6. NATURAL RESOURCES

The Natural Resources Chapter identifies the natural features and resources found throughout Dunbarton and important natural resource related issues. As noted in the Community Survey, many of the respondents consider natural resources an important topic to address. The Survey identified the issues of highest concern to be natural habitats, forests, and the protection of wetlands. Many respondents also thought that there should be additional efforts to increase the amount of open space and conservation land in Town.

Dunbarton occupies approximately 20,045 acres in the Central New Hampshire Region, with approximately 5,400 acres of this total held in conservation. Within its borders are a rich diversity of natural resources and numerous distinct natural features. Although there are no rivers that run through Dunbarton, several brooks, streams, and ponds scatter the landscape. The terrain is dominated by steep slopes and hilly areas, resulting in several scenic viewsheds. The natural land cover is dominated by forests but there are many fields and agricultural lands throughout Town.

VISION STATEMENT

Promote good stewardship of our natural resources and continue working to preserve Dunbarton's high quality of life and rural character by supporting open space, agriculture, forestry, wildlife, outdoor recreation, clean water, and wetlands.

COMMUNITY SURVEY RESULTS

The following questions taken from the Community Survey best represent residents' opinions on natural resources.

Community Survey Question #2:

Please rate each of the following features for their importance to you in Dunbarton.



Community Survey Question #12:

There are 20,045 acres of land in Dunbarton, 5,284 acres of which are permanently protected for public conservation/recreation purposes (including the federally owned flood control area at Clough State Park). What do you feel is the ideal goal for permanent conservation land in Dunbarton?

Q. 12	Total	Percent
More	67	39.9%
Less	13	7.7%
Same	80	47.6%
No opinion	8	4.8%
Total	168	100.0%

Community Survey Question #13:

Please indicate how important the preservation of open space (undeveloped land) in Dunbarton is to you:

Q. 13	Total	Percent
Very important	87	51.5%
Important	33	19.5%
Somewhat important	37	21.9%
Not important	9	5.3%
No opinion	3	1.8%
Total	169	100.0%

Not Important No Opinion

Community Survey Question #14:

Do you support the acquisition of lands by the Town for conservation and low impact recreation purposes?

Q. 14	Total	Percent
Yes	123	73.2%
No	33	19.6%
No opinion	12	7.1%
Total	168	100.0%

Community Survey Question #15:

What are the most important land conservation objectives to you? Please choose the three most important:



Community Survey Question #16:

What one specific place in Dunbarton is the most important to permanently conserve?

Responses included the Town center and Town common, Kimball Pond and Long Pond, Clough State Park, Everett Trail System and the flood control area, Black Brook, and the Kuncanowet Town Forest and Conservation Area. Various farms and fields across Dunbarton were also mentioned as important features to permanently conserve.

DUNBARTON VISIONING SESSION

Attendees at the Dunbarton visioning session showed their appreciation for the Town's rural setting and natural features, many indicating it was the main reason they live in Town. The variety of natural features in Town, including open space, conservation land, scenic vistas, trails, and water bodies were mentioned as specific resources and often used for recreation.

A common theme discussed by attendees was a concern with the continuing growth occurring in Dunbarton, and the impact that this growth may have on the natural features and rural character of the Town. It was stressed that natural features should continue to be protected in the future, with prioritizing connectivity of corridors for wildlife habitat and crossings. Continuing to maintain class VI roads and scenic roads was also mentioned, as well as the potential for these roads to be converted to public trails. It was also suggested that a trail network map be created showing the locations of trails within Town.

THE 13 WONDERS OF DUNBARTON

The 13 Wonders of Dunbarton are considered to be the most important natural or historically unusual features of the Town. They include conserved open space, undeveloped ponds, exceptional views, and places of historic significance.

- 1. The Bela Brook Conservation Area (Grapevine Road).
- Kimball Pond Conservation Area (Kimball Pond Road). Boat launch, dam site, mill house cellar hole, logs from 1938 hurricane marked US, Whipple home site, heron rookery.
- **3.** Kuncanowet Town Forest and Conservation Area (Holiday Shore Drive). Old mill site, beaver dam, state champion black gum tree, heron rookery (in the natural area).
- 4. Winslow Town Forest (Stark Lane).
- Hopkinton Everett Flood Control Area (Everett Dam Road). Everett Lake, abandoned village, trail network, granite Weare/Dunbarton town line marker.
- 6. Long Pond (Long Pond Road).
- 7. Purgatory Pond (Purgatory Pond Road).
- 8. Rogers and Putney home sites (Robert Rogers Road).
- 9. Stark Cemetery (Mansion Road).
- Highest Point in Dunbarton (Mills Hill, Rt. 13, 900 feet). Views include Mt. Sunapee, Mt. Kearsarge, the Franconia Range, Ragged Mountain, Mt. Cardigan, Sandwich Range, Mt. Washington.

- **11.** View from Burnham Hill (Rt. 13). Views include the Uncanoonuc, Mt. Monadnock, Crotched Mountain and Mt. Kearsarge.
- 12. Geographic Center of New England (Stone Farm, Guinea Road).
- **13.** Biggest boulder in Dunbarton (off powerlines on east side of Kimball Pond Road).

DUNBARTON COMMUNITY PROFILE

With support from the University of New Hampshire Cooperative Extension, Dunbarton's Community Profile Steering Committee conducted a two-day community profile event in May of 2015. The purpose of the profile was to encourage citizen participation in identifying community strengths, and targeting ways to meet any challenges through an action plan that is tied to specific projects or initiatives.

The event was attended by 97 residents who worked through identifying strengths, challenges, a vision, and priority projects for a variety of topic areas such as Working Landscape and the Natural Environment, Economic Vitality and Community Services. Of the feedback related to Natural Resources, actions included revitalizing a recreation committee (with focus on the relationship with Clough State Park and adult activities), creating a walkable village center with cross walks and sidewalks, and continuing conservation efforts within the Town focusing on education, acquiring open space, and creating a resource directory.

The Community Profile in its entirety is available on the <u>UNH</u> <u>Cooperative Extension website</u>.

WATER RESOURCES

The *Surface Water Resources Map* details Dunbarton's water resources as noted in this section. This map shows the location of water bodies such as ponds and rivers, as well as watershed boundaries, wetlands, and dams. The *Groundwater Resources Map* includes aquifer transmissivity (how much water moves through the aquifer) and public water supplies.

PONDS

Dunbarton is fortunate to have five Great Ponds. Great Ponds are defined by state statute (RSA 271:20) as all natural bodies of fresh water situated entirely in the state having an area of 10 acres or more. These are state-owned public waters and held in trust by the state for public use. All of Dunbarton's Great Ponds have public access. Part of Gorham Pond, most of Long Pond, and all of Purgatory Pond are surrounded by private lands.

Gorham Pond is the main tributary to Gorham Brook. This 103-acre pond has a maximum sounded depth of 14 feet. It is currently infested with milfoil, a highly invasive aquatic weed that disrupts recreational activities and destroys aquatic habitat. For several years the Town has supported funding to supplement State grants to minimize the impact of this invasive aquatic plant. Land to the north, west, and east have been permanently protected and are known as the Kuncanowet Town Forest and Conservation Area. Trails In the vicinity of the pond, beginning at a trail head on the east side, lead through protected land to beaver ponds and the Stinson Mill site.

The 10.8-acre Stark Pond, with an average depth of only six feet, has an extensive marsh associated with it. Located in the Army Corps Flood Control area, it is also an ice skating resource for residents.



