

CHAPTER 5

Natural Resources

Introduction

An argument could be made that nothing is more important to a town and its people than their natural resources. After all, the water we drink, air we breathe, food we eat, and homes we live in – all products of natural resources – are essential to our very existence and survival. Our environment, from the planet we live on to the town we live in, is a balanced natural ecosystem composed of biological and geophysical processes and products – natural resources – that provide the essential building blocks of life and the nourishment, nutrition, energy, and sustenance needed to survive and thrive. Natural Resources include vegetation (plants, trees, shrubs, crops, forests, wetlands), wildlife, water, air, soil, minerals and many other components of the natural biology, geology, topography, and the topology, of the land, atmosphere, and water. They influence and are affected by the bio-physical relationships, natural cycles, and processes occurring between the earth, water, air, and their environments, including evaporation, the hydrologic cycle, soil chemistry, weather, humidity, temperature, and wind patterns.

As such, natural resources are unique in that they are shaped *by* their environment, and shapers *of* their environment. They are formed and defined by their surrounding environmental and climatic conditions while at the same time, shaping, regulating, or otherwise influencing the composition of that environment and the local or regional climate. They are essential to all life and living processes. They provide air, water, vitamins, minerals, nutrients, food, building materials for shelter, textile materials for clothing, and many other essential elements necessary for life and living. They afford people and communities the opportunity and ability to survive and thrive. And in doing so, they play a major role in sustaining and defining life, culture, and society, here in Ashburnham and around the globe.

A town's natural resources are a defining aspect of its physical existence relative to both its landscape and its people. The following Chapter provides an inventory of the Town of Ashburnham's Natural Resources and provides an explanation of their importance to the community in the past, present, and future. It provides a historical context, an assessment of current conditions, and future significance of the Town's natural resources and community needs.

Natural Resource Visions:

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Inventory and Baseline Conditions

Ashburnham is blessed, in both abundance and quality, by the presence of variety of critical and valuable **Natural Resources**, particularly lush forests, pristine streams, flowing rivers, crystal-clear lakes, placid ponds, rich wetlands, productive soils, and a diversity of fish, and wildlife. Below is an inventory of Ashburnham's many natural resources and descriptions of their past significance and an assessment of their current, existing conditions. Much of the information is, in whole or part, summarized from the recent 2023 Ashburnham Open Space & Recreation Plan.

Ashburnham's Geographic Location & Natural Landscape

The Town of Ashburnham consists of 26,209 acres of land in northern Worcester County of the Montachusett Region. It abuts the New Hampshire border to the north, the Town of Ashby to the east, the City of Fitchburg to the southeast, the City of Gardner to the south and the Town of Winchendon to the west. Although there are broad open tracts and low-lying, level areas in some places, the town is primarily hilly and forested with maximum elevations of 1,800-feet above sea level, characteristic of the Worcester/Monadnock Plateau Ecoregion of the greater Northeastern Highlands (US EPA Level III and IV Ecoregions of New England, 2009).

Ashburnham, known as the "Town of Many Lakes", has over 20 lakes and ponds over 5-acres in size, and more than 100 linear-miles of brooks, streams, and rivers, accounting for 1,335 acres of surface water. Almost 9% (2,275 acres) of the town's total acreage (26,209 acres) is either open water or wetland. Approximately 60% of the town is served by municipal water drawn from Upper Naukeag Lake, while the remaining areas are served by individual, private wells (Ashburnham, 1986).

The Town's landscape is primarily forested with forests accounting for approximately 75% of the land cover (~ 19,752.53 acres), by far the dominant cover type and an abundant and valuable natural resource. Ashburnham's lush and vast forests form an almost uninterrupted vegetated expanse from Town-line to Town-line in all directions and forms a multi-directional connective corridor and buffer of (relatively) undeveloped green, natural landscape. Such a landscape of similar expanse is otherwise almost unknown in most parts of the surrounding Montachusett Region of North Central Massachusetts and throughout much of southern New England.

Mount Watatic and the Town's other hills, mountains, and ridges have always provided amazing views of the surrounding area. Such high-points and their view-sheds, at one time, offered a sacred seat and open view of the sky above and valleys below, and were of strategic importance for long distance communication and lines-of-sight for native people and later, European settlers. Today, they offer one-of-a-kind scenic vistas accounting for some of the region's finest recreational opportunities, including the revered Midstate Trail. In addition to scenic views, these highlands, and their unique characteristics, result in a colder local climate, more susceptible to harsh weather conditions and increased snowfall, than much of the surrounding region.

These three things – water, forests, and highland ridges – define the landscape of the place that is Ashburnham and have long shaped its settlement, development, character, and heritage. Given this, residents of Ashburnham have always placed great emphasis and value on natural and cultural resources and the relationship between Ashburnham's unique physical and cultural characteristics and the character of its people. As Ezra Stearns said in his 1887 History of Ashburnham:

“The altitude of the town and the bold and rugged outlines of the landscape, are the elements of scenery unsurpassed in beauty and grandeur. These features of nature are a living inspiration and enjoyment to all who inhabit here, and treasured among golden memories are the visions of matchless sublimity which delighted the childhood and youth of every absent son and daughter of Ashburnham.”

Ezra Stearns, 1887

Watersheds and Surface Waterbodies (Rivers, Streams, Lakes, Ponds, and Wetlands)

Ashburnham possesses an abundance of high-quality surface water resources, in the form of rivers, brooks, lakes, ponds, and wetlands. Twenty lakes and ponds, and numerous streams, brooks, wetlands, bogs, and vernal pools, make up the water resources in Ashburnham. These water resources played a major role in the town’s early milling history and contributed to the development, growth, and prosperity of the Town over time. The Town’s water resources are as critical and valuable a natural resource today as they were then, providing clean drinking water, exceptional fish and wildlife habitat, high quality recreational opportunities to the Town’s residents and the entire region.

The town serves at the headwaters of three of the region’s major river systems – the Millers River, the North-Nashua River (through the Whitman River and Phillips Brook), and the Souhegan River. Those three rivers, all originating within the hills of Ashburnham, traverse through Massachusetts and New Hampshire draining the landscapes and feeding the rivers of some of the region’s most populated areas as they course toward the Merrimack (Nashua and Souhegan River drainages) and Connecticut (Millers River drainage) Rivers, before eventually out-falling at two very distant and distinct locations, the Gulf of Maine and Long Island Sound, respectively. As such, Ashburnham’s watersheds and their surface water resources provide benefits not only to the Town, but also to much of the Southern New England Region.

Lincoln Pond, which drains into Lake Winnekeag, Phillips Brook, and the North Branch of the Nashua River forms the headwaters of the Nashua Watershed. Lake Wampanoag is also within the Nashua Watershed and flows south to the Whitman River and then to the North Branch of the Nashua River, which ultimately flows into the Merrimack River in Nashua, New Hampshire. The Millers Watershed begins with waters that drain from Wallace Pond, Lake Watatic, Sunset Lake, and Lower and Upper Naukeag Lakes, which flow west into the Millers River whose confluence with the Connecticut River occurs adjacent to the French King Bridge in the Towns of Erving and Montague. The Souhegan Watershed contains Stodge Meadow Pond, Marble Pond, Billy Ward Pond, and Little Watatic Pond, which all flow north into the Souhegan River and on into the Merrimack River in Merrimack, New Hampshire (See **Figure 5.1 – Elevation & Watershed Drainage Map**).

Collectively, these watersheds drain 2,200 square miles of land located within sixty-seven towns in Massachusetts and eleven in New Hampshire (See **Figure 5.2 – Watersheds Regional Context Map**). Because watershed sources, or headwaters are vital to the water quality and ecology of the entire downstream watershed network and ecosystem, Ashburnham plays a significant, primary role in the quality of our region’s rivers and streams. Protecting Ashburnham’s lakes and their upstream and downstream watershed lands is essential to ensuring the quality of the Town’s drinking water, and much of the region’s riverine ecosystems. Protecting land adjacent to water bodies is one of the best ways to ensure water quality and, therefore, should be a top priority of the Town’s Master Plan.

Ashburnham's abundant and high-quality water resources influence the value its residents place on natural resources, especially rivers, lakes, ponds, and their contributing watersheds. These resources have produced waterpower, recreational opportunities, and clean drinking-water that shaped the Town's cultural identity and heritage. The Lakes created by dams to power the milling industry 200 to 300 years ago now provide habitat for many State-listed rare aquatic, avian, and terrestrial species. The Town's waterbodies are filled by the rain and snow runoff captured and drained by their surrounding upstream watershed landscapes. Adjacent and interconnected wetland areas (another critical natural resource described in greater detail in the "Wetlands & Floodplains" subsection below), filter and slowly release that water to over time while also providing essential habitat, carbon sequestration, pollution and sediment control, and the regulation and stabilization of surface flow and water-levels. The quality of the water and condition of the Town's water resources, including its drinking water supply, are dependent upon the ecological integrity and environmental condition of their contributing landscapes. Fortunately, most of Ashburnham's watershed lands, comprised of the numerous hills and valleys of the Town, contain large areas of undisturbed forests and wetlands, critical to the production and maintenance of clean water. **Figure 5.3** provides a comprehensive overview map of Ashburnham's Watershed Resources and Drainage Basins, including lakes, ponds, reservoirs, streams, rivers, wetlands, vernal pools, and watershed boundaries.

