into the water body.

- Property contains lands that filter runoff from development before it drains into the surface water body.

Wetlands

Wetlands, including vernal ponds, are valued for their storage of flood waters; storage and absorption of soluble nutrients which would otherwise contaminate downstream surface waters; discharge of water to surface waters during periods of low precipitation; groundwater recharge; filtration of pollution; habitat for many species that depend on wetlands for all or part of their life cycle; and recreational and educational opportunities. As with surface waters, the surrounding buffers are essential to the protection of wetlands. Wetland protection contributes to the conservation of the natural resource base, wildlife habitats, scenic quality, and recreational and educational opportunities.

Attributes for Qualitative Review:

- Land is adjacent to wetland identified as a Prime Wetland.
- Wetlands on the site are vernal pools.

Floodplain Preservation

The benefits of floodplains include the following:

- floodplain soils consist of rich deposits of sediments suitable for agricultural cultivation and wild plant species
- habitat for plants and animals
- flood water storage increases groundwater recharge
- open space and scenic vistas
- shoreline erosion protection
- buffer zones protecting waterways from pollutants.
- Preventing development on floodplains also reduces significant flood hazards and the associated expenses.

Attributes for Qualitative Review:

- Land lies within the 100 year floodplain.
- Land serves as a temporary flood retention basin.

Significant Ecological Areas

A significant ecological area is characterized by the presence of sensitive plant or animal species and/or sensitive biological communities that require special management considerations or protection for the area's conservation. This category is subdivided into six subcategories: Exceptional Forest, Shoreline Protection, Unique Areas, Wetlands, Wildlife Habitat and Biodiversity.

Exceptional Forest (or Plant Community)

The subcategory of Exceptional Forest or Plant Community includes any type of plant community that is significant and requires special management for its continued existence; or habitat with the potential for the reintroduction of extirpated species. Exceptional forestlands are characterized either by old growth forest cover or by natural communities of plants that are relatively rare such as Pine Barrens, Atlantic White Cedar swamps or Blackgum swamps. Rare plants, animal and communities are defined by the New Hampshire Natural Heritage Bureau. Their imperiled status is categorized according to degree (rare, threatened, or endangered) and scope (within New Hampshire, regionally, or globally).

Attributes for Qualitative Review:

- Land contains mature timber with well-developed canopy.
- Forest is diverse and is not dominated by a single tree species.
- Forest has a rich and diverse spring ephemeral community.
- Land contains species identified by New Hampshire Natural Heritage Bureau as rare, threatened, or endangered, or as species of special concern.
- Land contains exemplar natural communities as identified by NH Natural Heritage Bureau.

Unique Areas

The Unique Area subcategory provides for the inclusion of several types of natural resources that do not neatly fit under the remaining subcategories of the "Significant Ecological Areas", but still qualify as areas of natural beauty, geological significance or some other unique characteristic.

Attributes for Qualitative Review:

- Area has features that are one of a kind for the Town of Goffstown.

- Area has features that are one of a kind for the Piscataquog watershed.
- Area has outstanding natural beauty.
- Area has unique geological features.
- Area has locally diminishing habitats, such as meadows or grasslands.

Wildlife Habitat

Wildlife Habitat conservation can fulfill different goals, depending on the features of the land. Some projects may protect habitats for wildlife species with very specific habitat needs, particularly species that are endangered, threatened or rare. Often the community structure of the habitat is itself a rare occurrence – a New Hampshire example is Pine Barrens habitat and the endangered species it supports. Other areas, such as open fields and vernal pools, have previously been common, but are rapidly being replaced by human developments. It is also important to protect good quality sites where species have been extirpated but the potential for their restoration still appears feasible, or that are important to critical life stages of specific migratory species. However, wildlife habitat also needs to be provided for common and abundant species to maintain healthy ecosystems, and to provide for wildlife related recreational opportunities.

While no single development will decimate Goffstown's wildlife, the cumulative effect of many "small" decisions over time could have far reaching negative impacts. Goffstown's landscape will only continue to support a widely diverse assortment of plants and animals by maintaining large, non-fragmented areas of varied habitat, and by protecting the corridors that connect habitat areas in Goffstown and in neighboring towns.

Attributes for Qualitative Review:

- Land has a high abundance of common wildlife species.
- Land provides a habitat role for rare, endangered or threatened species or species of special concern as identified by the New Hampshire Natural Heritage Program.
- Land has a seasonal, but critical habitat role.
- Area has a broad diversity of habitat types.
- Aspects of the area provide an enriched high quality wildlife habitat.
- Area has habitat that is rare for Goffstown or the Piscataquog Watershed.

Recreational Opportunity

Conservation lands provide public use and enjoyment of the town's outdoor environments. Outdoor recreation is highly valued in Goffstown in all seasons of the year. It takes many forms, from the solitary enjoyment of a wildflower to a

hunter tracking a deer. The benefits of this recreation range from spiritual replenishment to good health. Lands that offer personal or socially interactive recreation, or active or passive recreation, are essential elements of the open space system. Universal access should be provided at a variety of appropriate places where development of such access will not compromise the character of the area.

Town Parks & Shorelines

Urban open space resources include lands that help to alleviate significant open space shortfalls in densely populated urban areas. These include land for active and passive recreation found in urban forests, recreation areas, neighborhood playgrounds, small pocket parks and community gardens. It also includes the protection of, or access to, shorelines.

Attributes for Qualitative Review:

- Land not served by existing facilities.
- Land providing access to public waters.

Natural Parklands

Natural parklands are multi-purpose areas that preserve open space for use as passive recreation areas, environmental education, environmental research and environmental quality protection.

Attributes for Qualitative Review:

- Area has an undisturbed wilderness character, isolated from urban developments.
- Area is large enough to support trail networks.
- Area may support opportunities for public hunting.

Trailways & Greenways

The Trailways & Greenways category provides for trails and linear parks that connect open space and natural resource areas; conserve scenic and cultural resources, and accommodate a variety of recreational trail uses. A trailway may also function as an alternative transportation corridor. These corridors may also be used by some wildlife species to move between open spaces. The Town of Goffstown recognizes its responsibility to provide recreational opportunities for all types of trail users - hikers, skiers, snowshoers, people with strollers or wheelchairs, horseback riders, mountain bikers, and snowmobile riders.

Class VI roads are important recreational trailways. Class VI roads are public rights-of-way. They include all discontinued roads subject to gates and bars, or any road that has not been maintained by the town in suitable condition for travel for five successive years or more. Although towns have no duty to maintain them, Class VI roads are full public highways over which the public has a right to pass at its own risk. They often provide connections to existing trails, or other Class VI road segments.

Attributes for Qualitative Review:

- Property could extend or link hiking or walking trails.
- Property could extend or link cycling trails.
- Property could extend or link cross country ski trails.
- Property could extend or link snowmobiling trails.
- Property could extend or link horse trails.

Waterway Access

This category provides for permanent public access to streams, ponds and lakes for fishing, swimming and recreational boating. Fishermen parking areas, boat ramps, and “rights-of-way” need to be protected.

Attributes for Qualitative Review:

- Property provides access to boat launch ramp using trailers.
- Property provides dock facilities.
- Property provides access for recreational fishing from shorelines.
- Property provides access for canoe or kayak launches.

Distinctive Character

Distinctive character projects protect lands that contain cultural, natural or scenic resource values of singular quality. Historic structures and sites are the visual manifestation of a community's people, places and activity. Important cultural elements of open space are structures of traditional use (for example, stone walls, dams, barns, sugar houses), and/or land that enhances or protects an aesthetic area of significant local or regional historic interest. The four subcategories, Historic Preservation, Working Landscapes, Scenic Resources and Heritage Areas, recognize the value of these areas.

Historic Preservation

The preservation of historic places also preserves the cultural values of Goffstown and improves the quality of our daily experiences. The ability to

understand our past, by experiencing it at a historic site, provides all Goffstown citizens with an appreciation of our diverse cultural heritage and distinguishes our town as a unique place. It also has the potential, along with our natural resources, to draw tourism to our community and make a positive economic impact. And there is great esthetic value in our rural vistas of old farmhouses, barns and stone walls.

Attributes for Qualitative Review:

- Area lies within a designated Historic Conservation District.
- Area contains historic structures that are integrally linked with land, such as a historic farm.
- Area contains subtle historic features without dominant structures, such as the Pauper's Cemetery.
- Area marks the location of an historic event.

Heritage Areas

Areas both large and small can be established to recognize regions where natural features, historic events and trends combine to reveal a special character that uniquely defines the town. Examples include the historic preservation zones located in Goffstown and Grasmere villages. These areas represent important chapters of cultural development in the town's history.

Attributes for Qualitative Review:

- Area has an outstanding man-made feature.
- Area has historical significance.
- Area reflects cultural heritage through the sum of many individual features. For example, New England rural lifestyle with features like:
 - well-kept stone walls
 - covered or stone bridges
 - traditional layout of colonial farms
 - maple sugar shacks
 - historic homes and barns
 - open meadows.