KIMBALL POND CONSERVATION AREA

Kimball Pond is 52 acres in area with an average depth of nine feet. This Pond becomes a tributary to the Merrimack through Black Brook. The land around it was protected through three conservation campaigns spearheaded by the Conservation Commission. Additional conservation and Town Forest land in the area create a diverse area of 965 acres, including a variety of wetland types, forests, open field, steep slopes, and other habitat features. The conservation area has been identified by wildlife ecologists as important habitat, as it is home to a wide diversity of bird species and several rare species.

Long Pond is a natural 32-acre pond. The town owns a 10-acre lot with a small amount of pond frontage which is managed by the Conservation Commission. Purgatory Pond is a small 14-acre pond. The maximum depth sounded was 14 feet with an average depth of 10 feet.

RIVERS

While there are no rivers in Dunbarton, just west of Dunbarton is the North Branch of the Piscataquog River, dammed by the US Army Corps of Engineer's Hopkinton-Everett Flood Control Everett Dam. The lakes and streams on the west side of Town drain into the Piscataquog River, while two major tributaries, Black Brook and Bela Brook on the east side of the Town, described below, drain into the Merrimack River. Roughly half of Dunbarton lies in the Piscataquog River watershed.

BROOKS

Dunbarton is home to several brooks, including:

- Harry Brook flows from Long Pond south into Goffstown and the Piscataquog River;
- Black Brook flows southward out of Kimball Pond through Goffstown to the Merrimack River in Manchester;
- Gorham Brook flows from Gorham Pond into Goffstown and the Piscataquog River;
- Stark Brook flows from the Stark Marsh to the North Branch of the Piscataquog River;
- Bela Brook flows through the northeast part of Dunbarton and into Bow, east of Pages Corner and Routes 13 and 77, and ultimately to the Merrimack River via Turkey Pond. Surrounding the Brook in Dunbarton is a 288 acre townowned conservation area, located to the west of Grapevine Road that contains downstream reaches of wetlands, an undeveloped stream corridor, and a small pond. As Bela

Brook acts as one of the Town's most significant wetlands, the conservation area permanently protects public access to the Brook; and

• Purgatory Brook flows from Purgatory Pond through Goffstown before joining Black Brook and the Merrimack River in Manchester.

These resources can be affected not only by point source pollution (pollution discharged from an identifiable location, such as a pipe or ditch), but also by nonpoint source pollution such as stormwater runoff from roads and developed land. As natural vegetation is replaced by roads, driveways, and buildings, precipitation runs off the land more quickly, picking up available pollutants as it goes. Studies have demonstrated that as little as 10% impervious surface on a lot can affect the morphology and health of adjacent streams and other drainage ways by increasing the speed with which water leaves the lot. While perhaps not currently an issue in Dunbarton, it underscores the importance of water management to the planning and zoning decision-making process.

In addition to draining excess water from uplands, rivers and streams are important to wildlife. Cutting trees too close to a waterway or otherwise altering a brook's natural habitat affects its value as aquatic habitat, as riparian habitat, and as a wildlife corridor.

AQUIFERS

A fairly large aquifer lies beneath the Stark Pond, Stark Brook, and Stark Marsh area, stretching from a few miles south of Hopkinton along Stark Brook to Stark Marsh, down to Stark Pond. Beyond Stark Pond, the aquifer becomes less continuous with small pockets as far as Clough State Park. The other main aquifer in Dunbarton lies within the Kimball Pond/Black Brook watershed. This aquifer is concentrated around Kimball Pond with smaller portions north and south of the pond. A few additional small aquifers underlie the southeastern and southwestern parts of the Town. Available USGS aquifer mapping indicates that all aquifers have relatively low transmissivities, and it is unlikely that any high-yield water supply wells could be located in Dunbarton. Aquifer transmissivity can be seen on the *Groundwater Resources Map*.

WHAT IS AN AQUIFER?

An aquifer is defined as an underground body of porous materials, such as sand, gravel, or fractured rock, filled with water and capable of supplying useful quantities of water to a well or spring. The two main types of aquifers, bedrock and stratified drift aquifers vary in composition and the amount of water accessible. Stratified drift aquifers are typically used for public water supplies in New Hampshire, including industrial, commercial, and domestic uses.

WETLANDS

Wetlands are areas where water is present at or near the soil surface for at least part of the growing season. This influences the plants that grow there, as well as soil characteristics. Wetlands vary widely and therefore may support different plants and animals. A large wetland lies north of Kimball Pond (the Great Meadows) and a second wetland lies to the south of Kimball Pond. North of Gorham Pond is another large wetland complex, including emergent marshes and open water beaver ponds. Other large wetland areas include: Stark Marsh, portions along Stark Brook, areas of Purgatory Pond, and portions along Bela Brook. Many other smaller isolated wetlands exist throughout Dunbarton. Wetlands are influenced by topography, but also may be created, as by beaver dams.

Acreage by wetland type is presented in the table below. Palustrine wetlands are nontidal wetlands areas, vegetated, and characterized by the presence of trees, shrubs or emergent vegetation (rooted below water but grows above the surface). These wetlands are most commonly referred to as marsh, swamp, or bog and are the most common wetland type present in Dunbarton. The second type of wetland, lacustrine wetlands, is characterized by large, open-water dominated systems such as ponds and lakes. These wetlands can also be seen on the **Surface Waters Map**.

Wetlands provide a range of benefits to the ecosystem and the natural environment as they assist in flood control, water storage and groundwater recharge, erosion and sediment control, pollution filtration, and support a wide range of plant and animal diversity.

Dunbarton's wetlands conservation district protects shorelines, streams and wetlands associated with Bela Brook and four of the Town's Great Ponds (The Stark Pond wetland system lies within the Army Corps of Engineers' flood control so is excluded.) Structures, septic tanks and leachfields are prohibited within 125 feet of the wetlands conservation district.

Table of the the table by type				
Type of Wetland	Acreage	Total % of Town		
Palustrine	1,832.4	9.3%		
Lacustrine	336.1	1.7%		
Riverine	<1*	<1%*		
Total	2,168.3	11%		

Table 6.1: Wetland Acreages by Type

Source: National Wetlands Inventory GIS Database *No Riverine wetlands were reported by the National Wetlands Inventory GIS Database

VERNAL POOLS

Vernal pools are wetland depressions characterized by their small size and seasonal filling and drying. They may be physically isolated from other wetlands. Because they typically dry each year, no fish can survive in them. This in turn allows other species to thrive in them. Some unique wildlife species are dependent on vernal pools, especially for breeding. These include fairy shrimp, wood frogs, and "mole salamanders" such as the blue-spotted salamander and yellow spotted salamander.

There are vernal pools on public lands in the Kimball Pond and Kuncanowet conservation areas and the Hopkinton Everett Flood Control Area and throughout Dunbarton, many on private land, though they are easy to overlook because they are not always wet.

FLOODPLAINS

Floodplains are areas of low-lying ground adjacent to a river or stream that become inundated when heavy precipitation occurs upstream within the watershed. Keeping floodplains in their natural state is an important goal not only for wildlife habitat but for improved water quality, recharging of aquifers and protection of nearby properties and structures. While Dunbarton has a relatively high elevation and no rivers or large streams flow through Town, there are still some floodplains identified on the **Surface Water Map.** The Town of Dunbarton joined the National Flood Insurance Program in 2001 and has adopted a Floodplain Ordinance to provide protection in special flood hazard areas in Town.

HYDRIC SOILS

Wetlands are defined by the presence of water, soil type, and vegetation. Hydric soils are indicative of wet conditions. There are a total of 3,922 acres of hydric soils in Dunbarton with 2,740 acres comprised of Hydric A soil and the remaining 1,182 acres accounting

Very Poorly Drained Soils (Hydric A)

Water is removed so slowly that the water table remains at or on the ground surface for most of the year (9-10 months of the year). Very poorly drained soils occupy level or depressed sites, are frequently ponded, commonly have a thick, dark colored surface layer, and have gray subsoil.