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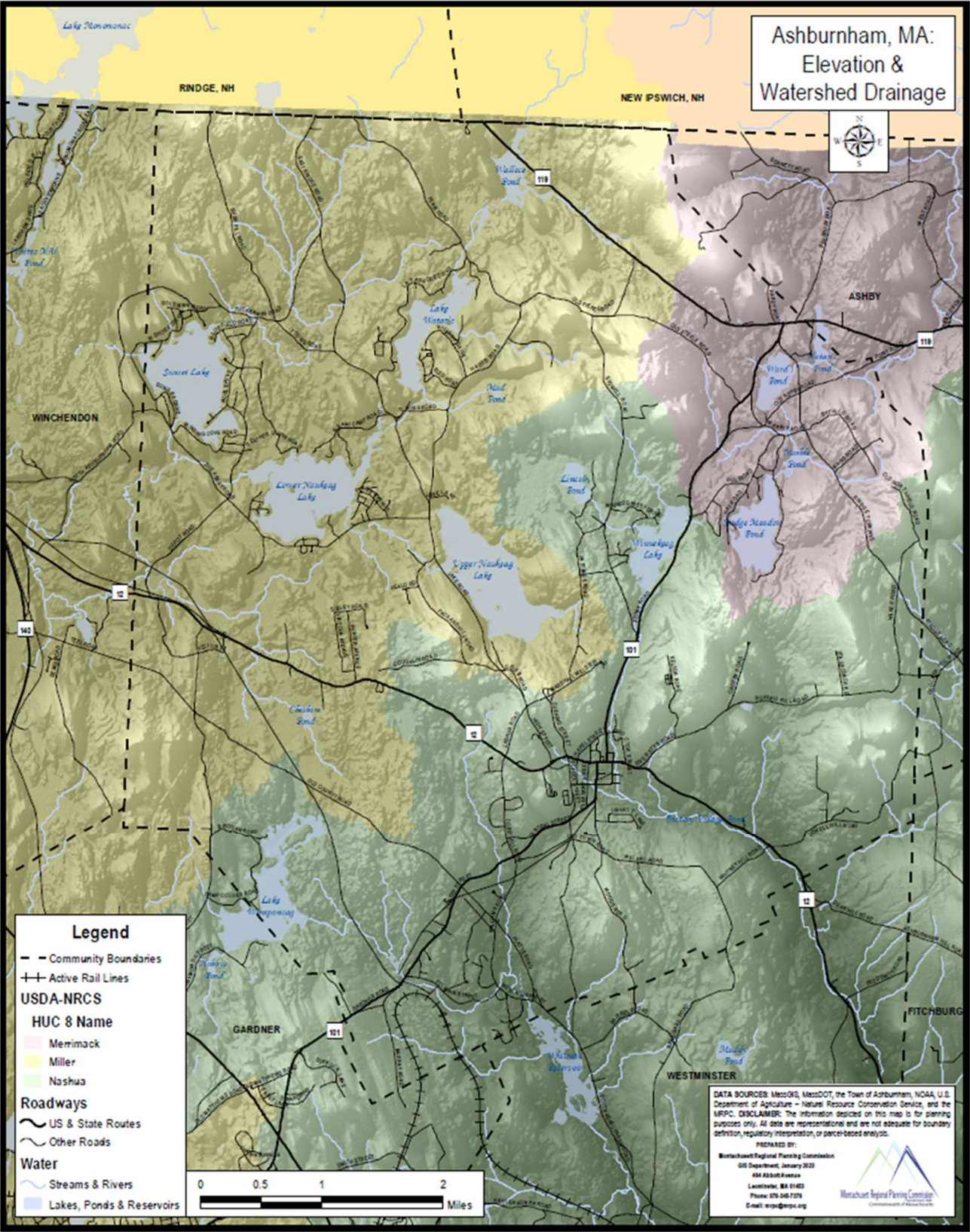
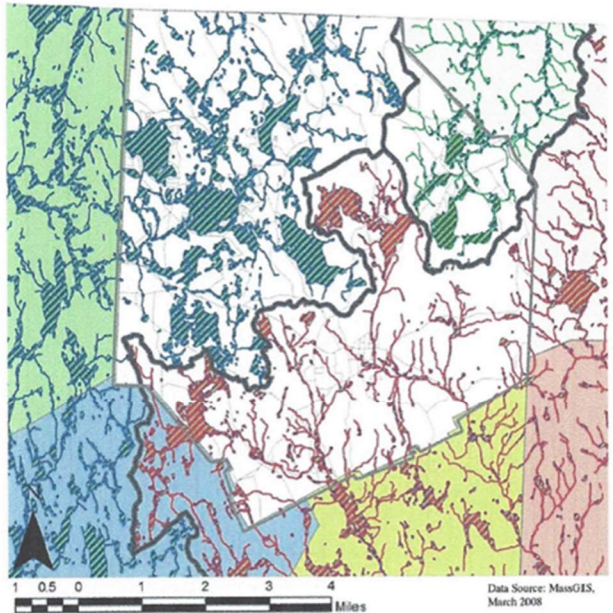


Figure 5.1. Elevation and Watershed Drainages



Watershed Context



Directed by the many hills and valleys of Ashburnham, the water flow from all the lakes, ponds, wetlands, vernal pools, streams, and brooks form the headwaters of three watersheds. Collectively, the Nashua, Millers, and Souhegan Watersheds drain 1,100 square miles, thereby creating the largest potential to sustain or degrade communities downstream. Maintaining water quality at the headwaters in Ashburnham should be a priority for enhancing biodiversity and human health in the region as a whole.



Watersheds

The Nashua Watershed flows northward through Middlesex and Worcester Counties from the Wachusett Reservoir to the Souhegan Watershed basin in Ashburnham and the Merrimack Watershed in southern New Hampshire. Over its course, the basin drains 31 communities, covers 538 square miles, and provides drinking water to more than one million people. In Ashburnham, the watershed encompasses the southern portion of town, including Lake Wampanoag, Winnekeag Lake, Lincoln Pond, and Phillips Brook.

The headwaters of the Millers Watershed are located in New Hampshire and Ashburnham and empty west, into the Connecticut River Watershed. The watershed drains a total of 392 square miles and goes through 17 communities. Some of the steepest areas in Massachusetts are encompassed in the Millers Watershed, 81 percent of which is forest. The remaining 19 percent of land drained by the Millers includes six percent farmland, six percent wetlands, and seven percent urban including the towns of Gardner, Athol, and Orange.

The Souhegan Watershed encompasses a small portion of Ashburnham before draining northeasterly into Ashby and nine communities in New Hampshire. It then meets water from the Nashua Watershed where both drain into the Merrimack, and on to the Atlantic Ocean. The Souhegan drains 170 square miles.