Scenic Resources

Goffstown has a number of scenic roads and scenic vistas, which contribute to the town's rural character and aesthetic quality. Such areas exhibit outstanding arrangements of natural or man-made features including water features and/or

land forms and/or vegetative patterns that provide inspiration, hold interest and command attention of the viewing public. Lands that contribute to the protection of a view should be considered a high priority as well as the places from which viewing can take place

Attributes for Qualitative Review:

- Property has viewpoints of scenic vistas.
- Property is a scenic vista of natural features from other viewpoints.
- Property is a scenic vista of human rural features from other viewpoints.

Educational Value

Some areas will offer exceptional opportunities for environmental education. The possibilities are nearly as wide as the range of topics in natural sciences. For example, the sites may offer possibilities to study topics in geology, botany, zoology, ecology, astronomy, or hydrology. The two most important attributes of such a site are the presence of an easily observed feature, and safe access to the site.

Enhancement of Open Space Lands

Conservation projects are usually opportunistic, and the results are often a patchwork of protected areas. Enhancements of open space lands are undertaken to improve the administration of the lands, or to protect existing resources.

Access

Some conservation lands may be landlocked, and access acquisitions or easements may be required for public access. Lands that provide connections between trail segments, or between parcels that allow public access, are valuable to the overall open space system. These connections improve recreational opportunities and provide wildlife with routes to different populations of the same species (important for health of the population), food sources and additional habitat.

Attributes for Qualitative Review:

- Land can support parking and access to an adjacent conservation area.
- Land provides a travel corridor into a conservation area.

Buffer Zones

Buffer zones are used to protect sensitive resources from adjacent land uses that might damage the resource. Some lands provide buffers for trail and recreation corridors or waterways that protect the ecological stability and viability of an already-established park or conservation area. They also provide significant open space buffers between settlements and contribute positively to the perception of open space and rural character.

Attributes for Qualitative Review:

- Area expands the buffer zone around a prime wetland.
- Area expands the buffer zone around existing conservation lands.

Consolidation and Inholdings

Eliminating gaps in conservation protection between 2 or more parcels may preserve wildlife or recreational corridors. When a minimal size is a prerequisite for the conservation goal, consolidation may be required to preserve the functional integrity of the separated parcels. Connectivity with other adjacent open space parcels or lands under neighboring towns or land trusts is important. Regional land trusts include the Piscataquog Watershed Association, the Bedford Land Trust, the Five Rivers Conservation Trust, the Trust for Public Lands, the Society for the Protection of New Hampshire Forests, the Audubon Society of New Hampshire, and the Nature Conservancy.

Attributes for Qualitative Review:

- Area fills in a gap between two or more existing conservation regions.
- Area contributes to biodiversity initiative plans of regional organizations (PWA, SPNHF, State of NH).

Linkage Corridors

Isolated parcels of land do not always encompass enough area for wildlife species with large ranges, such as moose or black bear. Other species may have more modest ranges for individuals, but need genetic exchange with neighboring populations to maintain genetic viability. Protective corridors can connect otherwise isolated areas to meet both requirements. In some cases, the corridors may have minimal requirements (open, undeveloped land), but often important corridors require a continuity of habitat type.

Attributes for Qualitative Review:

- Land provides a corridor for wildlife between two or more conservation areas.

- Land provides a alternate corridor for wildlife that decreases dangerous motor vehicle accidents, such as collisions with moose and deer.
- Land provides a linear habitat type, such as a riparian floodplain.

Preservation of Agriculture

Productive Soils

Soil properties such as mineral composition, texture, depth, permeability, wetness, slope and susceptibility to erosion define the land's capability to grow forests, orchards, crops, or pasture grasses. Prime agricultural soils and those of statewide importance are the town's most productive soils for food production. Similarly, forest soils have been categorized for their ability to grow marketable timber. Conserving the most productive forest and agricultural soils in tracts large enough for economically viable forestry and farming is a necessary component of protecting the town's natural resource base, wildlife habitat and diversity.

Attributes for Qualitative Review:

- Land is identified by the state as a Prime Agricultural Soil.
- Land currently supports active agriculture.
- Land is currently fallow, but previously farmed.
- Land currently supports productive forestry.
- Land has characteristics that could support agriculture; has sufficient loam depth and appropriate slopes.

Working Landscapes

The cultural resources of Goffstown are not limited to historic sites; the town's working landscapes are also important. Their preservation is not only economically beneficial; it also preserves a certain atmosphere that has, in significant measure, disappeared as a result of the urbanization of our society. People who use farmlands and forests for commercial purposes are not only stewards of the land but business people who must support families and employees. Farm and forestlands have always provided multiple resource values to their owners and to the general public. In New Hampshire, prime agricultural soils are themselves scarce, valuable and vulnerable resources. Working forests are also multi-purpose lands used for hunting, fishing and other forms of recreation while protecting water and air quality. The objective of the working landscape category is to allow the transfer of conservation easements over such land so that landowners are paid (directly or by tax incentives) to limit their right to develop their land while retaining it as private property dedicated to resource use.

Attributes for Qualitative Review:

- Property currently supports a working farm.
 - Property currently supports a working orchard.
 - Property currently supports maple sugaring.
 - Property currently supports horse boarding and riding facilities.
- 

Stewardship of public and private lands

Open space will be conserved through many mechanisms, which means that many different stewardship patterns and policies need to be applied. Many of the private conservation parcels will be managed by third party land trusts and professional conservation organizations with little or no town involvement. At the other extreme, some properties may become town acquisitions, and therefore the town would assume all of the stewardship responsibilities. This document will discuss these two extreme situations, but it should be recognized that other more intermediate arrangements may be proposed, such as joint ventures between the town and conservation organizations. Any such proposal would need to be analyzed and approved by at least the Board of Selectmen, the Conservation Commission and/or the Planning Board, and may be subject to approval by other town administrative bodies.

Private Land Stewardship

Good private land stewardship cannot be mandated, but it can be nurtured through public outreach and education programs. Many private landowners are excellent stewards, and their experiences and examples could be shared with the broader community. The Open Space Committee and Conservation Commission can facilitate these exchanges by organizing meetings and connections between private and public groups, and local and regional entities. The Committee and Commission can also be a conduit to professional advice to others by providing publications and website links.

Public Land Stewardship

Town stewardship activities will fall into four major categories:

- 1) Management of town-owned conservation properties.
- 2) Monitoring of conservation easements on private properties where the town is the easement owner.
- 3) Monitoring of conservation easements required as a condition of planning board or zoning board approval.
- 4) Keeping an inventory of all conserved properties including data on their conservation status and third party easement monitors.

Management of town-owned conservation properties

When the town owns a parcel of conservation land, the town assumes the greatest level of stewardship responsibility. However, this also allows for the greatest flexibility and opportunity for utilization of the land. Management of town-owned properties requires that explicit processes must be followed and that records must be kept for public and administrative inspection. These procedures must be detailed in this, or a related document, that has been approved by town management.

The following process should be the minimum requirement for any town-owned conservation land:

- 1) The property's potential should be evaluated for possible uses. The evaluation process detailed in this document under the section *Project Eligibility and Evaluation Process*. For all future acquisitions, these procedures should be followed before the land acquisition is proposed.
- 2) Identify the primary use or uses of the property. This is a town administrative decision, and written memorandums should be obtained between the Board of Selectmen and the Conservation Commission. Other town administrative bodies should be included when the usage is related to their functions.
- 3) A management plan must be written for the property. The management plan should include the following information:
 - a. An exact identification of the parcel and its location.
 - b. A description of the parcel and its physical natural resources.
 - c. Any known information of the biological natural resources on the parcel.
 - d. Any special concerns about the property. Some examples include, but are not limited to: safety issues, fire hazards, public access, vehicular access, vandalism, potential hazardous waste sites, and abutter's concerns.
 - e. Allowed uses on the property.
 - f. Disallowed uses on the property.
 - g. Uses to be determined after further study.
 - h. Specification of who (town board, department or commission) will be responsible for stewardship and maintenance.
 - i. Schedules and budgets for any work required for development or maintenance activities.
- 4) The property must be monitored. The property must be inspected no less than once a year, and more frequently for heavily used properties or areas

of special concerns. The inspection must be documented, with all reports filed either on paper reports or in a secure database with an enforced backup policy. Property inspections should include:

- a. Establishing baseline documentation for all existing conditions when the parcel is acquired.
- b. Walking boundaries and checking for infringement.
- c. Walking trails and identifying maintenance needs.
- d. Inspection of sites of special concerns. The details of any special inspections should be part of the site's management plan.
- e. Periodic inspection of less used areas in the property may be performed less frequently, as required.