Poorly Drained Soils (Hydric B)

Water moves so slowly that the water table remains at or near the ground surface for at least half the year (6-9 months of the year). These soils occupy nearly level to sloping sites, are ponded for short periods in some places, have a dark colored surface layer, and have grayish colored subsoil which is mottled in most places.

DAMS

According to the NHDES, there are 12 dam sites in Dunbarton. They are displayed in Table 6.2. The State's hazard classification system categorizes dams on the basis of safety. Four dams in Dunbarton are classified as AA, which means the failure of any of these dams would not threaten life or property. One dam is classified as A, which means it presents a low hazard potential. No dams in Dunbarton are classified as B, meaning the dam has a significant hazard potential were it to fail.

The most dangerous class is Class C, which means the dam has a high hazard potential with possible loss of life and damage to major highways. Dunbarton has two Class C dams, the Everett Reservoir North and East Dikes, which are part of the US Army Corps of Engineers' Hopkinton-Everett Flood Control. The remaining five dams are not classified in NH DES records. This is because the dams were not built or are in ruins and are not currently holding back water.

Hazard			
Class	Dam Name	River	Status
Non-			
Menace	Cohen Fire Pond	Unnamed Stream	Active
Non-			
Menace	Wildlife Pond III	TR Black Brook	Active
Non-			
Menace	Recreation Pond	Natural Swale	Active
Non-			
Menace	Recreation Pond	Stark Brook	Active
Non-			
Menace	Dunn Farm Pond Dam	Natural Swale	Active
Non-			
Menace	Wildlife Pond	TR Stark Brook	Active
Non-			
Menace	Zeller/Vaal Recreation Pond	Runoff	Active
Non-			
Menace	Wildlife Pond	TR Stark Brook	Active
Low	Flintlock Estates Fire Pond		
	Dam	Unnamed Brook	Active
Low	Belanger Recreation Pond		
	Dam	Unnamed Stream	Active
Low	Kimball Pond Dam	Black Brook	Active
Low	Stark Pond Dam	Stark Brook	Active
High	Everett Lake North Dike P2	Stark Brook	Active/Multiple
High	Everett Lake East Dike P1	TR Stark Brook	Active/Multiple

Table 6.2: Active Dams in Dunbarton

Source: NHDES One Stop Mapper, December 2016

WATER USE AND CONSUMPTION

Water is an essential resource for residents, businesses, and local agriculture. The majority of Dunbarton's water is supplied through private water supply systems (commonly referred to as wells) directly to households and businesses. According to data gathered through the New Hampshire Department of Environmental Services (NHDES) OneStop, there are over 700 wells registered in Dunbarton. Additionally, water can be acquired through public water supply systems, which are typically found in densely populated communities, and provide water via piping for a large area with a high number of homes and businesses. Though no public systems of this size are present in Dunbarton, a few smaller scale public water systems are registered that serve a small number of people, including Dunbarton's Elementary School and the Countryside Golf Club. Public water systems may source from groundwater or surface water depending on the system's location and surrounding topography. Given Dunbarton's dispersed development patterns and absence of centrally located aquifers, it is unlikely public water supplies will be developed to serve residential properties in the near future. The Town's dependence on wells reinforces the importance of good homeowner and municipal practices, particularly those relating to water and waste management and transportation corridors, including road salt use and storage, in order to protect groundwater. Information is available from the NHDES.

Arsenic and radon, both naturally occurring potential pollutants of drinking water, are common in New Hampshire due to the state's geology. Arsenic can have adverse effects on human health and is thought to be predominantly natural, originating from minerals in bedrock. Former pesticide use, treated lumber, and manufacturing also are sources of arsenic and may be a contributing factor to groundwater contamination. Radon is a naturally occurring radioactive gas found in bedrock and water from bedrock drilled wells. Radon can be released into indoor air during showering, dishwashing and doing laundry. Exposure to radon poses an increased risk of developing certain types of cancer.

The NHDES recommends testing well water every three to five years. High levels of both arsenic and radon have been documented in Dunbarton wells, and homeowners should include both contaminants in well water quality test runs. Treatment systems are available for both contaminants.

CHALLENGES TO DUNBARTON'S WATER RESOURCES

At one time direct discharges of pollutants via pipes into rivers and streams were the greatest threat to water quality in the United States. While "point source" pollution still exists, the greatest threat to Dunbarton's water resources is likely from contaminants carried in stormwater runoff. Runoff picks up the oils, pesticides, fertilizers, winter road salt and sand, and other pollutants from everyday activities that end up on the land surface. Such runoff typically carries those pollutants to streams, ponds, and wetlands.

The effects of stormwater runoff are magnified by impervious surfaces, such as buildings and paved areas like roads and parking lots since they prevent water from percolating into the ground. The problem is further exacerbated by heavier rainfall and flooding. Septic systems, gravel pits, manure storage areas, exposed soils, particularly on sloping land, oil and gasoline storage tanks, auto junkyards, and sites where hazardous materials are used or stored are also potential sources of nonpoint source pollution. Management and maintenance of these sites should follow best management practices to prevent potential pollution. As Dunbarton grows, minimizing pollution risks will become even more important. Like the problem, the solution lies in dispersed responsibilities. Homeowners, Town highway crews, septic system designers and installers, developers, and planning decision makers all play a part in reducing pollution potential, serious natural resource degradation, and threats to human health. The NHDES maintains a list of spill and remediation sites in town and is the agency charged with helping to resolve pollution problems.

Another major challenge facing Dunbarton's water resources is loss of wetlands due to fill or hydrologic changes in the surrounding area caused by changing land uses. Because they typically contain water only part of the year, vernal pools are especially vulnerable to being bulldozed under or otherwise filled. But incremental fill of permanent wetlands also has lasting consequences, particularly on the wetland's capacity to absorb and treat stormwater, to retain stormwater and thereby reduce flooding, and to recharge groundwater resources on which Dunbarton depends for its drinking water.

Loss of vernal pool habitat due to development is a threat, as is degradation, filling, or altered hydrology of surrounding land. Vernal pools are vulnerable to being overlooked during certain seasons or drier years due to the seasonal nature of their filling and drying cycles. Because they are dry during certain seasons, locations of vernal pools can be challenging to identify.

Invasive species come in terrestrial and aquatic forms. Milfoil presents a current problem in Gorham Pond.

LAND RESOURCES

CLIMATE

How land resources are developed can have a direct/indirect impact on climate. For example, land use decisions that lead to sprawling development patterns can result in more paved surfaces, less forest cover and open space, and greater reliance on automobiles to access needed services, leading to more generated heat, runoff and erosion, as well as energy consumption and emissions.

Broader climate events, associated with the frequency and intensity of storm events, have occurred throughout New Hampshire, leading to increases in annual average precipitation and the amount of rainfall associated with storm events. These events can cause damage to infrastructure, homes, businesses, drinking water supplies, recreation areas, and our ecosystems. Good planning can help significantly to mitigate impacts. Making informed land use decisions that evaluate potential flooding, erosion, and impacts to key natural resources, ecosystems and habitats is an important goal of creating a resilient, healthy community. For a full discussion of natural hazard risks, please refer to Dunbarton's Hazard Mitigation Plan.