Figure 5.2. Regional Context of Ashburnham's Watersheds

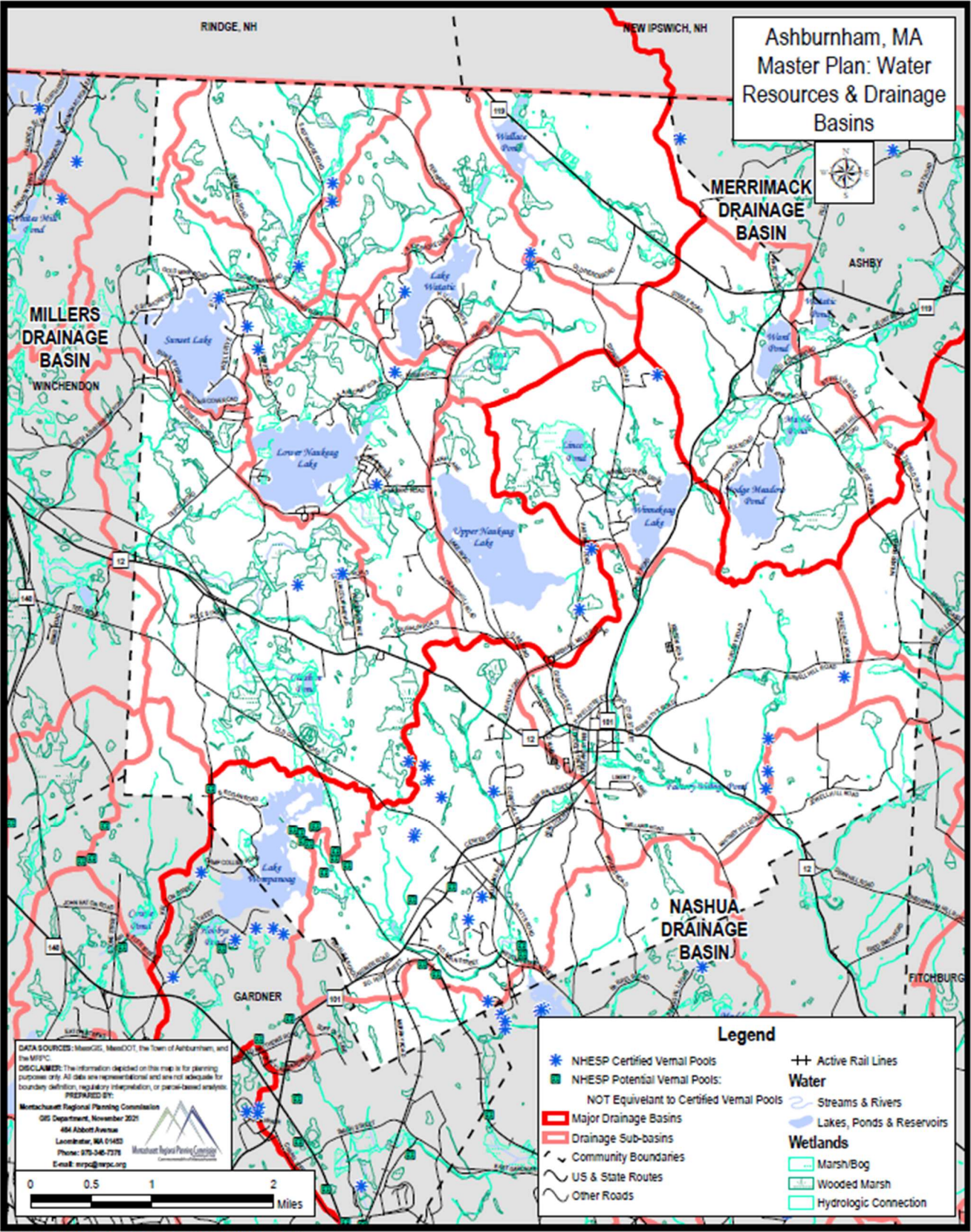


Figure 5.3. Water Resources & Drainage Basins

Historical Context

ASHBURNHAM'S MANY LAKES WERE ONCE A SOURCE OF WATERPOWER FOR THE EARLIEST SAWMILLS AND GRISTMILLS SO IMPORTANT TO ESTABLISHING THE REGIONS "FRONTIER" SETTLEMENT TOWNS DURING THE 1600 AND 1700'S. DURING THE 1800 AND 1900'S, ASHBURNHAM'S LAKES PROVIDED THE WATER THAT POWERED THE HYDROELECTRIC- AND STEAM-TURBINE POWERED PAPER MILLS, TEXTILE MILLS, AND FURNITURE FACTORIES, THROUGHOUT THE REGION. ALONG THE NASHUA RIVER, EARLY WATER-WHEEL MILLS (AND LATER ELECTRICAL-TURBINE AND STEAM-MECHANIZED INDUSTRIAL PAPER MILLS) AS FAR AWAY AS FITCHBURG, LEOMINSTER, LANCASTER, AND GROTON WERE DEPENDENT UPON WATER SUPPLIED FROM LAKE WAMPANOAG (ALSO KNOWN AS LAKE BALLOU AT AN EARLIER TIME), THE WHITMAN RIVER, AND LAKE WINNEKEAG AND PHILLIPS BROOK (FORMERLY KNOWN AS NOCKEEGE RIVER OR SOOKAGEE BROOK). ALONG THE SOUHEGAN RIVER, MILLS, IN ASHBY, NEW IPSWICH, GREENVILLE (FORMERLY KNOWN AS MASON VILLAGE), WILTON, AMHERST, AND MERRIMACK NEW HAMPSHIRE, INCLUDING SOME OF THE EARLIEST WOOLEN AND COTTON MILLS IN THE REGION, WERE POWERED BY WATER SUPPLIED FROM STODGE MEADOW, BILLY WARD, AND WATATIC PONDS. ALONG THE MILLERS RIVER (ORIGINALLY KNOWN AS PAKONTUCQUASH RIVER), MILLS IN WINCHENDON, ATHOL, ORANGE, AND LATER ERVING AND MILLERS FALLS, DEPENDED UPON WATERS THAT AROSE IN THE WETLANDS AND STREAMS OF NORTHWEST ASHBURNHAM, INCLUDING BEAR MEADOW AND BLUEFIELD BROOKS, UPSTREAM OF PRESENT-DAY SUNSET LAKE, AND BINNEY HILL BROOK WHICH FLOWS THROUGH PRESENT-DAY LAKE WATATIC AND LOWER NAUKEAG LAKE.

Today Ashburnham's many lakes are important natural and cultural resources to the Town, providing drinking water, fishing, swimming, boating, and other water-based recreational activities, in addition to aquatic, wetland, and riparian habitat for fish and wildlife. Dams at several of the lakes, are controlled and maintained by lake associations who regulate water levels for recreational and aesthetic purposes and to control the spread of noxious, nuisance, or invasive species of aquatic vegetation. The alteration of water levels (i.e., drawdowns) at any dam is subject to proper notice and the guidelines, policies, and regulations of the local Wetlands Protection Bylaw and Massachusetts Wetlands Protection Act administered by the Ashburnham Conservation Commission and Massachusetts Department of Environmental Protection. Such coordinated management of water levels and administration of wetlands protection regulations ensures the continued maintenance of water quality, water quantity, and ecological condition of Ashburnham's impounded waterbodies.

Ashburnham's many lakes and ponds are an important natural and cultural resource providing drinking water, fishing, swimming, boating, and other water-based recreational activities, in addition to aquatic habitat for fish and wildlife.

Below is a list of 16 of the Town’s major lakes and ponds (**Table 5.1**). Seven of Ashburnham’s lakes and ponds are designated Great Ponds¹, but only two of those (Cheshire Pond and Lincoln Pond) have designated public access. Four of Ashburnham’s remaining Great Ponds (Lower Naukeag Lake, Lake Wampanoag, Billy Ward Pond, and Lake Winnekeag) do not currently provide adequate public access, and the fifth, Upper Naukeag Lake, is restricted due to its status as a public drinking water supply reservoir. Public access for water-based recreation is also available at Lake Watatic and Whitney Pond and was identified as a “need” in the Master Plan and Open Space and Recreation Plan public surveys.

Table 5.1. List of Ashburnham’s major lakes and ponds (sorted by size) with status indications provided for designated Water Supply Reservoirs and “Great Ponds”.

Lake or Pond Name	Area (size in acres)	Water Supply Reservoir?	Public Access?	“Great Pond” Designation?
Cheshire Pond	9.30	No	Yes	Yes
Factory Village Pond	4.95	No	No	No
Lincoln Pond	31.20	No	Yes	Yes
Marble Pond	16.68	No	No	No
Mud Pond	4.51	No	No	No
Upper Naukeag Lake	305.27	Yes	No	Yes
Lower Naukeag Lake	295.49	No	No	Yes
Stodge Meadow Pond	124.87	No	No	No
Sunset Lake	268.35	No	No	No
Wallace Pond	46.09	No	No	No
Lake Wampanoag	154.89	No	Yes*	Yes
(Billy) Ward Pond	54.03	No	No	Yes
Lake Watatic	133.10	No	Yes	No
Watatic Pond	13.65	No	Yes*	Yes
Lake Winnekeag (Pond)	112.39	No	No	Yes
Whitney Pond	4.75	No	No	No
Source: MassDEP Hydrography (1:25,000) accessed through MassGIS, MassMapper; MassDCR, Massachusetts Great Ponds List: https://www.mass.gov/doc/massachusetts-great-ponds-list/download *Limited, remote access via Mass Department of Fish & Game, Wildlife Management Area				

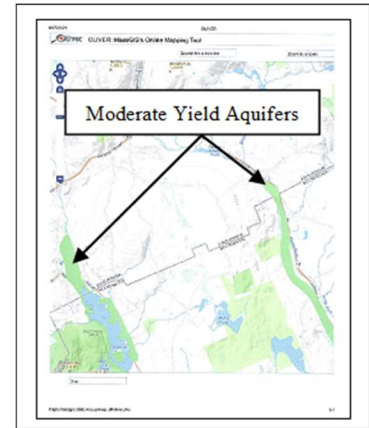
Ashburnham has over 100 linear miles of brooks, streams, and rivers including approximately 5 miles of rivers and streams draining to the Souhegan River Basin, 22+ miles within the Nashua River Basin, and another 24+ miles within the Millers River Basin. In addition to several rivers, including the Upper Millers River, Whitman River (Upper Nashua), and Upper (South Branch) Souhegan River, Ashburnham also contains several smaller brooks and streams, including Bear Meadow Brook, Binney Hill Brook, Bluefield Brook, Brown Brook, Cushing Brook, Laws Brook, Phillips Brook, Willow Brook, and the Upper Phillips Brook connecting Lincoln Pond with Lake Winnekeag. Many of these streams including Brown Brook,

¹ According to Massachusetts General Law (MGL), a great pond is defined in Massachusetts as a pond or lake that is in its natural state at least 10 acres in size, including ponds that met the criterion at one time but are now smaller. Statute within MGL Ch. 131, Sec. 45, states that all great ponds must be open for hunting, fishing, and boating, including providing reasonable access to the pond, with the exception of water supply reservoirs.

Cushing Brook, Phillips Brook (and two unnamed tributaries), S.B. Souhegan R., Whitman R., and Willow Brook are designated Coldwater Fish Resource Areas.