5) A public relations and education strategy should be implemented. The strategy should include:

- a. Abutters should be invited to discuss their concerns about the property, and how its use impacts them.
- b. Some combination of signs, informative kiosks, pamphlets and website information may be used to explain the uses and restrictions on conservation lands.
- c. The amount of publicity appropriate for a site needs to be determined. If the purpose of a site is to provide a refuge for endangered species or communities, it may be appropriate to provide minimal publicity. Sites with recreational uses could be publicized with newspaper articles, festival displays or by leading public hikes. It should be noted that while frequent public use increases the impacts on a site, it also provides a feedback opportunity to learn about property abuses in a timely manner. Publicity information should contain email and phone contacts to report this information.
- d. Public stewards should be recruited to help with the stewardship effort. Individuals who are regular users of a site, and care deeply about it, are good candidates. In many cases these individuals may also be abutters with easy and frequent access.

Monitoring of conservation easements on private properties where the town is the easement owner

To some extent, this is similar to monitoring town-owned properties. The primary difference is the need to establish a good relationship with the property owner. The owner and monitors should both understand the specific uses of the land specified in the easement agreement, as well as the legal requirements for easement monitoring and documentation.

Monitoring of conservation easements required as a condition of planning board or zoning board approval

As of this writing, Goffstown has upwards of 15 easements covering more than 600 acres associated with subdivision development. It is expected that this number will grow substantially as the town now mandates open space development plans with clustered housing. Monitoring these sites presents even more of a challenge than monitoring sites with voluntary easements. Often, instead of an individual owner, the land is owned by a cooperative organization including all the homeowners in the development. Each individual household needs to be informed about the conditions and requirements of the conservation easement, and some of the owners will probably be unaware of the details. Even if the original owners fully understand the easements, when the property is sold that information may not be adequately conveyed.

It is recommended that the Planning Board and Board of Selectmen form an easement monitoring committee for the stewardship of these mandated easements. This committee should be separate from the Conservation Commission and the Open Space Committee, which already have too many responsibilities. However, there should be regular and open communications between all these committees. Monitoring these easements will likely be time consuming, and may require help from the town's full-time staff for recordkeeping and correspondence.

We also recommend that the proposed easement monitoring committee should develop protocols for addressing easement violations and for periodic notification of all coop members or administrators concerning the terms of their conservation easement.

Keeping an inventory of all conserved properties including data on their conservation status and third party easement monitors

Records should be kept for all conserved lands in the town, regardless of who owns the conservation easements or stewardship responsibilities. These records are essential to understanding and assessing the town's conservation status and priorities. Records should include:

- 1) The exact identification of the parcel and its location and boundaries.
- 2) The property owner(s) and their contact data.
- 3) The easement holder and their contact data.
- 4) A copy of the easement language, and its county record reference.
- 5) Any other descriptive data about the natural resources or special concerns that is readily available.
- 6) Allowed and disallowed uses for the property.

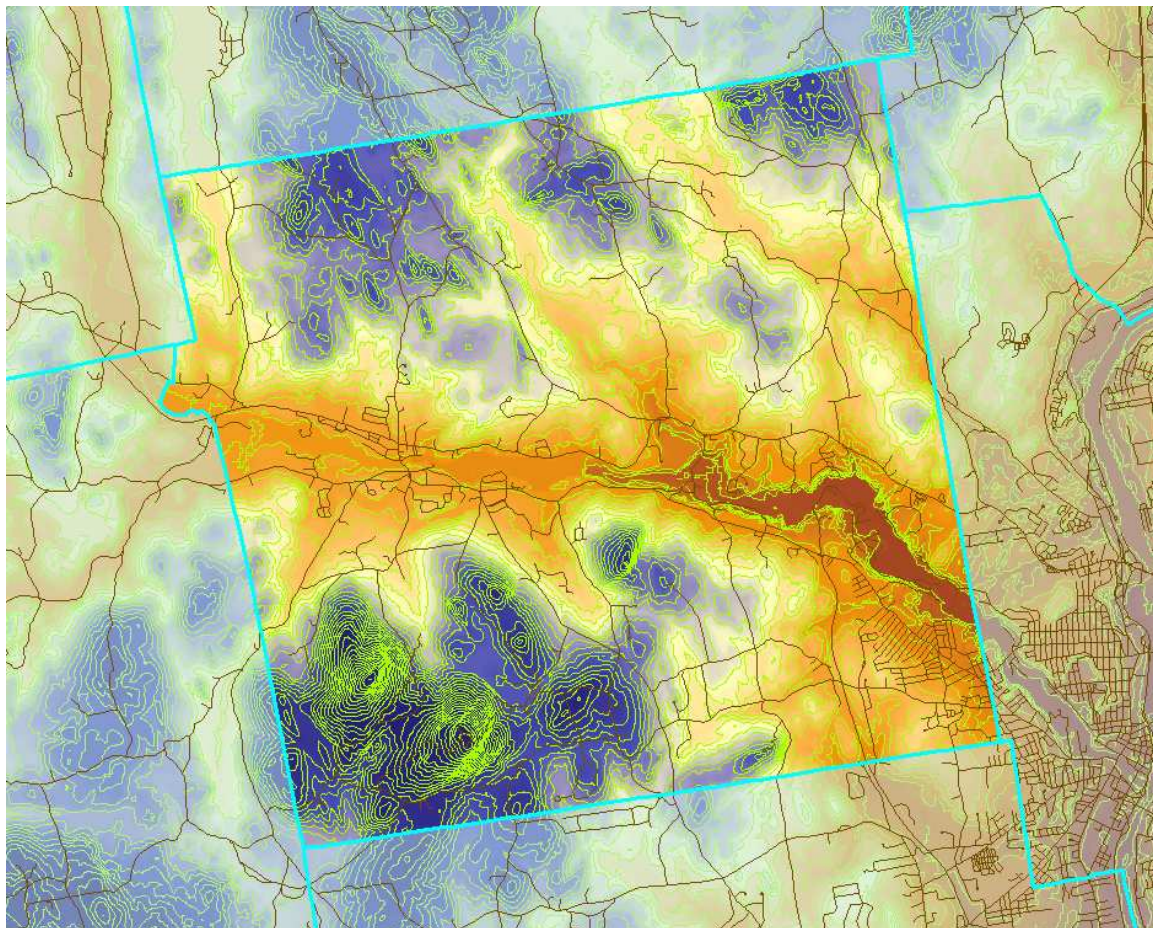
Physiogeography

Goffstown's Physiogeography

The physiographic features we observe in Goffstown today were shaped by tectonic processes that occurred between 360 and 410 million years ago that formed the local bedrock, and also by the relatively recent glacial ice advance that peaked approximately 12,000 to 15,000 years ago.

During the earlier tectonic events, previously buried sedimentary rock layers were intruded from below by silica-rich magmas or thermoplastic masses. This material cooled to form rock characterized by relatively large crystals: granites, diorites and granodiorites. The most evident granite outcrops are easily found on the Uncanoonuc Mountains and surrounding hills. The heat and pressure from this intrusion also transformed the buried sedimentary rocks into metamorphic species. Examples of the metamorphic rocks, such as phyllite, schist and quartzite, are most easily found along the northern edge of town.

The recent glacial advance carved the bedrock into the surface shapes we see today (Figure 1). The movement of the ice from the north-northwest to the south-southeast left its imprint on the shapes of the hills and mountains and the paths of most of the major drainage flows. It smoothed the northern edge of rocky hills into gradual ramps while plucking rock from the southern sides to form cliffs or steep slopes. The ice also left abundant sediments on the bedrock surface. Beneath the ice, sediments were squeezed into the teardrop-shaped drumlins distributed throughout the northwestern quarter of the town. When the ice was melting, a pro-glacial lake extended from the present day Merrimack Valley into the lowlands through the center of the town, and a deep bed of water-sorted sand was formed.