CONSERVATION LANDS

The **Conservation Lands Map** depicts the public conservation lands in Dunbarton. The listing is displayed in Table 6.3. While many of these properties initially were protected lot by lot, the two largest conservation areas – KTFCA and Kimball Pond – are the result of concerted conservation campaigns involving hundreds of acres, multiple grant applications, several landowners, and many players. In the case of KTFCA, the Conservation Commission, Town Forest Committee, interested individuals, landowners willing to donate their land to create this wonderful town conservation area, and Selectmen worked together to bring the project to pass, tapping into available State funds. In the case of Kimball Pond, the Conservation Commission worked with citizens interested in contributing financially to the project, the Selectmen, and outside agencies, particularly the Trust for Public Lands, to bring the Kimball Pond Conservation Area to fruition (over many years and three separate projects). Their key conservation attributes reflect Town priorities for conservation land acquisition. The newer conservation properties have also been targeted efforts to create contiguous blocks of conservation land.

While most of the easements in town were gifted to the Town or to nonprofit land trusts, where funding has been needed to purchase land, the Conservation Commission has raised \$9 in grants and private contributions for every \$1 in Town funding from the Conservation Fund.

The Conservation Commission is responsible for management of the Kimball Pond Conservation Area and other Town conservation properties. Designated Town Forests are managed by the Town Forest Committee, which collects the proceeds of its timber sales and sales of gravel to the Town in a Town Forest Fund. The Kuncanowet Town Forest and Conservation Area is managed by a committee comprised of representatives of the Conservation Commission, the Town Forest Committee, and the community at large.

Town-owned conservation lands are open to the public for lowimpact recreational use, such as hiking, bird watching, snow shoeing, and cross-country skiing. No open fires, dumping, or ATVs are allowed. Snowmobiling is allowed on designated trails found on some conservation properties.

Conservation Lands	Held by	Acres
Clough State Park (small portion in Dunbarton)	COE/DRED	1
Bela Brook Conservation Area	Town	289
Cathcart/Burack Easement	5RCT	67
Chan Lot	Town	43
Fogg Easement	PLC	13
Farley Easement	5RCT	256
North Woods Easement	Town	3
Stone Farm Easement	5RCT	237
Tucker Hill	Town	11
Town Forest (Old Hopkinton Rd/Transfer Station)	Town	45
Brown Lot	SPNHF*	159
French #5 Easement	SPNHF	127
Greenhalge Easement	SPNHF	50
Hough Easement	SPNHF	130
Gorham Pond Lot	Town	5
Grant Easement & Grant Flowage Easement	Town	8
Kimball Pond Conservation Area	Town	965
Kuncanowet Natural Area - Erikson Lot	Town	122
Kuncanowet Town Forest and Conservation Area (KTFCA)	Town	1033
Long Pond Lot	Town	10
Ray Road Lot	Town	20
Story Easement	Town	45
Taylor Easement	Town	145
Town Forest - Kimball Pond Road (Little, KP lots)	Town	266
Town Forest - Mansion Road (School Lot)	Town	10
Town Forest - Winslow Lot #1	Town	101
Town Forest - Winslow Lot #2	Town	47
Hopkinton-Everett Reservoir (portion in Dunbarton)	COE	1,187

Table 6.3: Dunbarton Conservation Lands

Source: GRANIT and Dunbarton Conservation Commission.

*COE - Army Corps of Engineers; SPNHF – Society for the Preservation of NH Forests; DRED – NH Department of Resources and Economic Development; PLC – Piscataquog Land Conservancy; SRCT – Five Rivers Conservation Trust.

STONE FARM

After several years of work, a conservation easement was placed on Stone Farm, the last working farm in Dunbarton. The Farm also plays an historic role in Dunbarton's history, as it has been continuously owned and operated by the Stone family since 1809. The effort was headed by the Friends of the Stone Farm, which includes the Dunbarton Conservation Commission, Dunbarton Congregational Church, Five Rivers Conservation Trust, and several residents. The conservation easement is held by the Five Rivers Conservation Trust with back up interests to the Town through its Conservation Commission and to the State. The easement will ensure the land is protected from development and available for farming and forestry.

The Conservation Commission plans to work with the current owner of the land to create a pubic trail through the easement that will highlight notable historic and natural features on the farm.



Source: Dunbarton's 2016 Annual Report and http://www.dunbartonconservation.org/.

6.12 | DUNBARTON MASTER PLAN 2019 | NATURAL RESOURCES

Table 6.3 includes lands that are privately owned and protected by conservation easements from development and, typically, subdivision. The protective easements are held by nonprofit organizations or by the Town. Conservation easements held by the Town are the responsibility of the Conservation Commission.

CURRENT USE

Property owners of undeveloped land totaling 10 acres or more may file for reduced property taxes though the Current Use Taxation program. The current use value is the assessed per acre value of open space land based on its income-producing capabilities, not its market value as developable real estate. The legislature passed Current Use to encourage the retention of open space, which makes few demands on Town services and contributes to the state's and a community's rural character. Although current use does not provide a permanent form of land protection, it is important to recognize that it helps to maintain open space throughout the town.

Current Use valuations are determined by the Town assessor in accordance with a range of current use values established by the State Current Use Board (CUB) and considering class, type, grade, and location of land. Current Use categories are as follows:

- "Farm land" means any cleared land devoted to or capable of agricultural or horticultural use as determined and classified by criteria developed by the Commissioner of Agriculture, Markets, and Food and adopted by the CUB.
- "Forest land" means any land growing trees as determined and classified by criteria developed by the State Forester and adopted by the CUB. For the purposes of this paragraph, the CUB shall recognize the cost of responsible land stewardship in the determination of assessment ranges.

- "Open space land" means any or all farm land, forest land, or unproductive land as defined by this section. However, "open space land" shall not include any property held by a city, town or district in another city or town for the purpose of a water supply or flood control, for which a payment in place of taxes is made in accordance with RSA 72:11.
- "Unproductive land" means land, including wetlands, which by its nature is incapable of producing agricultural or forest products due to poor soil or site characteristics, or the location of which renders it inaccessible or impractical to harvest agricultural or forest products, as determined and classified by criteria developed by the CUB. The CUB shall develop only one category for all unproductive land, setting its current use value equal to that of the lowest current use value established by the CUB for any other category.
- "Wetlands" means those areas of farm, forest and unproductive land that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The Town levies a land use change tax when the land use changes from open space use to a non-qualifying use. By Town Meeting vote, one-half of the Current Use Change Tax goes to the Conservation Fund for permanently protecting land in Dunbarton.

As shown in Table 6.4, Dunbarton had approximately 8,700 acres of land in current use. That accounts for about 44% of the total land area in Dunbarton. As shown, the main contributor to current use land acreage has been forest land. A general trend shows that from 2007 to 2015 the amount of land placed in current use has

	CU Acreage by Land Type					
Year	Farm Land	Forest Land	Forest Land w/ documented stewardship	Unprodu ctive	Wetland	Total CU Acres
2007	757.49	6,975.20	426.04	26.06	444.31	8,629.10
2008	750.49	6,950.27	426.04	61.46	412.71	8,600.97
2009	740.61	7,129.03	171.75	140.46	475.96	8,657.81
2010	745.26	7,131.71	171.75	142.91	475.46	8,667.09
2011	767.75	7,203.50	171.75	155.01	475.46	8,773.47
2012	751.38	7,194.49	171.75	163.30	475.46	8,756.38
2013	746.38	7,220.92	171.75	178.60	457.46	8,775.11
2014	743.53	6,211.26	1,227.34	523.60	11.08	8,716.81
2015	743.53	6,199.13	1,227.34	14.78	521.60	8,706.38

Table 6.4: Current Use Acreages by Land Type, 2005-2015

Sources: NH Department of Revenue Administration Annual Current Use

Reports

Table 6.5: Land Use Change Tax Collected, 2007-2018

Year	Total
2007	\$25,850
2008	\$25,850
2009	\$37,900
2010	\$5,100
2011	\$900
2012	\$12,000
2013	\$12,000
2014	\$31,000
2015	\$13,950
2016	\$62,800
2017	\$136,500
2018	\$126,500

Sources: NH Department of Revenue Administration Annual Current Use Reports (2007-2016); Town of Dunbarton Staff (2017-2018) remained steady. Table 6.5 shows the amount of monies collected when lands were taken out of current use. Beginning in 1996, the Conservation Commission receives 50% of collected funds.