Groundwater Aquifers and Recharge Areas

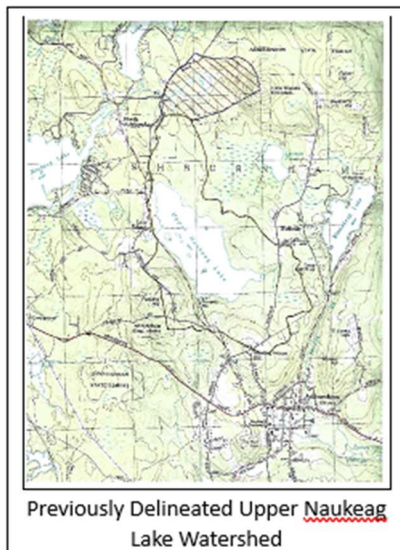
Viable, water-bearing aquifers in Ashburnham are highly limited and of lower-yield due to the predominance of surficial deposits consisting of glacial till. Based on available groundwater-mapping data from MassGIS, as shown in the graphic at right, only deposits along short segments of the Whitman River and Phillips Brook near the Westminster boundary are classified as moderate-yield producing groundwater aquifers. There are no documented high-yield aquifers within Ashburnham. **Figure 5.4** below shows Ashburnham's Groundwater Resources, including aquifers, surface water intakes, non-community groundwater sources, wellhead protection areas, and associated water resources and surface water supply protection areas.



Drinking Water Supply Protection Areas

Upper Naukeag Lake, a 240-acre reservoir, supplies drinking water to both Ashburnham and Winchendon residents. In Ashburnham, the Board of Water & Sewer Commissioners oversees approximately 53 miles of water lines with 1,200 service connections. In 2022, Ashburnham's annual water usage was 97,558,281, or an average of 267,283 gallons of water per day (gpd), while Winchendon's annual water usage was 348,021,416 gallons, or an average of 953,483 gpd. In 1993, the Town established a Water Supply Protection Zoning Overlay District around the lake. A *Source Water Protection Plan* was prepared by the Massachusetts Rural Water Association in 2006, based on a risk assessment that identified residential septic systems as the highest threat to water quality, followed by the transportation of hazardous materials, and roadway runoff. The plan recommended septic systems within the Town to be identified and monitored by the Board of Health every three to five years, and those located along lakefront to be inspected and maintained annually. The plan also suggested the implementation of low-salt areas on winter roadways and installing signs to warn drivers of such areas.

The need to protect Upper Naukeag Lake as a public water supply is of paramount importance given the lack of viable water-bearing groundwater aquifers in Ashburnham. As such, the Town has taken several steps to ensure the health of its water resources including the creation and updating of Water Supply Protection zoning and enforcement of local water protection policies and regulations. The Ashburnham Wetlands Protection Bylaw, adopted in 2007 (Revised 2019), along with the adoption of the Low Impact Development Bylaw in 2008, helped protect the Town's water resources.



Currently, Ashburnham continues to work on revisions to its general and zoning bylaws, including the Water Supply Protection (Overlay) District Bylaw, to maintain compliance with MA Department of Environmental Protection (DEP) regulations. In conjunction with this effort, Ashburnham's 2006 *Source Water Protection Plan* was reviewed and, in part, found to be in error with respect to the limits



Regulated Wetlands & Flood Zones

Wetlands are an important, if not critical natural resource here in Ashburnham, throughout the Commonwealth of Massachusetts, and across the nation and globe. Wetlands play a primary role in the protection of water resources, especially in the filtration and maintenance of clean drinking water supplies. In addition, wetlands stabilize, maintain, and regulate streamflow, groundwater, and surface waterbody levels and prevent flooding and storm damage during storm events or seasonal periods of snowmelt and rainfall. Further, wetlands help to prevent and treat pollution while also providing essential habitat that supports a large variety of wildlife, including sensitive, rare, and endangered species. Finally, in addition to health and safety benefits, wetlands offer natural beauty and recreational opportunities, such as hiking, hunting, fishing, art and photography, and birdwatching.

What are wetlands and why are they important?

WETLANDS, IN GENERAL, ARE SEMI-AQUATIC AREAS ASSOCIATED WITH BODIES OF WATER WHERE PERIODIC FLOODING OCCURS AT SHALLOW, BORDERING, VEGETATED AREAS, OR PLACES WHERE WATER COLLECTS AT A PARTICULAR LOW-POINT IN A DRAINAGE AREA OR DUE TO SOIL-TYPES OR CONDITIONS THAT PREVENT OR SLOW THE WATER FROM INFILTRATING. WETLANDS ARE SOMETIMES WET TRANSITIONAL AREAS BETWEEN UPLANDS AND WATERBODIES. THEY ARE IMPORTANT TO PEOPLE BECAUSE OF THE USEFUL FUNCTIONS THEY PERFORM, INCLUDING IMPROVING WATER QUALITY, PROVIDING FLOOD CONTROL AND MINIMIZING STORM DAMAGE, CYCLING NUTRIENTS (INCLUDING CARBON), SUPPORTING FISHERIES, WILDLIFE, AND PLANT HABITAT, AND PROVIDING RECREATION. WETLANDS ALSO PREVENT AND CONTROL SOIL EROSION AND SEDIMENTATION AS A RESULT OF THEIR WELL-DEVELOPED ROOT SYSTEMS THAT HOLD SOIL IN PLACE AND FILTER SEDIMENT, PARTICULATES, AND POLLUTANTS, THEREBY IMPROVING WATER QUALITY. DUE TO THEIR ABILITY TO STORE WATER, A WETLAND CAN SLOW THE MOMENTUM AND HEIGHT OF FLOOD WATERS BY STORING WATER AND RELEASING IT SLOWLY, OVER TIME MINIMIZING FLOOD DAMAGES AND PROVIDING A SOURCE OF WATER DURING LATE-SUMMER DRY PERIODS WHEN THE AMOUNT OF WATER IN A RIVER IS AT ITS LOWEST POINT OF THE YEAR.

C. LARAIME, ASHBURNHAM CONSERVATION COMMISSION

Unfortunately, Massachusetts has lost nearly 30% of its wetlands to development, draining, or impounding (i.e., damming of bordering rivers and streams) since the 16th Century. Despite the significant, historical, loss of wetlands over time, they are recognized as a “common” resource in Massachusetts, and as such, are an important part of the natural, common, “wealth” that the landscape provides to the people. For these reasons wetlands are a protected resource in the Commonwealth of Massachusetts and Town of Ashburnham, protected under the Massachusetts Wetlands Protection Act and Ashburnham Wetlands Protection Bylaw, respectively (Mass DEP).

Most areas subject to flooding during 100-year storm events occur along the Town’s major waterways, including the Millers River, the Whitman River, Phillips Brook, and Bear Meadow Brook. However, 100-year flood elevations have only been established by FEMA for the Whitman River south of the Whitney Pond Dam and Phillips Brook south of the Lake Winnekeag Dam.

With respect to flooding and consistent with the Federal Disaster Mitigation Act of 2000, Ashburnham is one of the 22 communities available to receive FEMA hazard mitigation grants per the *Montachusett Region Hazard Mitigation Plan 2015 Update*, prepared by the Montachusett Regional Planning Commission (MRPC). The Plan identified hazards within the Montachusett Region and evaluated their potential impacts to specific locations relative to past occurrences, existing conditions, and known vulnerabilities, and established a mitigation strategy to reduce risks. The 2015 Montachusett Region multi-jurisdictional Hazard Mitigation Plan expired in 2020, resulting in the need for several Montachusett Region Towns, including Ashburnham, to develop a local Hazard Mitigation Plan for approval by FEMA. In 2021, the Town of Ashburnham's *Local Hazard Mitigation Plan* was updated as part of the Municipal Vulnerability Preparedness (MVP) planning grant received by the Town from the MA Executive Office of Energy and Environmental Affairs (EEA).² As a result, by letter dated September 9th, 2021, the Town of Ashburnham was recognized for its completion of the Community Resilience Building planning process and designated by the EEA as a MVP Community. This MVP Community designation indicates the Town's commitment to preparing for climate change.

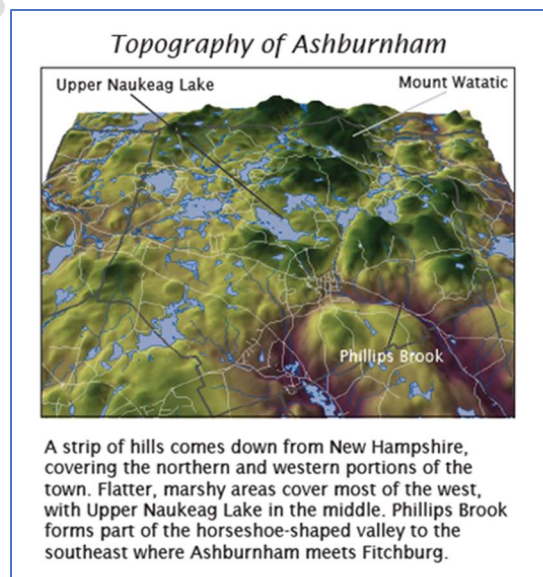
The most recent Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA) for the Town were published in June 1984. While the FEMA maps have been updated in other Worcester County communities, and local updated maps for Ashburnham and other County municipalities are in the process of being prepared and reviewed, they have not yet been formally published by FEMA.