Topography with 30 foot contours

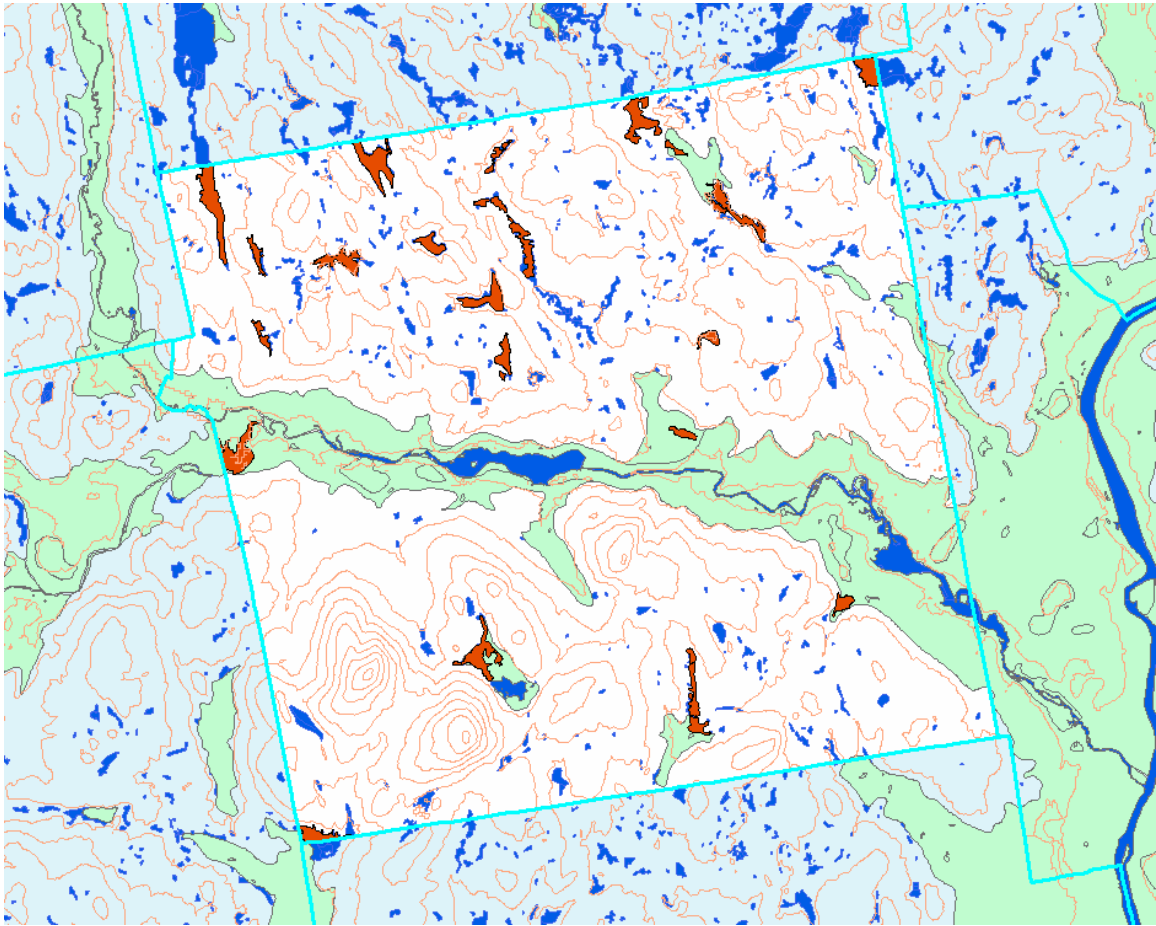
Goffstown Elevations

Value



Figure 1. Topographic Elevations, Goffstown, NH. Data source: *New Hampshire GRANIT. Digital Elevation Model data, New Hampshire GRANIT, Durham, NH. Original data from US Geological Survey, Reston, VA.*

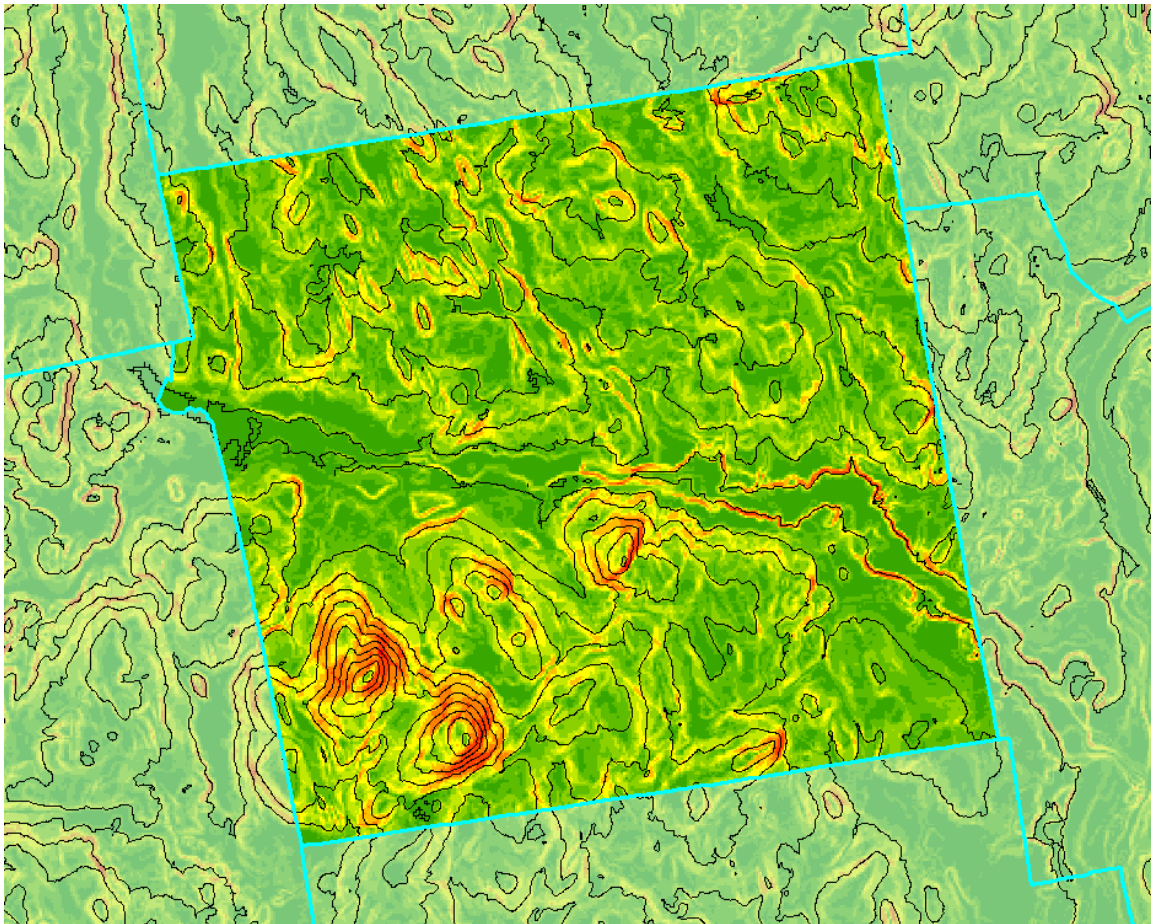
Water resources are intimately linked to geological features (Figure 2). In Goffstown, the most prominent feature is a large surficial aquifer contained in the sands of the pro-glacial lake bed. The Piscataquog River has carved its path through these sands, and is integral with the aquifer. In the southern mountainous area, ponds and wetlands are primarily contained in basins on the otherwise steep and well-drained slopes. The northern side of town also contains some basins in the bedrock, but many of the abundant wetlands are confined by natural dams of sediments. Unlike the porous sands of the central aquifer, the drumlin sediments are dominated by impervious clay minerals, so the wetlands play a critical role for deep rock aquifer recharge in this region of town. These coupled upland/wetland formations form high quality wetland habitats and account for many of the town's prime wetlands.



Goffstown's Water Resources

- 100 foot Contours
- Prime Wetlands
- Surficial Aquifers
- All Wetlands / Open Waters

Figure 2. Water Resources in Goffstown, NH.
Data source: *New Hampshire GRANIT, Durham, NH.*



Goffstown's Slopes

Slopes, in degrees

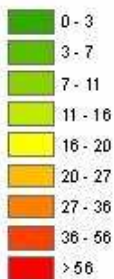


Figure 3. Steep Slopes in Goffstown, NH.

Data source: Calculated slopes from following data source: *New Hampshire GRANIT. Digital Elevation Model, New Hampshire GRANIT, Durham, NH. Original data from US Geological Survey, Reston, VA.*

Steep slopes need conservation protection to protect them from erosion, and to protect down-slope lands and wetlands from destructive siltation. Most steep slopes in Goffstown can be classified into three categories (Figure 3). Bedrock slopes, predominately south-facing, have the lowest erosional risk.

Sandy slopes on the sand terraces above the Piscataquog River are extremely vulnerable to erosion and should have maximum protection from deforestation. Paired slopes on the eastern and western sides of drumlins are at risk for soil slumping when forest vegetation is removed.