HILLS

Four major hills are located in Dunbarton. They are identified on the *Bedrock and Surficial Geology Map*. Table 6.6 shows the elevation of each of these features. At 900' Mills Hill is Dunbarton's highest hill. Hills and ridgelines can be important for wildlife, recreational users, and homeowners, recreationists, and visitors seeking views.

Name	Elevation	
Kuncanowet Hill	650'	
Burnham Hill	825'	
Quimby Mountain	850'	
Mills Hill	900'	

Table 6.6. Hills in Dunharton

Source: CNHRPC 1999 Natural, Cultural and Historical Resources Inventory

STEEP SLOPES

Steep slopes within the Master Plan are defined as slopes greater than 15%. The designation of "steep" slopes can range from as little as 8-10% for roadways and driveways to as much as 25-35% for septic and sewer depending on the context of the intended use. Steep slopes are often associated with increased erosion and create problems for road construction and other infrastructure. According to the 2003 Natural Resource Conservation Services (NRCS) draft soils layer, Dunbarton has 4,773 acres of steep slopes. Most of the steep slopes in the Town occur east of NH 13 and west of Kimball Pond Road and Montalona Road. South facing steep slopes provide important wildlife habitat and may harbor unusual plants, depending on soil type.

EXCAVATION MATERIALS

Dunbarton has five excavation sites. Four of these sites are presently used for gravel excavation, while one Town-owned gravel site remains inactive.

Table 6.7: Excavatio	on Operations
e or Location	Type of Materia

Name or Location	Type of Material(s)
McDevitt (private)	Gravel
Belanger & Costello (private)	Gravel
Town of Dunbarton	Gravel
Town of Dunbarton	Gravel
Town of Dunbarton	Gravel (Inactive)

Sources: Subcommittee Input, Town Files

GEOLOGIC RESOURCES

Geological features have contributed to the appearance and development patterns of Dunbarton's landscape. Dunbarton's several hills offer potential sites for recreation and scenic views. One need only to walk up Mills Hill to appreciate the contribution geological resources make to the Town. The bedrock and surficial geology help determine the location of aquifers, wetlands, and forests. Bedrock constituents have the potential to impact water quality (e.g., arsenic and radon content), types and depth of soils, topography, vegetation, and potential for various uses; while the presence of seismic lines indicates where past or potential future earthquakes have/could occur. Though research is continually identifying the importance of these features, the known influences of geological resources should not be overlooked. The *Bedrock and Surficial Geology Map* depicts the bedrock geology of Dunbarton and the location of the hills and mountains as previously noted.

BEDROCK GEOLOGY

Bedrock is the solid material that underlies the soil or other unconsolidated material of the earth. It is most often comprised of a complex of materials. The types of bedrock found in Dunbarton are listed below:

- Dc1m Type: Concord Granite (Late Devonian)—Gray two-mica granite, locally grading to tonalite. This is the most predominant bedrock found in Dunbarton. Accounting for 8,483 acres, the majority of this bedrock is found underlying the area east of Mansion Road and North of Robert Rogers Road. A small area of approximately 584 acres occurs surrounding Purgatory Pond.
- *Ds1-6 Type:* Spaulding Tonalite (of the NH Plutonic Suite, Late to Early Devonian) weakly foliated to nonfoliated, spotted biotite quartz diorite, tonalite, granodiorite, and granite; garnet and muscovite may or may not be present. All 150 acres of this bedrock type occurs along the western border of the Town.
- Sp Type: Perry Mountain Formation (Metasedimentary and Metavolcanic, Middle to Lower Silurian) – sharply interbedded quartzites, light-gray nongraphitic metapelite, and "fastgraded" metaturbidites. Coticule layers common. The majority of the 1,684 acres of Perry Mountain Formation occurs along the western border of Dunbarton, with a majority of it occurring in the northwest corner of the Town.

- Srl Type: Lower part of Rangeley Formation—Gray, thinly laminated (5-25 mm) metapelite containing local lentils of turbidites and thin quartz conglomerates in western New Hampshire. Sparse calc-silicate pods and coticule. Probably equivalent to member B of Rangeley Formation of Maine. This bedrock accounts for 2,834 acres and occurs in the central to southeastern portion of the Town.
- Sru Type: Upper part of Rangeley Formation— Rusty-weathering, pelitic schist, metasandstone, and local coarse-grained metasandstone lentils; calc-silicate pods common; minor coticule. Probably equivalent to member C of Rangeley Formation of Maine. The upper part of the Rangeley Formation accounts for 5,538 acres of bedrock and is the second most prominent bedrock type in Dunbarton. It is located in the central and southeastern part of the Town.

The United States Geological Service (USGS) has conducted many studies in NH on bedrock geology and its effects on water quality. Bedrock geology clearly influences the presence of radon and arsenic in drinking water. Very high concentrations of radon and concentrations of arsenic have been documented in several of the private wells in Dunbarton. While public water supplies are tested and regulated, private wells are not. Virtually all homes in Dunbarton are on private wells.

Bedrock not only affects water quality, but also surface water and groundwater supplies. The materials that comprise bedrock vary in density and permeability. Water "pools" in some areas, while running quickly through other areas, creating aquifers (watersaturated areas underground) and wetlands. Fractures in the bedrock also provide sources for water supplies.

SEISMIC LINES

Dunbarton contains one seismic line, located by Stark Pond Marsh just east of the junction of Ray Road and Mansion Road. This seismic line is approximately 850 feet long. National building codes indicate that Dunbarton, and much of New Hampshire, is in a moderate earthquake zone.

WILDLIFE RESOURCES

Dunbarton has a wide variety of wildlife, from moose, bobcats, and bears to wild turkeys, red-winged black-birds, and saw-whet owls to Blandings turtles, spotted salamanders, and milk snakes. The Community Survey and Community Visioning Session done in preparation of this Master Plan demonstrate the importance of wildlife and the natural habitat to residents. A common theme discussed by attendees at the visioning session was the concern with the continuing growth occurring in Dunbarton and the impact that it may have on the natural features and rural character of the Town. It was highly stressed that natural features should be preserved in the future, with the concern for connectivity of land corridors for wildlife being mentioned. Survey results also indicated that 53.6% felt natural habitat should be one of the most important land conservation objectives for the Town. Fish and wildlife was also indicated with 33.9% of participants.

Wildlife surveys at Kimball Pond and north of Rte. 77 conducted by the Piscataquog Watershed Association have documented all the key indicator species found in intact upland/wetland systems: bear, moose, bobcat, river otter, mink, and fisher. Bird sighting data is available from New Hampshire Audubon. Deeryards have been documented in several areas in Dunbarton most notably between Winslow Road and Barnard Hill Road. In addition, both the Piscataquog Watershed Association (PWA) and the NH Fish & Game Department (NH F&G) have produced habitat maps based on habitat information available through the GRANIT geographic information system. The PWA analysis looked at south facing slopes >10%, steep slopes >35%, alluvial soils, emergent wetlands, wetlands >20 acres in size, river and stream corridors with 300' buffers, open lands >40 acres, and unfragmented forest blocks >500 acres. Special habitat information was provided as an overlay. The NH F&G analysis looked at similar features, with notable exceptions, as follows: wetlands >5 acres in size, wetland clusters (3 or more wetlands <5 acres in size within 1 km of each other and within the same unfragmented block), ledges, and differentiated open lands categories of disturbed, cleared, and agriculture.