Although Ashburnham does have some issues with flooding, these issues are mainly caused by beavers rather than extreme storm events. Beaver-related flooding has the potential to affect sewage disposal systems and wells of property owners proximate to the flooded areas. In 2021, two (2) Emergency Certifications were issued by the Conservation Commission to address beaver-related flooding issues.

Topography, Geology, and Soils

Most of Ashburnham's topography consists of rolling, hilly terrain ranging from a high-point of 1,832 feet above sea level on Mount Watatic, to a low-point of 840 feet at the point where Phillips Brook flows into Fitchburg. Steep slopes at high elevations form the divide between the Northeast Coastal Plains and the Connecticut River Valley ecoregions. A rich geological and glacial history with alternating periods of volcanic activity, shifting faults, and erosion led to the formation of igneous and metamorphic rock almost 500 million years ago. Glacial sculpting wore deep grooves in the land, creating the hilly landscape visible today.

As the glaciers advanced, materials scraped from the underlying bedrock were carried south. Consequently, bedrock outcrops are an abundant landscape feature in Ashburnham (e.g., Mt. Watatic, Lesser Watatic, Nutting Hill, Mt. Hunger, Fisher Hill, Brown Hill, and the



² Pare Corporation. June 2021. *Local Hazard Mitigation Plan and Municipal Vulnerability Preparedness Plan*. Prepared for the Town of Ashburnham. Ashburnham, MA.

area of steep slopes between the Rindge Turnpike and Byfield Road). The Town's surficial geology consists primarily of glacial till, or mixed sediments of varying sized deposited by glaciers³. According to a witty pun by Peterson (1984), Ashburnham also is not without its 'geologic' faults, with the most prominent being the Stodge Meadow Fault which extends from New Hampshire through Ashby, then southward between Watatic Pond and Billy Ward Pond, through Stodge Meadow Pond, and Factory Village Pond. Peterson (1984) also described and mapped the **bedrock geology** of the Ashburnham/Ashby area which consists of a combination of Lower Devonian Littleton Formation (gray schist), and Silurian formations comprising Paxton (sulfidic schist), Paxton (granulite member and sulfidic schist), and Paxton (White schist member, sulfidic cordierite schist, quartzite – rusty schist member) Formations (**Figure 5.5 – Bedrock Geology**).

Warming temperatures caused the retreat of ice sheets, which left glacial debris, eskers, drumlins, and moraines in their wake. **Surficial geology** deposits primarily consist of glacial till, a non-sorted, non-stratified matrix of sand, some silt, and little clay containing scattered gravel fragments and a few large boulders. Glacial stratified deposits consisting mainly of coarse gravel-sized fragments, cobbles and boulders, and minor amounts of sand are most abundant in the vicinity of Billy Ward Pond, between Lake Watatic and Lower Naukeag Lake, and from Lake Wampanoag north to Lower Naukeag and west along the Millers River. Postglacial deposits of floodplain alluvium exist along Bluefield and Bear Meadow Brooks. Swamp deposits are associated with Lincoln Pond, Cheshire Pond, the waterway and wetlands between Cheshire Pond and the Millers River, the waterways and wetlands between Packard Hill and Sherbert Roads, and other scattered locations throughout Town (**Figure 5.6 – Surficial Geology**).

Many of Ashburnham's bedrock and surficial geology features impede drainage and have contributed to the formation of the Town's wetlands and natural ponds. While hilly terrain, steep slopes, wetlands, and areas of poorly draining soils provide diverse wildlife habitat and ecology, they are less suitable for development and limit the extent of developable lands in Ashburnham.

Steep slopes present along ridgelines and within many hilly, upland areas are also a limiting factor to development potential in those areas. Limiting or properly conditioning and carefully planning and monitoring development within sensitive areas is critically important, especially within the Upper Naukeag Lake watershed, the Town's drinking water supply. Wise land use practices will aid in the long-term conservation and protection of Ashburnham's soils, wetlands, and waterways, and hence provide high water-quality for drinking, recreation, and habitat.

Wise land use practices will aid in the long-term conservation and protection of Ashburnham's soils, wetlands, and waterways, and hence provide high water-quality for drinking, recreation, and habitat.

³ Glacial "till" can be defined as sediments of every size, from tiny particles smaller than a grain of sand to large boulders, with coarse sands and various sized cobble-stones and pebbles, inter-mixed in an unstratified combination of materials left behind by a receding glacier.

Ashburnham's soil conditions are predominantly stoney with some areas of sand and gravel. The predominant soil types are the Marlow Association and Marlow-Peru series. Together, these two types account for over 50% of the Town's soil-types. These soils are classified as having severe limitations for on-site septic systems due to either "wetness" or excessive slope gradient. Much of the Town's soils and landscape exhibit similar limitations related to drainage or steep slopes, respectively. In 1986, the Massachusetts Federation of Planning Boards standards for lot sizes classified over 75% of the town's soils as "not feasible" for septic systems. The only exception was the Berkshire Association series of soils which consists of between 1,200 and 1,300 acres within the town and was classified as having only moderate limitations for on-site waste disposal. The 1986 Ashburnham Master Plan references an anecdotal description of Ashburnham's landscape and soil characteristics as "a swamp on a ledge".