Goffstown's Land Cover
NH Land Cover Assessment 2001
VALUE

	Residential/Commercial/Industrial
	Transportation
	Row Crops
	Hay/Pasture
	Orchards
	Beech/Oak
	Paper Birch/Aspen
	Other Hardwoods
	White/Red Pine
	Spruce/Fir
	Hemlock
	Pitch Pine
	Mixed Forest
	Open Water
	Forested Wetland
	Open Wetland
	Disturbed Land
	Bedrock/Vegetated
	Other Cleared

Figure 4. Land Cover Categories in Goffstown, NH. Data source: *New Hampshire GRANIT. 2001. New Hampshire Land Cover Assessment. New Hampshire GRANIT, Durham, NH.*

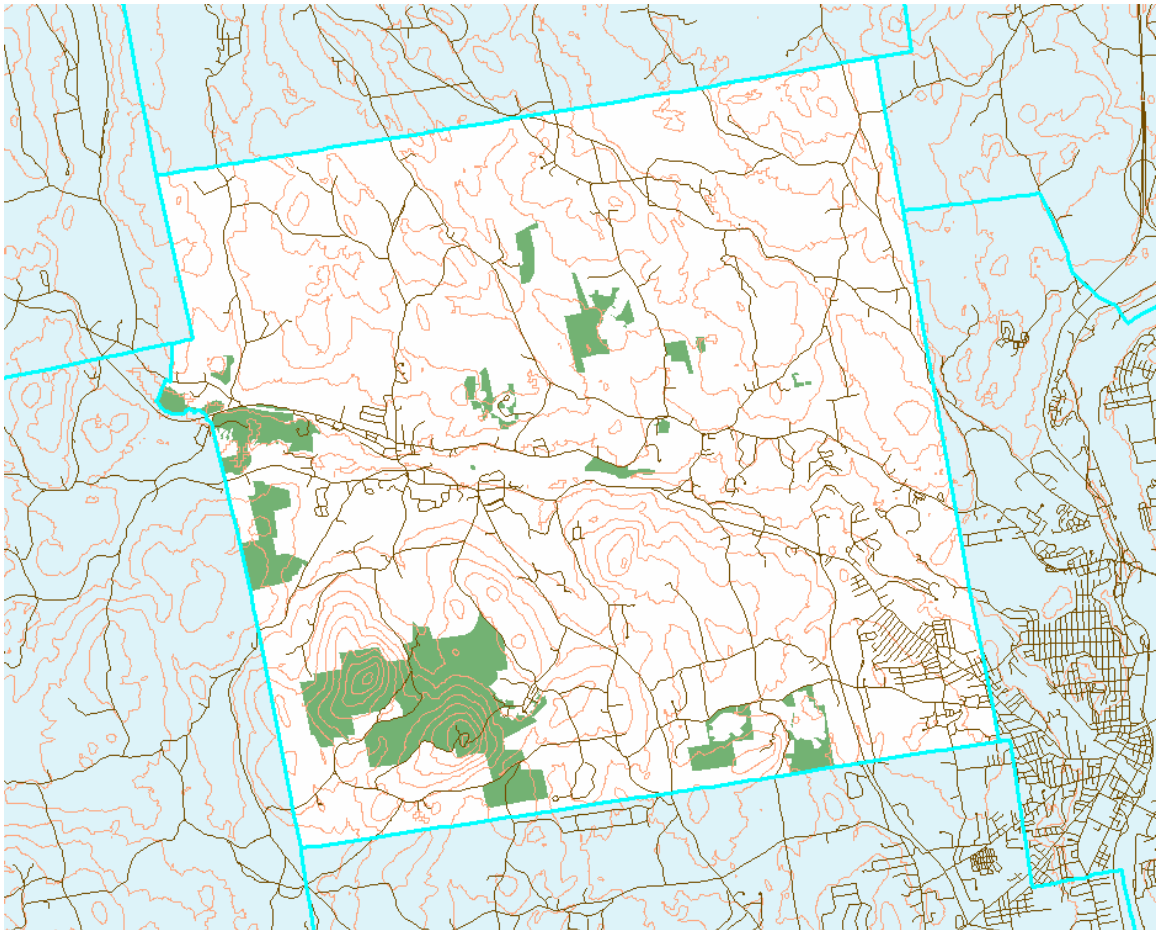
Vegetation cover in Goffstown can best be described as a mosaic of forest types, fields, meadows and developed areas (Figure 4). Before colonial times the vegetation patterns must have reflected the underlying geology to a greater degree than today, but previous forest clear cuts and subsequent agriculture have altered vegetation patterns. Even so, close examination still reveals an affinity of white pine forests for the flat sandy outwash plains and uplands tend to be dominated by hardwoods. Opportunities to preserve native forest communities will likely occur in small patches interspersed with other vegetation types.

Current conservation lands

Current conservation lands in Goffstown fall into several categories defined by the administrative overseer and the degree of conservation protection.

- Water Precinct land encompasses the watershed above the Uncanoonuc reservoir (600 acres) and a municipal well field on North mast Road (~50 acres). Approximately half of this land is protected with deed restrictions.
- Town-owned land around the Uncanoonuc Mountains adjacent to the water precinct land (~250 acres). This land is not legally protected, but is managed by the Conservation Commission.
- Open Space Subdivision developments includes isolated lands that are precluded from development as part of a clustered subdivision plan. They tend to be scattered and isolated, but collectively total about 530 acres.
- Various state and town owned parcels are scattered about town, including the town-owned Waldfogel Forest, and the state-owned Greggs Falls Wildlife Management Area.
- Private conservation organizations (The Society for the Protection of New Hampshire Forests and The Piscataquog Watershed Association) hold land with conservation easements (220 acres).
- Private landowners have placed conservation easements on their own properties (~185 acres).

More detailed information is presented in the report "Goffstown Land Protection Status Report, February 2004" (see reference D5, Appendix 1).



Conservation Lands in Goffstown

- 100 foot Contours
- Conserved Lands

Figure 5. Conservation Lands in Goffstown, NH.
Data source: *New Hampshire GRANIT. New Hampshire Conservation/Public Lands at 1:24,000 Scale, New Hampshire GRANIT, Durham, NH.*

Goffstown Regional Features and Needs Analysis

Open space preservation is important in all parts of Goffstown, but existing resources and conditions vary considerably in different regions of the town. We have divided the town into 6 geographic regions, primarily defined by watersheds, but using either roadways or stream courses as convenient boundaries (Figure 6). Each region is then examined independently to list existing noteworthy features, potential opportunities for conservation, and regional needs.

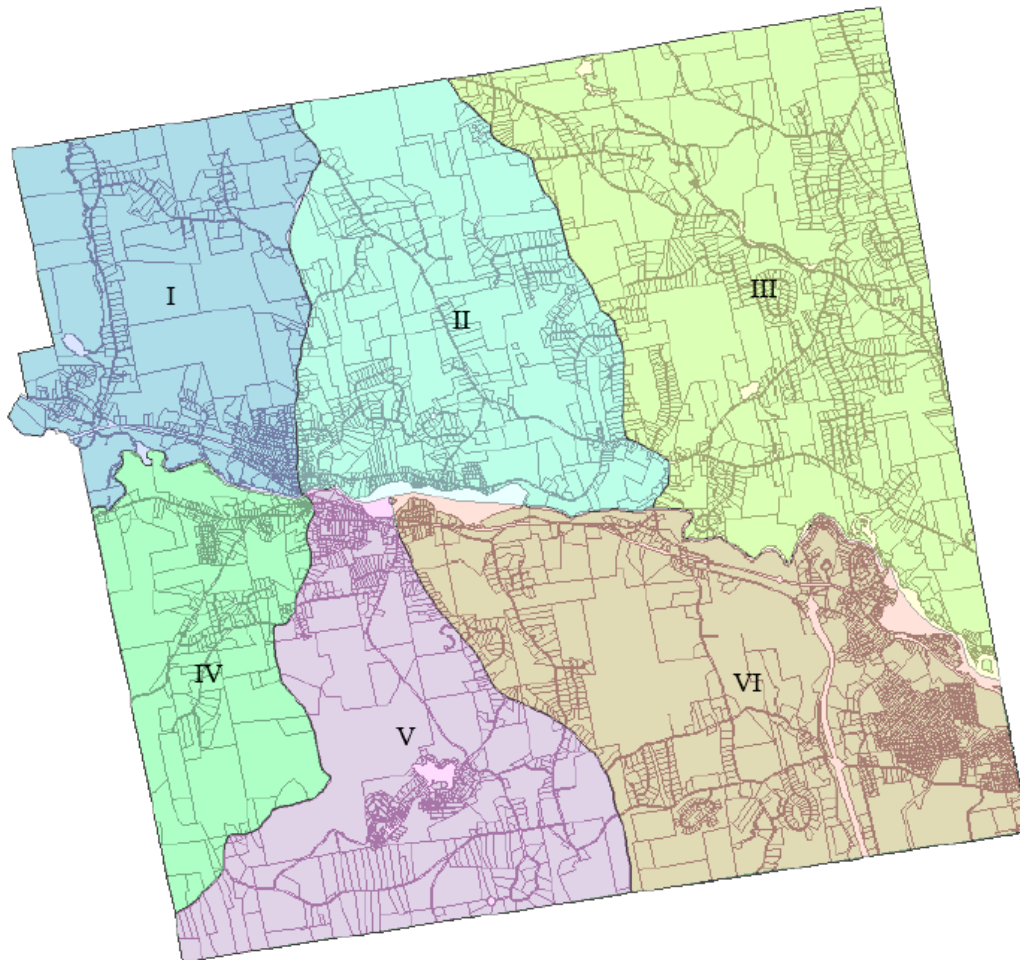


Figure 6. Conservation Needs Analysis Regions

The six identified regions are named as follows:

- I. Gorham Brook Region
- II. Harry Brook Region
- III. Black Brook Region
- IV. Bog Brook/North Mountain Region
- V. South Mountain Region
- VI. Mystic Brook Region

I. Gorham Brook Regional Features

Boundaries

The Gorham Brook region is in the northwest corner of the town, bounded to the north by Dunbarton and to the west by Weare and New Boston. The eastern boundary is route 13 from Dunbarton down to the Piscataquog River. The river forms the southern boundary.