These analyses show several conservation opportunities, as follows:

- The roadless area north of Rte 77 abutting the Fort Estates subdivision and the Hopkinton town line;
- The entire Bela Brook drainage and nearby south-facing slopes, still roadless and largely undeveloped;
- The large block of land south of Everett Dam Road and west of Rte. 13 to the Goffstown line;
- The Harry Brook/Long Pond watershed;
- Kimball Pond from Robert Rogers Road on the north to Montalona Road to Legache Hill and Kimball Pond roads on the west to the Goffstown line;
- The powerline;
- The block of roadless open space from Montalona Road on the west to north of Morse Road to Twist Hill Road on the east, to

WILDLIFE ACTION PLAN

The NH Fish and Game Department worked with partners in the conservation community to create the state's first Wildlife Action Plan (WAP) in 2005, and recently updated in 2015. The Plan identifies New Hampshire's wildlife habitats and presents conservation strategies and tools for restoring and maintaining critical habitats and populations of the state's species of concern. For purposes of prioritizing wildlife habitats for conservation across the state, a system was created to rank habitats between and amongst each other. For each habitat type, the top ranking habitats are combined and titled Highest Ranked Wildlife Habitat in New Hampshire. Recognizing that NH has a wide range of conditions, both natural and human altered, the state was divided into biological regions. Highest Ranked Habitat in Biological Region includes the top 30% of all terrestrial and wetland habitats with the following exceptions: 100% of high elevation spruce-fir and floodplain habitats based on their ecological importance and rarity. Aquatic habitats are only ranked statewide and not ranked in this category.

In Dunbarton, 4,133 acres (approximately 21%) of the Town's total land area is identified as Highest Ranked Wildlife Habitat in NH. In addition, approximately 41% (8,106 acres) of the Town's total land area is identified as Highest Ranked Habitat in the Biological Region. Please refer to the <u>scoring map</u> of Dunbarton to view the habitat areas.

the Goffstown line;

- An area east of Twist Hill Road near the Goffstown /Hooksett line;
- An area south of Robert Rogers Road just beyond the intersection with County Road.

Additional smaller areas, largely fields and wetlands, also exist throughout the Town. The "roadless" or "unfragmented" forested blocks are particularly important to interior forest birds and many large mammals that are found in Dunbarton. If residents intend to maintain the present wildlife species diversity, these areas, which in some cases have been the focus of major conservation initiatives, must be viewed as high conservation priorities. Conservation of these areas will also contribute to the community's rural character. (See also the discussion under <u>Corridors</u>, below.)

ECOLOGICAL RESOURCES

For the purpose of this chapter, Ecological Resources are defined as those natural features that are important to wildlife habitat and plant species, and include plant and wildlife species that are found throughout the Town.

CORRIDORS

Just as recreational greenways are established for recreation and transportation, so wildlife use wildlife corridors to travel from one area to another. Maintaining viable, undeveloped corridors contributes to the biological success of many wildlife species, particularly larger mammals, within an area. The following corridors have been identified in Dunbarton, through the *1999 CNHRPC Natural, Cultural, and Historical Resources Inventory*.

• A large utility line corridor travels through the entire length

of Dunbarton from the northern border with Hopkinton to the southern border with Goffstown. This corridor runs through several marshes, conservation lands, and other non-developed lands making it an excellent travel corridor for wildlife.

- The riparian corridor of Bela Brook is primarily undisturbed by roadways or human activities. A series of wetlands dot the entire Brook as it travels along the Bow/Dunbarton town line to Turkey Pond in Concord.
- The Black Brook watershed, a sub-watershed of the Manchester Tributaries of the Merrimack River watershed, provides another relatively undisturbed corridor encompassing the Great Meadow, Kimball Pond, and Black Brook. Virtually all the lower reaches of this corridor to the Goffstown line have been protected, although additional conservation would likely enhance its already high value.
- North/south trending streams, like Gorham Pond Brook and Harry Brook, make for excellent corridors, as does the Kuncanowet Ridge.

Less prominent and obvious corridors provide locally important travel ways for wildlife as well. Often these corridors are identifiable at roadway crossings where motorists commonly see wildlife.

RARE PLANTS, RARE ANIMALS AND EXEMPLARY NATURAL COMMUNITIES

Rare plants, rare animals, and exemplary natural communities are tracked by the NH Natural Heritage Bureau in cooperation with various other organizations. Table 6.8 identifies all flora and fauna identified by the NH Natural Heritage Bureau for Dunbarton. As seen, each listed species is given a rank of importance, based upon how rare the species or community is and how large or healthy its examples are in each community. Highest Importance indicates an excellent example of globally rare species, natural community, or system. Extremely High Importance indicates a good example of a global rarity or an excellent example of a state rarity. Very High Importance indicates a marginal example of a global rarity or a good example of a state rarity and high importance indicates a marginal example of a state rarity.

Note, however, that this list is not complete. Several other rare flora and fauna have been identified in the Town by other sources. For example, there is more than one heron rookery in the Town and New Hampshire's two other rare turtle species, the Wood Turtle and the Spotted Turtle, have been documented in Dunbarton in recent years. In addition, the emergent marsh south of Kimball Pond is considered an exemplary plant community by the NH Chapter of The Nature Conservancy. An impresive stand of rare Black Gum occurs in the Kuncanowet Town Forest and Conservation Area. There are scattered black gum elsewhere in town.

SCENIC VIEWS

Dunbarton has several viewsheds and scenic vistas that are noteworthy. Among these are the views from Burnham Hill and Mills Hill on Route 13 and the view west from Gorham Pond Road near the donor's marker in the field that is now part of the Kuncanowet Town Forest and Conservation Area.

AGRICULTURAL RESOURCES

The Natural Resource Conservation Service (NRCS) soil mapping program inventories the complex patterns of soils and organizes them into groupings as a useful and understandable planning tool. Please refer to the *Agricultural Soils Map* for the locations of the different soils groups in Dunbarton.

Table 6.8: Rare Plants, Rare Animals, and Exemplary Natural Communities Present in Dunbarton

Species or Common	Listed		# Reported Last 20 vrs		
Name	Federal	State	Town	State	Importance
Natural Communities	s - Terrestr	ial			
Red oak – ironwood					High
– Pennsylvania					importance
sedge woodland	-	-	1	12	
Natural Communities	s - Palustriı	ne			
Black gum – red					Very high
maple basin swamp	-	-	1	32	importance
Vertebrates - Birds					
Pied-billed Grebe					-
(Podilymbus		Threaten			
podiceps)	-	ed	Historical	28	
Vertebrates - Reptiles	s				
Blanding's Turtle					Extremely
(Emydoidea		Endanger			high
blandingii)	-	ed	20	709	importance
Northern Black					Very high
Racer (Coluber					importance
constrictor		Threaten			
constrictor)	-	ed	4	54	
Smooth Green					Very high
Snake (Opheodrys		Special			importance
vernalis)	-	Concern	1	60	
Spotted Turtle		Threaten			High
(Clemmys guttata)	-	ed	1	119	importance
Invertebrates – Dragonflies & Damselfies					
Martha's Pennant					Very high
(Celithemis Martha)	-	-	1	22	importance

Source: NH Natural Heritage Inventory, July 2013

Prime farmland and forestry soils in Dunbarton are identified in the following tables, using NRCS derived data compiled in GRANIT's database. Prime farmland soils are described nationally as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. Note that, while farming prime soils is easier and generally requires less additional nutrient input, most of Dunbarton's farms are not on prime soil.