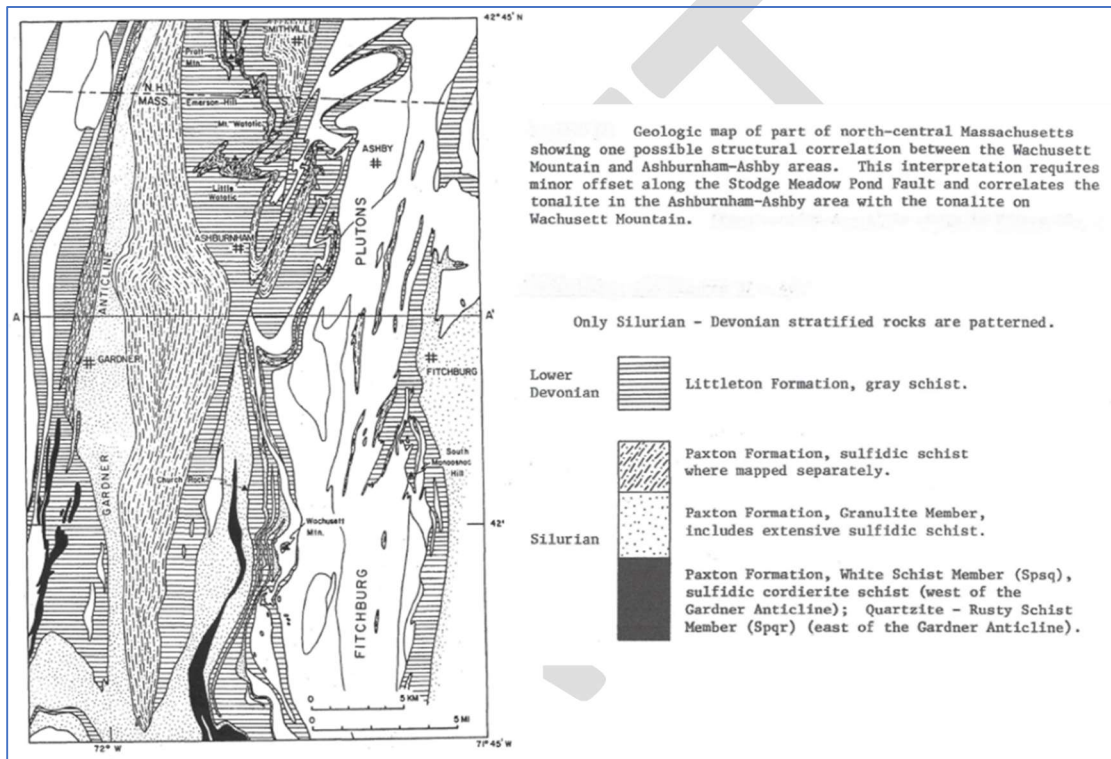


Figure 5.5. Bedrock Geology

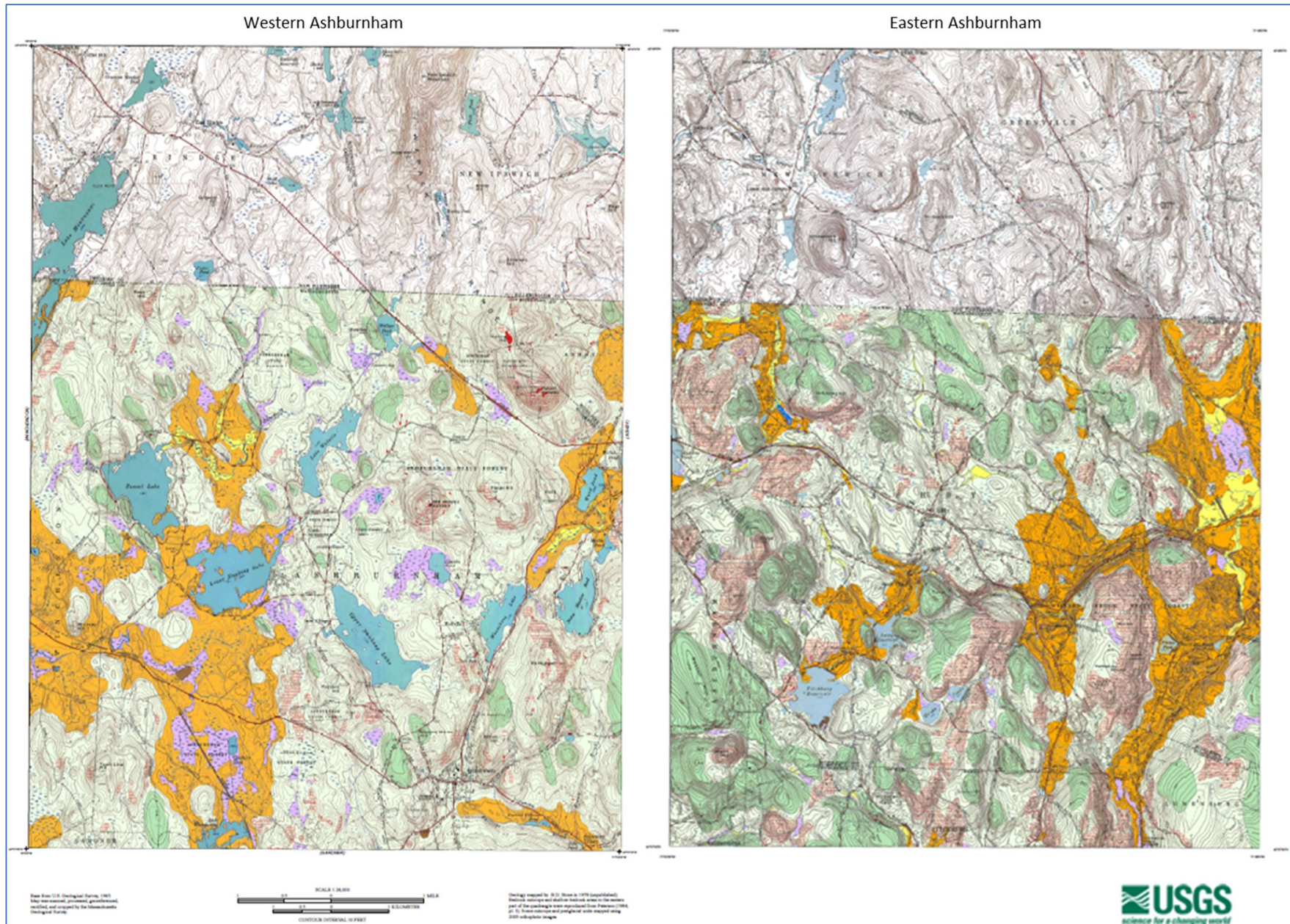


Figure 5.6. Surficial Geology

Forest Resources

Ashburnham is predominantly forested, with over 19,000 acres, or 75.4% of the land being predominantly forested. Mixed hardwood-softwood forests cover most of the land. Ashburnham's make-up of forested lands and history of forest loss has been documented in the previous Master Plan (1986) and multiple iterations of the Open Space and Recreation Plan (2001, 2014, and 2023). From 1971-1985, 535 acres of forestland (at that time, 2.6% of the total forested lands) were cleared and developed. The 2023 Ashburnham Open Space and Recreation Plan documented a 3.8% loss of forested lands between 2016 and 2020. Despite recent losses of forested land to development, as much as 19,752.5 acres remain forested. Of those, over 852 acres are permanently protected as Town-owned conservation lands, another 2,968 acres are permanently protected state-owned forest lands (Mass Department of Conservation & Recreation), while another 555 acres are permanently protected as state-owned Wildlife Management Areas or Reservations (Mass Department of Fish & Game), and still another 868 acres are permanently protected by private land trusts as conservation land (Mass Audubon, Trustees of Reservations, Ashburnham Conservation Trust).

Ashburnham's vast forest lands were once important to the town's early history for the manufacturing of chairs and production of "pearl ash" (a.k.a., potassium carbonate), a material of critical importance in those days for blowing glass, and of in high demand due to the shortage of "good wood" in England. Then, and now, Ashburnham's forests are a critical natural resource to both the Town and region, providing watershed protection and supporting the production and protection of a clean drinking water supply.

Today, Ashburnham's forests protect the source waters of three regionally important river systems. As such Ashburnham's forests, and the watershed sources they protect, provide benefits to the Town (through the protection of local drinking water supplies) and much of the Southern New England region (through the protection and provision of instream flows [i.e., water quantity] and the prevention and treatment of pollution [i.e., water quality]). By protecting the source drainage-areas, Ashburnham's forests play a major role in protecting stream and riverine water quality and quantity both locally and regionally. In fact, the Town's forests filter, treat, and maintain the source waters of the Nashua, Souhegan, and Millers Rivers, providing pollution prevention and control as well as streamflow and temperature regulation, ensuring a constant flow of clear, clean water to the region's freshwater rivers and two primary marine ecosystems, the Gulf of Maine and Long Island Sound.

Ashburnham is blessed with abundant forest cover, and logging has been an important industry for centuries to provide lumber, firewood, and (more recently) biomass fuel. In recent years the rate of forest cutting has increased in Ashburnham as documented by satellite imagery maps produced by the Global Forest Watch⁴. Promoting sustainable forestry and wise timber management and forest cutting practices is an important aspect of planning for Ashburnham's future. Promoting wise, sustainable use and protecting the long-term sustainability of this important renewable resource is in the best interest of the economy, environment, and community. This is particularly important given the extent, volume, diversity, and high ecological integrity of Ashburnham's forest-resources (**Figure 5.7**).