Description

This region is distinguished by 4 parallel topographic features that all run north to south. The western edge of the region is in the Kuncanowet Hills ridge. Parallel to the eastern side of the ridge is the glacial scoured valley that Gorham Brook meanders through, much of it containing wide linear wetlands. East of the valley, the topography rises again to broad rounded hills and then transitions to the edge of Goffstown's drumlin field.

Development in this region is primarily in the southeast corner – a large portion of Goffstown village. Other residential lots are strung along the major roads including Gorham Pond road, Snook road and Tenney road. Another cluster of homes is in the Parker Station region.

Prime Wetlands

The region contains a large abundance of wetlands including 6 prime wetlands: "Gorham Brook Wetlands", "Gorham Brook Tributary and Associated Wetlands", "Saunders Road Wetlands", "Snook Road Swamp", "Beaver Pond/Harry Brook Tributary Marsh" and "Piscataquog River Floodplain".

Aquifer Considerations

The abundance of wetlands provides a significant aquifer recharge area. Closer to the village are wells used for the municipal water supply.

Wildlife Habitat

This region contains many large parcels of relatively undeveloped land. The abundant wetlands, diversity of topography, and rich forest cover combine to create a rich mosaic of wildlife habitats, and provide one of the best opportunities in the town for wildlife habitat conservation. The wetlands in this region are exceptionally ecologically intact. One is notable for containing a Great Blue Heron rookery.

Agriculture

Agricultural enterprises include a blueberry farm, an apple orchard, and horse boarding.

Historical and Cultural Features

Two of the town's prominent historical regions are within the region: the Parker Station Historic District, which includes facilities for the town's Historical Society and Goffstown village west of route 13 and north of 114. Westlawn Cemetery is along 114 (North Mast Road). The region contains many historical houses and barns.

Recreational and Aesthetic Features

Route 13 from Dunbarton to Goffstown village is very scenic including distant views of the Monadnock region, rolling hills and farms, and the view of Goffstown village in front of the Uncanoonuc peaks. Route 114 approaching the village from Weare is also a noted scenic drive. Hiking, hunting and snowmobiling are very popular within the region.

Adjacent Conservation Lands

The Kuncanowet Hills region extends into protected lands in Dunbarton. There are also many linkages into the Harry Brook Region discussed below. Wildlife habitat conservation in this region would provide corridors between these zones.

Recommendations

The Gorham Brook region offers one of the best opportunities in Goffstown to preserve a large area with wilderness character and unfragmented habitat blocks. Conservation efforts in this region will be strengthened by similar efforts underway across town lines in Dunbarton and Weare, providing a high probability for success. This region of town is best suited for a mixture of agricultural and passive recreational uses, integrated with the relatively lower developmental density already present.

II. Harry Brook Regional Features

Boundaries

The Harry Brook region is in the north central portion of the town, bounded to the north by Dunbarton. The western boundary is route 13. The eastern boundary is delimited by Tibbetts Hill road to Center Street, then Center Street to Grasmere Center and Henry Bridge Road down to the Piscataquog River. The river marks the southern boundary.

Description

The Harry Brook region contains most of Goffstown's drumlin field. The elongated glacially-formed drumlins are stream-lined linear hills of glacial sediments rising 80 – 120 feet above the bedrock ledge. Their distribution pattern largely determines the water drainage and human development patterns in this region. Harry Brook is the largest Piscataquog tributary in this region, and it flows along the eastern edge of the primary drumlin concentration. The southern edge of the region slopes sharply down to the Piscataquog River, and includes glacial kame terraces in the southeastern corner.

Prime Wetlands

The abundance of drumlins in this region has also created an abundance of sharply defined wetlands. The impermeable clays in the sediment deposits act as natural dams, and outline many of the wetlands. As a result, the largest number of prime wetlands is found in this region. The 9 identified prime wetlands include: "Upper Harry Brook and Northern Associated Wetlands", "Upper Harry Brook and Southern Associated Wetlands", "Middle Harry Brook and Northern Associated Wetlands", "Middle Harry Brook and Central Associated Wetlands", "Middle Harry Brook and Southern Associated Wetlands", "Paige Hill Road Marsh", "Stinson Road Marsh", "Lower Harry Brook at Locust Hill Road" and "Paige Hill Swamp".

Aquifer Considerations

Aquifer infiltration will not occur where the ledge is covered by a drumlin. Water enters the topsoil, but cannot penetrate the clay hard pan beneath. As a result, seeps and slumps are readily observed on the drumlin sides. However, the damming effect of the drumlins creates an abundance of wetlands that serve as aquifer recharge areas.

Wildlife Habitat

The drumlin field also provides for a wide variety of habitat types. From the sedimentary base of the drumlins, a rich deep topsoil has formed with a neutral pH. These soils support diverse mixed hardwoods, and one of the town's most diverse woodland flora. Combined with the interlaced wetlands, this region

provides very diverse high quality wildlife habitats. The combination of floral habitat diversity and wind shelters provided by the drumlins maintains a high population of deer and moose in numerous winter deer yards.

This region also contains 3 of the town's uncommon habitats. First, there is a southern-facing cliff of quartzite (Rattlesnake Hill), which has potential for harboring rare or uncommon species (this formation also outcrops in the Black Brook Region). There are 2 uncommon biological communities (uncommon for both the State of New Hampshire and Goffstown), and both are contained within the Paige Hill Swamp: a Red Maple / Black Gum (*Nyssa sylvatica*) swamp and an Atlantic White Cedar (*Chamaecyparis thyoides*) Swamp.

Agriculture

Most of the past and present agriculture in this region occurs on drumlin tops. Since the topsoil will slump off the water impermeable core of the hills if actively worked, low tillage agricultural uses are more successful. Current agriculture in the region is low tillage and includes beef production, horse boarding, apple orchards and hay fields.

Historical and Cultural Features

A portion of 2 of the town's historic districts lies within this region: Goffstown village north of the river and east of route 13, and the western edge of Grasmere village.

Recreational and Aesthetic Features

Hiking, hunting, fishing, nordic skiing, horseback riding and snowmobiling are all popular activities in this region. Nearly all of the recreation occurs on private lands, and opportunities are decreasing as development encroaches in the region. There are 2 small public areas: Glen Lake Beach and the Greggs Falls Wildlife Management area along the river.

Scenic drives include Tibbetts Hill Road, Locust Hill Road, portions of Elm Street and route 13. There is an exceptional scenic vista of the Monadnock Mountains from the cliff top of Rattlesnake Hill.

Adjacent Conservation Lands

The Harry Brook wetland corridor continues over the town border into Dunbarton, running through similar topography and habitats up to the Long Pond area. There are also corridor linkages to the Gorham Brook and Black Brook regions.

Recommendations

The Harry Brook region contains some of the most diverse habitat mixtures found in the town, but is increasingly susceptible to development pressure. The coupled upland/wetland habitat found in the drumlin field is threatened by the pressure to develop desirable hilltops. These hilltops have only a veneer of loam over an impermeable clay hardpan (the drumlins), which reach heights of 60 to 120 feet over the bedrock. The runoff from these hills goes into wetlands, including the largest collection of prime wetlands in the town. Many hilltops are already converted to housing. Those that remain as low tillage hayfields or orchards should be secured with conservation easements and kept as agricultural enterprises. The few remaining forested drumlins should be preserved as forest habitats for the wetland species that depend on them, and to preserve the wetland habitat and aquifer recharge functions.

Harry Brook is a high quality riparian corridor that should be protected and buffered. Not only does it offer high quality habitat in its own right, but it serves as an important wildlife corridor into the center of Goffstown. Protecting it also safeguards the water flowing into the Piscataquog River.

The Harry Brook region contains three of the town's most unique habitats that should be protected for their rarity not only in the town, but in the entire Piscataquog watershed: the quartzite cliffs of Rattlesnake Hill and the Red Maple/Black Gum swamp and Atlantic White Cedar swamp found in the Paige Hill Swamp prime wetlands.

III. Black Brook Regional Features

Boundaries

The Black Brook Region is in the north east corner of the town. The northern boundary is the Dunbarton town line, the eastern boundary is Hookset and Manchester town lines, and the southern boundary is the Piscataquog River. The western boundary along the Harry Brook region is delimited by Tibbetts Hill road to Center Street, then Center Street to Grasmere Center and Henry Bridge Road down to the Piscataquog River.

Description

This region is the most complex to describe in terms of topographic features and geomorphology. The prominent feature of the northern edge is a ridge of quartzite outcroppings running northeast to southwest, dipping about 30 degrees. This is a larger outcropping of the same formation seen at Rattlesnake Hill in the Harry Brook region. It varies from low hills to sharp cliffs, all with southern

exposures, and it a region of great interest that should be investigated for rare or uncommon species.