Table 6.10: Farmland Soils

Туре	Acres	Percent*
Prime Farmland Soils	647	3.2%
Soils of Statewide Importance	745	3.7%
Soils of Local Importance	11,993	59.8%
All Other Soils	6,661	33.2%

Source: NH GRANIT

*Based on a total land acreage of 20,046 provided by NH GRANIT

Table 6.11: Forestry Soils			
Туре	Acres	Percent*	
Forestry Soil IA	6,850	34.2%	
Forestry Soil IB	7,497	37.4%	
Forestry Soil IC	1,156	5.8%	

Source: NH GRANIT

*Based on a total land acreage of 20,046 provided by NH GRANIT

Categorized soils of statewide importance have properties that exclude them from the prime farmland list. However, they are important to agriculture in the State and produce fair to good crop yields when properly treated and managed. As a general rule, erosion control and irrigation practices are necessary to produce high-yield crops. Land that is not prime or of statewide importance but still has local significance for the production of food, feed, fiber and forage is classified as farmland of local importance. Please refer to the USDA Natural Resources Conservation Service's (NRCS) publication, <u>NH Soils Data Dictionary</u>, for more detailed information. Sixty percent of Dunbarton's farmland soils is classified as soils of local importance.

Dunbarton has a number of fields that add significantly to the sense of rural character. The small-scale farms in town support or produce farm animals, vegetables, nursery stock, horses, and hay. Though limited in scope, agriculture in Dunbarton contributes importantly to the region's agricultural economy.

FOREST RESOURCES

The Forestry Soils Map depicts the location of the best forestry soils (Group 1 soils) in Town. The NRCS classifies forest soils into categories that identify important forest soil groups, using characteristics such as depth to bedrock, texture, saturated hydraulic conductivity, available water capacity, drainage class, and slope. These groupings can help in evaluating the relative productivity of soils and how soil and site interactions can influence management or land use decisions. There are specific characteristics for each soil grouping with Group 1 soils (see Table 6.11) having the highest potential for commercial forest products, suitability for native tree growth, and overall forest use and management as these soils are more fertile and have the most favorable soil moisture relationship. Other soils categories for Group II soils are not identified in the master plan as they have forest management limitations such as steep slopes and bedrock outcrops or are poorly drained. For a complete list of definitions, please refer to the NH Soils Data Dictionary.

Forests serve a number of functions in both the community and the region, including protecting public water supplies and surface waters by filtering pollutants and reducing runoff, serving as a

source of renewable energy, providing lumber and other forest products, creating wildlife habitat, providing outdoor recreational opportunities, and contributing to Dunbarton's rural character.

FOREST MANAGEMENT

Timber harvesting remains an important source of income in New Hampshire. Timber is considered a renewable resource and, when managed properly, provides a continuous supply of wood products and income. However, economic viability is possible only if lots are sufficiently large to generate income – 50 acres is a common minimum, although much smaller lots can provide a continuous source of firewood for the homeowner.

Timber also generates tax revenues for the Town. When timber is harvested, the individual harvesting must file an Intent to Cut form, which provides the basis for assessing a Town-collected timber tax. Table 6.9 shows the timber taxes collected in Dunbarton from 2007 to 2016. Although the amount varies from year to year, the Timber Tax still provides a source of income to the Town.

Table 6.9: Timber Tax Collections, 2007-2016

Year	Total	
2007	\$7,681	
2008	\$9,172	
2009	\$18,802	
2010	\$7,903	
2011	\$16,427	
2012	\$10,290	
2013	\$10,428	
2014	\$23,203	
2015	\$18,572	
2016	\$14,752	
Courses Dupharten Annual Benarte		

Sources: Dunbarton Annual Reports

KUNCANOWET FOREST

The Kuncanowet Town Forest and Conservation Area covers approximately 1,000 acres of forest and wetlands located south of Gorham Pond and along the Town line of Weare and Dunbarton. The land contains a network of hiking trails including a varied terrain and a diverse plant and animal population. The area is managed by the Kuncanowet Town Forest and Conservation Area Committee.

Source: http://www.dunbartonconservation.org/

TREE FARMS

One method that has been implemented to assure good timber management practices is the development of the Tree Farm Program. The American Tree Farm System[®] (ATFS) is a program of the American Forest Society aimed at educating landowners how to manage their forests for multiple uses. Since 1941, members of the Tree Farm program have been educated on topics such as wildlife habitat, watersheds, soil conservation, and forest resources. The ATFS indicates that to qualify for the program, landowners must:

- Dedicate at least 10 acres to growing and harvesting forest products;
- Have a written plan for the future management of their forest;
- Follow management recommendations prescribed by a licensed forester; and

• Demonstrate a commitment to stewardship of their forest for multiple values.

Though not mandatory, programs like this one may assure continued conservation of Dunbarton's forests while providing landowners a consistent source of revenue.

CHALLENGES TO LAND RESOURCES

Development of land for residential purposes, the dominant land conversion activity in Town, converts forests and fields to house lots and yards. Over time, this development pattern contributes to the following natural resource challenges in Dunbarton:

- Habitat loss and fragmentation;
- Loss of agricultural lands and active farms;
- Loss of scenic views and sense of rural character; and
- Control/management of invasive species.

Wildlife diversity is impacted by cumulative development patterns that reduce the availability of unfragmented land and cause habitat loss. Unfragmented lands often encompass multiple habitat types and provide safe travel corridors, migratory pathways and habitat diversity. Community survey results demonstrate residents' appreciation of wildlife and natural habitats, where "natural habitat" was ranked the highest conservation priority.

A changing community also impacts the Town's agricultural land base. Residents value Dunbarton's remaining working farms and fields, ranking them 4th as conservation priorities. While Dunbarton's farms and fields contribute importantly to regional agricultural viability, they are especially appreciated locally for their scenic qualities. The same features that make land good for agriculture tend to make it good for development, and these lands will remain under development pressure. And new farm enterprises have not always garnered support from abutters, who resist the change and do not favor agriculture over what may be more familiar.

Residents rate scenic views and sense of rural character highly (see Community Survey results). Although the idea for some is tied to opportunities for community involvement, rural character is also defined by images: forests, wildlife, historic village centers, farms, undeveloped waterways, hills – features endemic to Dunbarton.

An invasive species has the innate ability to thrive and spread aggressively outside its natural range. Because invasive plants may not be affected or eaten by local native insects, diseases, and planteating animals, they are at a competitive advantage over native plants. They often get a foothold and thrive in disturbed soils. They may be brought into an area in fill or from other sources, e.g., birds. Invasive species tend to be highly flexible and adaptive to changing conditions. As a result, they can adjust more readily than native species to climate changes affecting flowering time, seed set, and other plant survival functions. If allowed to thrive, they can alter an entire ecosystem, causing harm to native species by replacing food sources with inferior foods, reducing ecological diversity, and disrupting intricate relationships. Note that aquatic plants, such as milfoil, can also be invasive.

Cumulative land development patterns need to be periodically evaluated in order to address these natural resource challenges the Town faces. It is important to note that forty-four percent of the land in Dunbarton is in current use. As indicated, current use land is not protected land, but merely land taxed at its open space value. If all the current use lands were developed, Dunbarton would be a very different community from what it is today, to say nothing of development of lands not in current use and presently undeveloped.

Conservation interests and land-use decision makers in Dunbarton need to work more closely to address these challenges and ensure that important natural features and resources are protected to maintain a healthy ecosystem as well as opportunities for future generations of Dunbarton residents to experience the natural landscape. Landowners interested in permanently protecting their land should be encouraged to do so.