⁴ www.globalforestwatch.org/map/

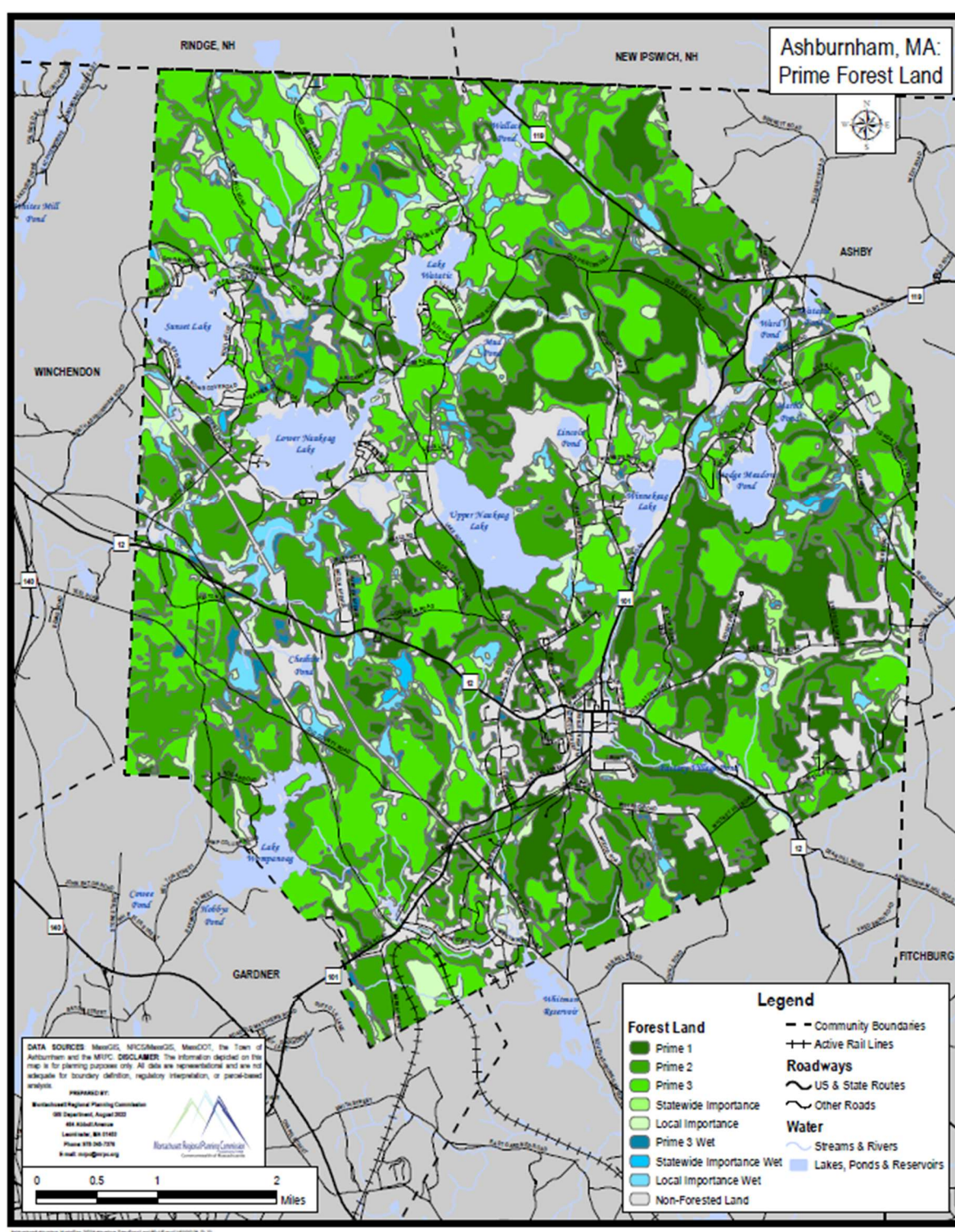


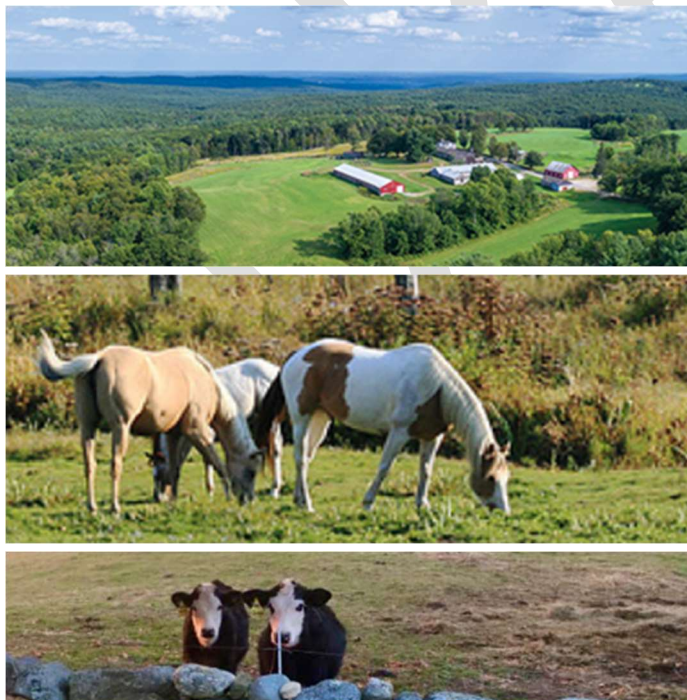
Figure 5.7. Prime Forest Land Map

Agricultural Resources

Ashburnham began as a subsistence farming community but after 1850, farming in Ashburnham became specialized, focusing on milk, cheese, hay, and horses and poultry. The Town's prime farmland soils are characterized by Canton fine sandy loam (3-8% slopes), Paxton fine sandy loam (3-8% slope), and Woodbridge fine sandy loam (0-8% slope) (see **Figure 5.8** – Prime Farmland Soils Map).

Portions of the farmland associated with The Trustees of Reservations (TTR) Jewell Hill Conservation Area consists of Paxton and Woodbridge soils. Farmland of Statewide Importance includes Canton fine sandy loam (8-15% slope), Canton fine sandy loam, very stony (0-15% slopes), Hinckley loamy sand (0-15% slopes), Hinckley loamy sand, very stony (3-15% slopes), Paxton fine sandy loam (8-15% slopes), Paxton fine sandy loam, very stony (0-15% slopes), Woodbridge fine sandy loam (8-15% slope), and Woodbridge fine sandy loam, very stony (0-15% slopes). These soils are located on outwash deltas, outwash terraces, kame terraces, moraines, eskers, outwash plains, drumlins, hills, and ridges. Their occurrence in Ashburnham is limited, primarily due to the Town's elevation and landscape position during past glacial periods.

Despite suboptimal soil conditions throughout much of the Town, many farms are located in Ashburnham and constitute an essential natural resource and component of the Town's heritage and culture. Besides adding to the rural and aesthetic character of the town, farms contribute to regional food security. While most farms are small, selling eggs and produce, many of the town's agricultural land is devoted to hay and livestock, and occupy relatively large amounts of land. While a few small farms have emerged in the last decade, the overall area of farmland has declined significantly over the last 50 years. The town had over twice as much working farmland in 1971 as it has now. Despite over two dozen parcels that can be considered farmland, only five of these parcels are permanently protected.



FARMLAND SOILS

Ashburnham's landscape is characterized by rocky uplands and lowland soils with low infiltration rates, resulting in upland sites with high runoff potential and lowland marshiness. The town's prime farmland soils are characterized by Canton, Paxton, and Woodbridge fine sandy loam.

Prime soils especially found in valleys and along the western border. The town's geological features take the form of gravel pits, rock outcrops, and marked wet spots. This mix of steep slopes and marshiness also limits Ashburnham in terms of development: much of the town is considered low potential for construction of homes, based on soil type. Few soils have potential for frequent flooding (based on dominant flood probability for map unit). Many areas have high runoff potential, with a hydrological classification of D, A/D, or C/D.

A Right to Farm Bylaw was adopted by the Town in May 2010 and encourages the pursuit of agriculture, promotes agriculturally based economic opportunities, and protects farmlands within the Town of Ashburnham. A recent inventory of farms and farmlands prepared by Mount Grace Land Trust is included within the Appendices of this Master Plan as a component of **Appendix 5**.

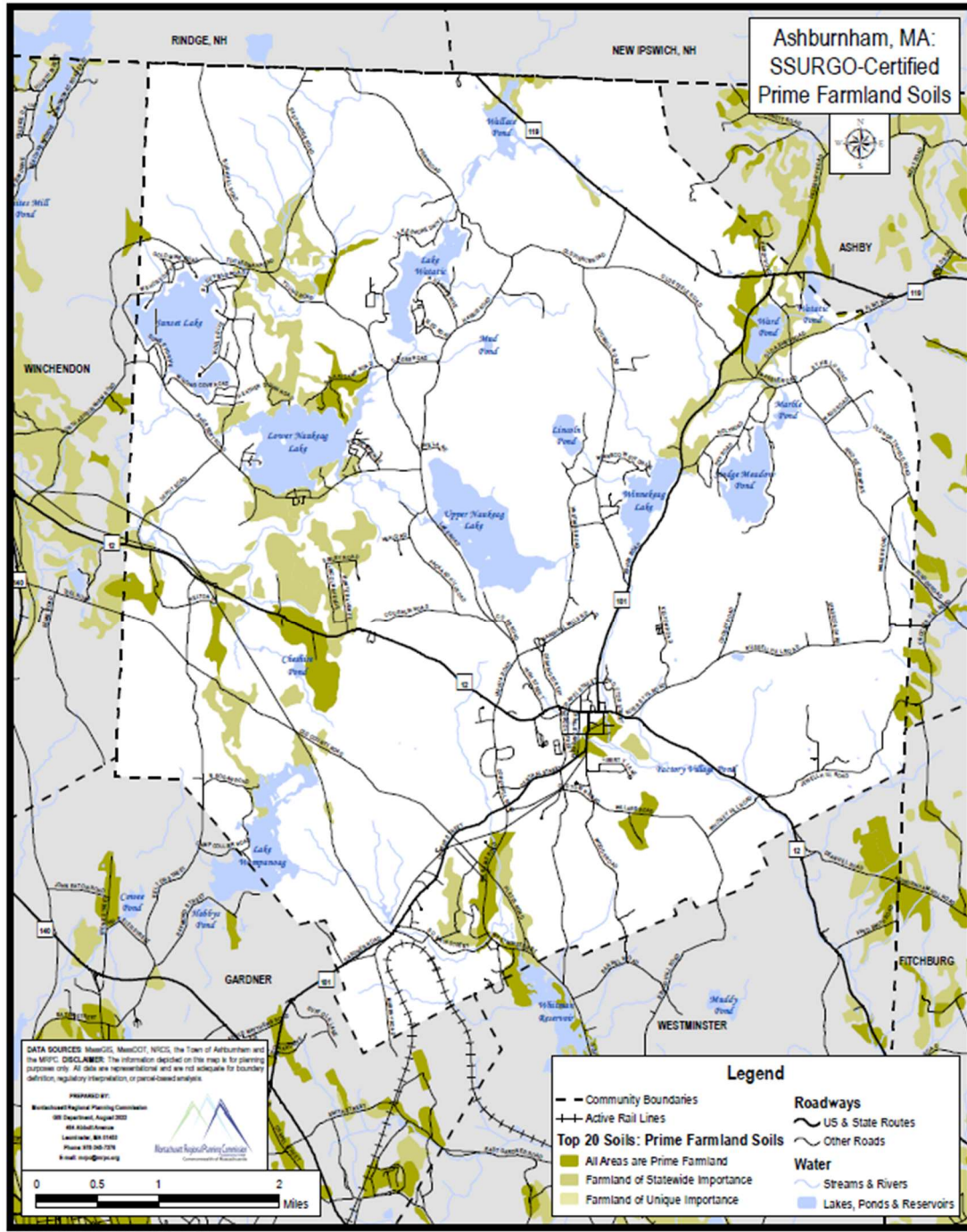


Figure 5.8. Prime Farmland Soils Map

Fish & Wildlife Resources

Ashburnham's Lakes, ponds, and streams provide habitat for broad diversity of fishes and aquatic organisms. Multiple cold-water streams support wild brook trout and other stream fish that depend on cool, clear, flowing, well-oxygenated water. Low-gradient warm-water streams, and lakes and ponds characterized by slow-moving or still water with lower dissolved oxygen concentrations harbor warmwater fish species such as bluegills, brown bullhead (hornpout), chain pickerel, pumpkinseeds, golden shiners, fallfish, largemouth bass, yellow perch, smallmouth bass, and redbfin pickerel. Surface waters also contain a myriad of aquatic macroinvertebrates, including caddisfly, damselfly and dragonfly larvae, leeches, numerous species of aquatic insects (e.g., whirligig and predacious diving beetles), gastropods (e.g., freshwater snails) and other aquatic organisms, all of which contribute to the aquatic food chain. Emergent, floating leaved, and submergent plant species also are abundant. Aquatic habitats also serve as life-sustaining components for such wildlife species as bald eagles, beaver, common loons, Canada geese, 'dabbling' (e.g., mallards) and 'diving' (e.g., common mergansers) ducks, great blue herons, kingfishers, mink, muskrat, osprey, raccoon, river otter, and a plethora of herpetofauna (e.g., reptiles and amphibians), among other species and groups thereof.