The western edge of the region contains the eastern bounds of the Goffstown drumlin field, with many of the same attributes described in the Harry Brook region. In the lower half of the region, a broad ridge of bedrock extends from the edge of the drumlin field to the southeast until it meets the Manchester boundary. Below this ridge are kame terraces along the Piscataquog valley. Between this broad ridge, and the quartzite ridge along the northern bounds lies a large irregular outwash plain with abundant sand and gravel deposits. Black Brook meanders through the southern edge of these outwash deposits. Much of the broad southerly ridge has been subdivided and developed, except for the steep slopes along its edge. The drier portions of the outwash region have also been developed, except for those regions where access has been restricted by the wetlands along Black Brook Road.

Prime Wetlands

Prime wetlands include: “Upper Black Brook (northern)”, “Upper Black Brook (southern)”, “Lower Black Brook Marsh”, “Juniper Drive Wetlands” and “Hardy Brook Headwaters Marsh”.

Aquifer Considerations

Much of the region should serve as a good aquifer recharge zone with its cover of surficial glacial sands and gravels. However, intense development pressure in this region has largely fragmented these lands, so it seems likely that infiltration has been affected to some degree.

Wildlife Habitat

The geomorphologic diversity of this region creates a wide variety of habitats, but the fragmentation of habitats is a problem in this region. There are still active corridors throughout the region, but many of them are being intruded. The northern part of the region below and including the quartzite outcrops is still relatively undeveloped, and a broad wildlife corridor still exists along the northern side of Black Brook.

Agriculture

Agriculture in the region is predominantly livestock based and includes sheep, hogs and poultry.

Historical and Cultural Features

Much of the Grasmere historical district is contained in this region, including the commons, Grasmere Town Hall, the old burying ground and historic Grasmere homes and inns.

Recreational and Aesthetic Features

Like the other 2 northern regions, recreational opportunities are primarily on private lands and consist of hiking, hunting, fishing, nordic skiing, horseback riding and snowmobiling. A small public recreation area is located at Mountain View Middle School where a short loop of nature trails is located.

A landlocked parcel including a portion of the quartzite ridge was donated to the town (the Waldfogel property), and presents a good opportunity for another public access to nature/hiking trails. An abandoned class 6 road (Shanty Road) is also nearby, and might be combined to form a larger recreation area.

Adjacent Conservation Lands

Black Brook and its associated wetlands extends up into Dunbarton and connects to one of Dunbarton's finest conservation areas – Kimball Pond and the Great Meadows. To the north, the quartzite ridge slopes down towards another undeveloped area in Dunbarton, Purgatory Pond, and also extends eastward towards Quimby Mountain. To the west of the region are possible linkages to the Harry Brook region.

Recommendations

The Black Brook region features another important riparian corridor along Black Brook that should be protected. The remaining open spaces in this region are among the most fragmented in the town, so it is vital to protect this corridor and link these fragments as much as possible. There is still an opportunity to preserve significant unfragmented blocks in the northernmost part of this region. A parcel of land (Waldfogel property) was donated for conservation in the heart of this region, and it also contains more of the quartzite outcroppings seen at Rattlesnake Hill. Conservation should be expanded around this region, which would be strengthened by similar lands across town lines in Dunbarton and Hooksett.

This region also needs more active recreational facilities like parks, playing fields, playgrounds, and pools. Even though it has been one of the fastest growing regions for housing, no recreational facilities have been installed by the town. This region is farther from town facilities than any other. The only recreational facility is the YMCA's Allard Center, and that facility requires membership fees and is primarily for indoor recreation.

There are significant stretches of the shoreline along the Piscataquog River still undeveloped, most notably on Hillsborough County land. These sites are among the most biologically diverse areas in town, and should have high conservation priorities. They include very rich spring ephemeral communities, and abundant and diverse bird habitats. This section of the river is the most flood prone area in Goffstown and should be protected for that reason alone.

The Black Brook Riparian corridor was also a site of serious flood damage in May 2006. Conservation lands that help mitigate flooding of Black Brook should receive a high priority.

IV. Bog Brook / North Mountain Regional Features

Boundaries

The Bog Brook region is located in the southwest corner of town. The western boundary is the New Boston town line, and the northern boundary is the Piscataquog River. Mountain Road and Roby Road delimit the eastern and southern boundaries.

Description

To the south, more than half of this region includes the North Uncanoonuc Mountain. The northern portion slopes down from the mountain towards the Piscataquog River, and includes part of the proglacial lake sand deposits.

Prime Wetlands

The steep slopes of the North Mountain region are well drained, and this region does not contain any prime wetlands.

Aquifer Considerations

The mountain slopes draining down into the deep sand deposits are an important aquifer recharge area, and the Village Water Precinct protects a significant tract on the mountain.

Wildlife Habitat

The regions large undeveloped tracts provide extensive wildlife habitats. The habitat is primarily upland forest dominated by oak and white pine, with beech and maple forests on some of the mountain's spurs.

Agriculture

Agriculture in the region includes a landscaping nursery and apple orchards.

Historical and Cultural Features

Historical features include farmhouses, barns and some historical homes in the village.

Recreational and Aesthetic Features

Public lands are available in this region for hiking, hunting, fishing, nordic skiing, horseback riding and snowmobiling. There are trails up to the summit of North Uncanoonuc from all sides of the mountain. The summit has many distant scenic vistas. Hiking trails are also located on a property in the foothills owned by the Society for the Protection of New Hampshire Forests. Lion's Park in the village has recreational ball fields.

Adjacent Conservation Lands

Conservation lands are located to the east on the south mountain. Lands to the west in New Boston offer other opportunities for conservation, and are being targeted by New Boston conservationists.

Recommendations

The Bog Brook/North Mountain region should expand the current conservation lands and maintain the links to undeveloped lands to the west in New Boston. To date this region has been Goffstown's greatest conservation success, and provides the most popular outdoor recreation area in the town. Expanding this region would continue to safeguard the towns primary aquifer and large unbroken block of wildlife habitat.

V. South Mountain Regional Features

Boundaries

The South Mountain region extends along half of the southern border of the town bounded by the Bedford town line. Mountain Road and Roby Road delimit the western boundary, and the Piscataquog River the northern boundary. Wallace Road is the eastern boundary.

Description

Most of the region is mountainous and includes South Uncanoonuc Mountain, Benson Hill, Worthley Hill and Shirley Hill. While most of the region is forested, there are areas of open meadows in the Shirley Hill area. The northern slopes drain down from the mountain and hills towards the Piscataquog River, and include part of the proglacial lake sand deposits.

Prime Wetlands

The steep slopes of the South Mountain region are well drained; however there are wetland areas nestled among some of the hills. Two prime wetlands are in the region, “Uncanoonuc Marsh” and the “Bog Brook Tributary Marsh”.

Aquifer Considerations

The mountain slopes draining down into the deep sand deposits are an important aquifer recharge area, and the Village Water Precinct protects a significant tract on the mountain, and also maintains reservoirs for the village water supply on the northern slopes.

Wildlife Habitat

The regions large undeveloped tracts provide extensive wildlife habitats. The habitat is primarily upland forest dominated by oak and white pine, with beech and maple forests on some of the mountain’s slopes. Meadow habitats are also abundant in the Shirley Hill area.

Agriculture

Agricultural enterprises in the region include community farms, horse boarding, hay, and orchards.

Historical and Cultural Features

This region was the heart of a thriving tourist industry from the late 1890’s through the 1930’s. This area had a number of resort hotels in the Shirley Hill region, and on the summit of the South Mountain. A rail spur brought tourists into the region, and a cable car system took tourists to the summit of the South Mountain.

Recreational and Aesthetic Features

Public lands are available in this region for hiking, hunting, fishing, nordic skiing, horseback riding, snowmobiling and swimming. There are trails up to the summit of South Uncanoonuc from the eastern and western sides of the mountain. Much of the summit area is developed and covered with transmission towers, but there

are some points with scenic vistas. Hiking trails are also located around the wetlands near Uncanoonuc Lake. A small public beach is also located on this lake. An abandoned class 6 road, Worthley Hill Road, also passes through the area. Barnard Park offers swimming, tennis courts, and a running track.

Adjacent Conservation Lands

Conservation lands are located to the west on the North Mountain. To the east are large tracts of still undeveloped land, but they are not under any form of conservation protection.

Recommendations

The South Mountain region has attributes similar to the North Mountain, and similar policies should be pursued to expand current town and conservation holdings. Expanding this region would also continue to safeguard the town's primary aquifer and further enlarge the unbroken block of wildlife habitat that crosses North Mountain and into New Boston.

This region also contains the lands around and on Shirley Hill where significant open space should be preserved. These lands contain multiple features worthy of protection. They are open and very scenic, contain prime agricultural soils, and are the locations of much of Goffstown's historical past as a tourist destination.

VI. Mystic Brook Regional Features

Boundaries

The Mystic Brook region is located in the southeast corner of the town. The Piscataquog River delimits the northern boundary, and Wallace Road is the western boundary. The Bedford town line is the southern limit, and Manchester is to the east.