REGULATORY PRESERVATION TECHNIQUES FOR ADDRESSING LAND USE CHALLENGES

Dunbarton has adopted some regulatory techniques that can aid in the conservation of its natural resources. These techniques are summarized below and others that could be considered in the future are also identified.

CLUSTER DEVELOPMENT ZONING

Area: Town-wide

Dunbarton currently allows open space subdivisions on lots that are 20 acres or larger in the Low and Medium Density districts. Its purpose is to provide flexibility in the design and development of land to conserve open space, retain and protect important natural and cultural features, provide for more efficient use of Town services and promote the development of balanced residential communities in harmony with the natural landscape. Areas identified for protection include scenic views, wildlife habitat, including large unfragmented blocks of undeveloped land, areas of highest quality habitat, water resources and historic structures. This technique is described more fully in the Existing and Future Land Use Chapter.

Conservation subdivisions work best when used with a conservation plan that identifies key protection areas that have been identified through a natural resource inventory or a conservation priorities/open space protection plan.

OVERLAY DISTRICTS

Area: As appropriate for districts

Dunbarton has two overlay districts. The Wetland Conservation District is designed to protect important wetlands from development of structures and other harmful land uses on or adjacent to wetlands. Structures as well as septic tanks and leach fields must be set back at least 125 feet from the Wetland Conservation District. This regulation does not cover all wetlands and represents one tool to help protect Dunbarton's wetlands.

The second overlay district is the Multi-Family Residential Housing District, located parallel to both sides of N.H. State Highway Routes 13 and 77, is intended to increase residential density in areas where transportation networks and proximity of services are more readily available. Overlay districts may also be used to protect highway corridors, drinking water, steep slopes and ridgelines.

AESTHETICS-BASED LAND USE REGULATIONS

Area: Town-wide

While not currently utilized in Dunbarton, aesthetics-based regulations are another technique to regulate the visual look, feel and placement of new buildings and roads, as well as the design consequence of lot fragmentation that takes place during the subdivision process. The design and placement of signage and lighting, and regulating design changes for historic residential and commercial structures are also sometimes considered.

NON-REGULATORY PRESERVATION TECHNIQUES

Volunteer efforts to conserve land are effective and are often more readily accepted than regulatory requirements. Hand in hand, regulatory and non-regulatory methods work together to serve the community's preservation interests.

CONSERVATION EASEMENTS

Area: Town-wide

A conservation easement is a permanent, legally binding agreement that ensures that certain uses will never be allowed on the property put under easement. Conservation easements are designed to keep land undeveloped and to promote open space land uses like agriculture, forestry, wildlife habitat, and watershed protection.

Land affected by a conservation easement can be sold by the original and subsequent owners but the easement "runs with the land" and is binding on all future owners.

Because they remove the development rights from a property, easements have value. That value can be gifted, sold, or sold at less than fair market value. As indicated above, Dunbarton's Conservation Fund can be used to acquire conservation easements, but the amounts the Fund accumulates are limited. Other sources for purchasing easements may include fund-raised dollars and grants. Funding limitations limit the opportunities to conserve land permanently except when landowners are able to gift the easement value, for which gift they may get federal tax benefits. Easements are held and enforced by land trusts or governmental entities.

MANAGEMENT AGREEMENT

Area: Town-wide

Management agreements primarily focus on a particular feature or use, such as a recreational trail across private land. They can be custom tailored to any specific situation, may be time-limited, and <u>Buffers Between Uses</u> – Written agreements which relate to the establishment and maintenance of buffer areas between incompatible land uses can be used to ensure that issues related to development and growth do not have a negative impact on the rural and scenic qualities that are valued by the Town.

SUMMARY

Dunbarton is blessed with a variety of natural features that continue to define the community and influence how residents and visitors alike see the Town. Dunbarton's geologic legacy gave the Town many of its basic building blocks. Much has been done to protect key forested areas, wetlands, and wildlife habitat and create recreational opportunities. What happens next to our water resources, wildlife, special ecological resources, agricultural lands and forests is in the hands of individual landowners, dedicated community leaders, local decision makers, and the Town residents at large. For many residents, it is Dunbarton's special places and features that make the town such an attractive place to live. Foresight, good regulations, community support for conservation efforts, and collaborative undertakings with conservation partners – of which there are several excellent examples – will help Dunbarton conserve its natural legacy.

OBJECTIVES OF THE CHAPTER AND RECOMMENDATIONS

OBJECTIVE 1:

To ensure protection for water systems including, but not limited to, ponds, streams, wetlands, and vernal pools.

- → Ensure future development, including bridges, roads, and buildings, minimizes impacts on water resources, and amend planning and zoning tools if necessary to achieve this end.
- → Enhance stormwater management activities to protect against degradation of water resources in the face of changing rainfall patterns, intensities, and duration.
- → Continue work with interested residents, the state, and private interest groups to control milfoil in Gorham Pond and to prevent its spread to other ponds in Town.
- → Review and improve the wetlands overlay district in the Zoning Ordinance.

OBJECTIVE 2:

To maximize integration of natural resources protection in Dunbarton's planning and zoning process.

- → Encourage land-use decision-making boards to incorporate consideration of wildlife corridors, unique habitats, and contiguous open space and promote development designs that accentuate and protect key natural features on site.
- → Require that development provides buffers to protect areas where unique or special plant communities or habitat for rare wildlife have been documented.

- → Encourage Planning and Zoning Boards to seek feedback from the Conservation Commission during subdivision and site development decision-making process.
- → Update regulations and the zoning ordinance to reflect best practices for protecting natural resources through regulatory means.
- → Evaluate the success of the open space subdivision regulations periodically to determine if implementation is meeting the purpose of the open space subdivision.

OBECTIVE 3:

To identify scenic vistas (viewsheds) and determine their importance for protection.

- → Locate scenic vistas (viewsheds) that are most representative of the rural character of Dunbarton and prioritize their protection.
- → Investigate the possibility of incorporating scenic vista (viewshed) protection into the subdivision regulations.

OBJECTIVE 4:

To identify parcels and support acquisition of conservation lands, whether by conservation easement or fee acquisition on the part of the town or other public or nonprofit conservation entities.

- → Locate and permanently protect corridors that connect contiguous areas of protected lands so that wildlife can pass from one conservation area to another.
- → Locate large tracts of land or smaller tracts of land that could be joined to create larger tracts that have qualities worthy of protection.

→ Take advantage of opportunities to collaborate with landowners and land trusts to conserve important open space/natural resources in Dunbarton.

OBJECTIVE 5:

To promote understanding of nature and the multiple benefits the wetlands, streams, forests, meadows, agricultural lands, rocky outcroppings, and other natural features provide through education and outdoor recreational experiences.

- → Educate townspeople about the importance of open space as it affects local taxes, wildlife, rural character, and quality of life.
- → Collaborate with diverse organizations to promote appreciation for natural and cultural resources on public lands and trails open to the public.
- → Through collaborations help teach residents of all ages about the importance of water resources, wildlife habitat and diversity, and other natural resources issues relevant to our Town.
- → Work with Dunbarton Public Library and Garden Club to educate landowners and relevant Town employees about invasive species.
- → Support efforts to provide opportunities for outdoor recreation throughout Town.

OBJECTIVE 6:

To continue to manage Town conservation lands for recreation, wildlife, and natural resources protection.

- → Monitor all properties at least annually, and more frequently as necessary for trail maintenance or other issues.
- → Ensure all public uses are compatible with overall property goals and the terms of any easements or other documents that define or restrict uses.