Description

The region is hilly, with the highest summits on Yacum Hill and Walnut Hill. The northern edge along the Piscataquog river contains much of the proglacial lake sediments. West of route 114 there are still large tracts of undeveloped land, much of it owned by Hillsborough County. East of route 114 are densely developed areas including the village of Pinardville, developments along the river and the Saint Anselms College Campus.

Prime Wetlands

Most of the region is well-drained and hilly, but it does contain 2 of the town's prime wetlands: "Shirley Hill Road Wetlands" and "Perennial Tributary to Piscataquog and Associated Wetlands".

Aquifer Considerations

The large aquifer within the proglacial lake sediments currently has a large upland recharge area in the undeveloped county and private lands.

Wildlife Habitat

The large undeveloped areas provide substantial quality habitat areas, predominantly forested.

Agriculture

Agriculture in the region includes community gardens, a plant nursery and farm stand, horse boarding and hay fields.

Historical and Cultural Features

Historical buildings include the County building complex, a pauper's cemetery, farmhouses and barns, Villa Augustina and St. Anselm's campus.

Recreational and Aesthetic Features

There are more active recreational facilities in this region than any other part of town. Facilities include swimming and playgrounds at Roy Park, ball fields at Villa Augustina, ball fields at the old landfill site, and the town's Parks and Recreation center. The rail trail currently under development for recreational use will run primarily through this region along the river. Private and county lands are popular for hiking, hunting, fishing, nordic skiing, horseback riding, and snowmobiling.

Adjacent Conservation Lands

Adjacent conservation lands are located in the South Mountain region.

Recommendations

The Mystic Brook region has some of the most contrasting development patterns and needs within the town. At the western end there are still large unbroken blocks of land that are linked to lands in the South mountain region. To the east lies Pinardville, Goffstown's most densely developed region.

Any opportunities to preserve open space in Pinardville should be seized, even if the parcels are small, due to the great need. Another opportunity is to support development of the Rails-to-Trails project along the river. This would readily serve Pinardville residents, and create a recreational linkage to other sites to the west in Goffstown and to the east in Manchester. The trail will also lead towards the largest block of undeveloped lands in the Mystic Brook region – the Hillsborough County lands and the large private blocks to their west. Much of this land has steep slopes and drains into the large stratified drift aquifer along the Piscataquog River.

Much of the shoreline along the Piscataquog River is developed to the water's edge, but those sites that remain intact are among the most biologically diverse areas in town, and should have high conservation priorities. They include very rich spring ephemeral communities, abundant and diverse bird habitats, and known occurrences of endangered species. This section of the river is the most flood prone area in Goffstown and should be protected for that reason alone.



Recommended Actions to Support the Open Space Plan

General Recommendations

Due to the nature of Goffstown, conservation lands may occur in both rural and in-town areas. Rural lands will offer more opportunities for conserving larger tracts of lands, while in-town lots will likely be small. Size is not considered to be a limiting factor for open space. A small lot in a developed area may provide a greater opportunity for recreational and social benefits than a larger rural site due to its proximity to human populations.

Public ownership is not a necessity for most conservation goals. Nor does protection in the public interest necessarily require public access to the open space lands. Public access might be incompatible with an individual property owner's right to privacy. In some extreme cases, public access might be incompatible with other open space needs such as wildlife habitat, fragile plant and animal communities, flood control or water supply protection.

Maintain a Natural Resource Inventory

The Open Space Committee and Conservation Commission will prepare a Natural Resources Inventory consistent with the State of New Hampshire statute (RSA 36-A:2). The inventory will draw on resources from many different sources, including, but not limited to:

- The Town's Prime Wetland Survey;
- A University of New Hampshire student project natural resource inventory;
- GIS data already in the Town's possession (aerial photographs, digitized lot boundaries, utility corridors, streets, topography, etc.);
- Data and maps prepared for the Piscataquog Watershed Association;
- Data stored in the New Hampshire Granit database;
- Local field surveys and observations.

These data sets will be used for assessing project eligibility and for regional and long term planning. The scope of this document does not include the complete description of all possible data and data products that will result from the inventory. However, as an illustration, the following list includes some of the products expected from the inventory.

- Identification and mapping of undeveloped and minimally developed parcels of land in Goffstown.

- Identify land parcels important for the preservation of scenic views.
- Identify and map appropriate areas for potential trail systems.
- Identify important wildlife areas in Goffstown.
- Identify names of important local species.
- Identify and describe local habitat and biological community characteristics.
- Inventory all of the local streams identifying the source, the streams course and the end point. This could be used to institute a stream monitoring program with the assistance of the local residents.
- Physical Description of individual pieces of property considered for conservation projects.
- Generate “valued characteristics”, weighted values combining multiple attributes to help prioritize conservation targets.

Promote Public Environmental Awareness and Education

The Town committees can promote the goals of this plan through the following actions designed to elicit citizen participation and support.

- Produce and distribute an informational pamphlet describing the responsibilities, activities, and accomplishments of the Conservation Commission, and in the future, the Open Space Committee. This will educate residents about the commission's broad range of activities and encourage participation.
- Prepare and distribute informational brochures about town owned lands. Describe the location, history, salient natural features, and rules for public use for each significant parcel.
- Support proposed changes to ordinance and regulations intended to conserve natural and historic resources through letters to the local newspaper and direct mailings to households.
- Create Town Hall displays using large colored maps of Goffstown's natural resources along with other materials that promote understanding of the town's resources and local conservation efforts.
- Sponsor students' visits to summer conservation camps to increase awareness and understanding of natural resource conservation.
- Consider hiring student "conservation interns" during summer and winter school vacations to assist the commission with management of conservation lands, preparation of informational materials, and other projects as well as provide conservation education and experience.

- Establish an outreach program in our schools.
- Establish an active relationship between St. Anselm's College and town committees.
- Establish active relationships with conservation organizations active in our region.

Conservation Protection of Town-Owned Lands

In 2004 there are approximately 320 Acres of town-owned parcels that are managed by the Conservation Commission as open space land for conservation purposes. In order to assure that these lands will remain as permanent open space, the town should work with a land trust to devise a conservation easement to protect each parcel. Each year, funds should be allocated from the Conservation Fund to work towards permanent protection of town-owned conservation lands.

Appendix 1: References

Documents:

- D1. Does Open Space Pay**, Philip Auger, University of New Hampshire Cooperative Extension. (*Summarizes cost-of-community-services studies in Deerfield, Dover, Fremont, and Stratham, NH*)
(http://www.town.goffstown.nh.us/boards/conservation/documents/Does_Open_Space_Pay.pdf)
- D2. Cost of Community Services Study for Brewster, Massachusetts: A Report on the Fiscal Implications of Different Land Uses**, Smith, Leah J. and Henderson, Philip, Association to Preserve Cape Cod, 2001.
(<http://nh.gov/oep/resourcelibrary/referencelibrary/c/costofcommunityservicestudy>)
- D3. Cost of Community Services Study for Truro, Massachusetts**, Smith, Leah J. and Henderson, Philip., Association to Preserve Cape Cod, 2001.
(<http://nh.gov/oep/resourcelibrary/referencelibrary/c/costofcommunityservicestudy>)
- D4. Goffstown Population Growth, Trends and Forecasts**, David Nieman, Goffstown Conservation Commission
(<http://www.town.goffstown.nh.us/boards/conservation/documents/GoffstownPopulationGrowth.doc>)
- D5. Goffstown Land Protection Status Report: February 2004**, Jason Sachs, Goffstown Conservation Commission
(http://www.town.goffstown.nh.us/boards/conservation/documents/landprot_10Feb04.pdf)

Organizations/Programs:

- O1. Hillsborough County Conservation District**
(<http://www.hillsboroughccd.org/>)
- O2. Land Trust Alliance** (<http://www.lta.org/>)
- O3. Nature Conservancy/New Hampshire Chapter**
(<http://nature.org/wherewework/northamerica/states/newhampshire/>)
- O4. New Hampshire Department of Environmental Services**
(<http://www.des.state.nh.us/>)
- O5. Piscataquog Watershed Association**
(<http://www.mv.com/ipusers/pwa/index.htm>)
- O6. Scenic America** (<http://www.scenic.org/>)
- O7. Society for the Protection of New Hampshire Forests**
(<http://www.spnhf.org/>)

O8. *Trust for Public Land* (<http://www.tpl.org/>)

Conservation Associations:

C1. *Connecticut River Joint Commissions* (<http://www.crjc.org/>)

C2. *New Hampshire Association of Conservation Commissions*
(<http://www.nhacc.org/nhacc.htm>)

Other Resources:

R1. *Audubon Society of New Hampshire* (<http://www.nhaudubon.org/>)

R2. *New Hampshire Counties Registry of Deeds*
(<http://www.nhdeeds.com/>)

R3. *New Hampshire Fish & Game Department*
(<http://www.wildlife.state.nh.us/>)

R4. *Northern New England Real Estate Network*
(<http://www.nneren.com/>)

R5. *UNH Cooperative Extension* (<http://ceinfo.unh.edu/>)