American bittern, endangered

Ashburnham's matrix of diverse habitat of upland forests, ridgelines, low-lying moist forests, wetlands, bogs, and meadows support an equally diverse and abundant variety of wildlife including large mammals like deer, moose, bear, fox, coyotes, and bobcats, as well as many small mammals and rodents like gray squirrels, flying squirrels, chipmunks, skunks, musquash, rabbits, field mice, mink,



Long-eared owl, species of concern

fisher cats, moles, voles, and shrews. Overhead, within the forests, and along the wetlands and shoreline edges many species of songbirds, raptors, wading birds, and waterfowl abound, including turkey vultures, red tail hawks, sharp-shinned and coopers hawks, barn owls, barred owls, great horned owls, saw whet owls, humming birds, robins, blue jays, chickadees, cardinals, cedar waxwings, ruffed grouse, norther flickers, goldfinch, white breasted nuthatch, tufted titmouse, and blue birds, among many others. Amphibians and reptiles including snakes, turtles, frogs, toads, and salamanders are also abundant among the debris of the forest floor, ledge of the hills and ridges, shrubs and grasses of the fields and meadows, and in the vernal pools and wet marshes, bogs, and swamps.

Ashburnham's many high-quality forests, lakes, ponds, streams, and wetlands provide an extensive array of habitat supporting an abundant, rich, and diverse variety of fish and wildlife. For a more detailed summary of Ashburnham's fish and wildlife resources see Section 4 of the Ashburnham Open Space and Recreation Plan or take a walk in the woods and explore the Town's many rich habitats.

Unique Natural Landscapes and Habitats

The geomorphic conformation, biotic composition, and topographic structure of a location, namely its geophysical natural resources or landscape are formed over long geologic periods of time yet are constantly changing and evolving in response to fluctuating environmental conditions. Over time, the geophysical and biophysical realms, together, form what is known as the Natural Environment, a complex, yet balanced network of natural systems, or ecosystems, together forming a Town's geophysical and biotic composition, or natural landscape and habitats, home to the living natural resources of a place.

MassWildlife's Natural Heritage and Endangered Species Program (NHESP) describes several unique Priority Natural Communities located within Ashburnham. See examples of each community type below from left to right, top to bottom: Acidic Rocky Summit/Rock Outcrop Community, Acidic Shrub Fen, Level Bog (Dwarf-Shrub Peatlands), Open Oak Forest/Woodland, Highbush Blueberry Thicket, Red Spruce Swamp, Spruce-Tamarack Bog, Spruce-Fir-Northern Hardwoods Forest, and Wet Meadow.



Spruce-tamarack bog, imperiled



Acidic Rocky Summit lichens on rocks with lowbush blueberry. Photo: P. Swain, NHESP.



Acidic Shrub Fen with mixed shrubs — sweet gale, leatherleaf, buttonbush, and water-willow on sphagnum. Photo: Patricia Swain, NHESP.



Level Bog with rhodora in flower, leatherleaf and scattered larch. Photo: Steven Roble, NHESP.



Down into Open Oak Woodland from adjacent open summit. Photo: Patricia Swain, NHESP.



Highbush Blueberry Thicket behind an Acidic Shrub Fen. Photo: Patricia Swain, NHESP.



Red Spruce Swamp with open understory. Photo: Glenn Motzkin.



Spruce - Tamarack Bog around a shrubby Level Bog. Photo: M.W. Nelson, NHESP.



400 year old red spruce in SFNHF. Photo: Patricia Swain, NHESP.



Large sedge dominated Wet Meadow. Photo: Tom Lautzenheiser.

In addition to the nine Priority Natural Communities shown above, Ashburnham has 5,436 acres of BioMap Core Habitat and 13,943 acres of Critical Natural Landscape. See **Figure 5.9 – Habitat Areas Map, Summary of Ashburnham’s BioMap Habitat at a Glance** infographic, **Figure 5.10 – BioMap Critical Natural Landscape Map**, and **Figure 5.11 – BioMap Core Habitat Map** below for an illustrative example of the composition of Unique Natural Landscapes and Habitats in Ashburnham and Section 4 of Ashburnham’s 2023 *Open Space & Recreation Plan* for a more complete description.

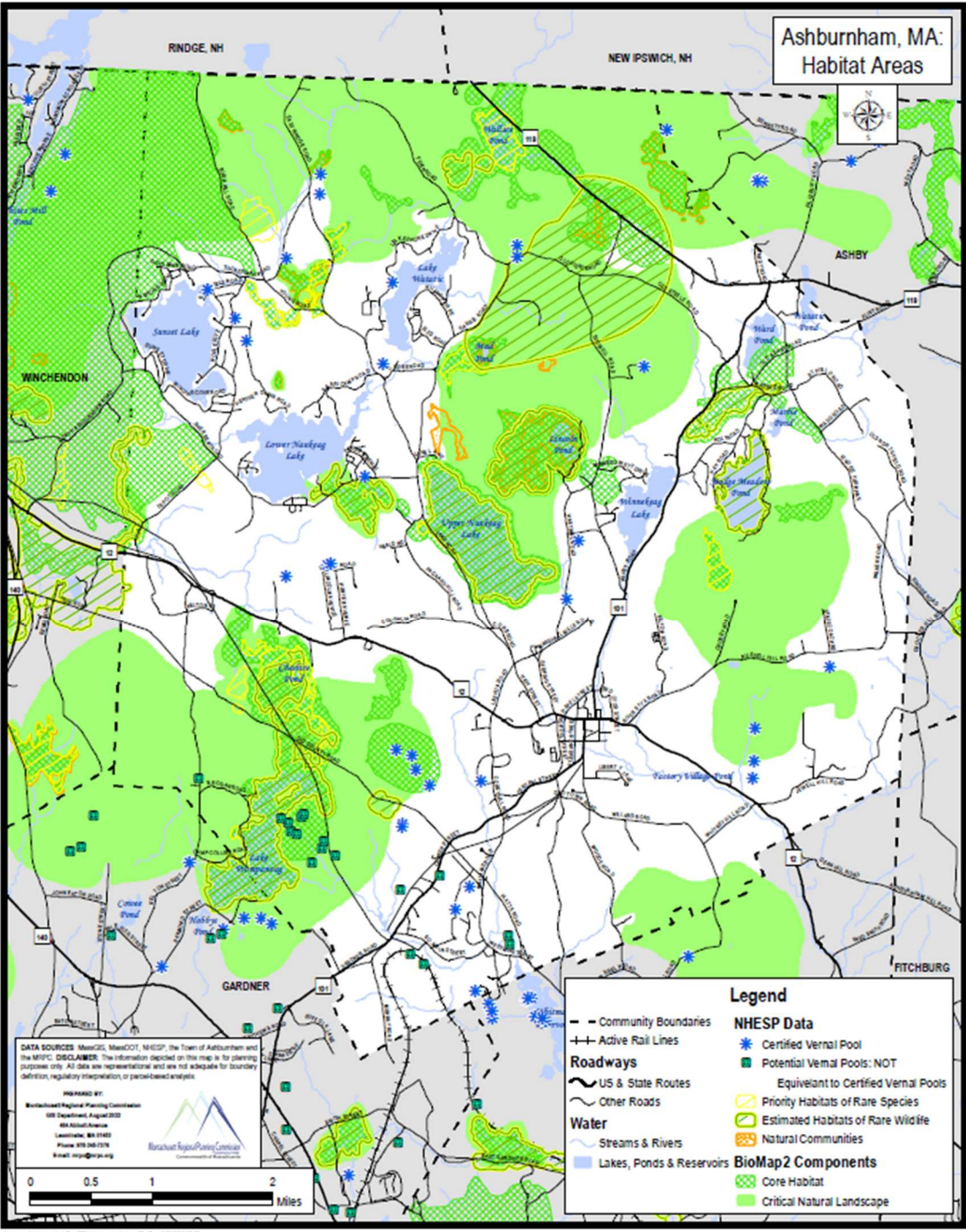


Figure 5.9. Habitat Areas of Sensitive, Rare, and Endangered Species of Plants and Wildlife

A Summary of Ashburnham's BioMap Habitat at a Glance

TOTAL AREA: 26,208.9 ACRES

TOTAL OPEN SPACE PROTECTED: 8,216.5 ACRES OR 31.4% OF TOTAL AREA

BIOMAP CORE HABITAT: 5,436.1 ACRES

PERCENT OF ASHBURNHAM COVERED BY CORE HABITAT: 20.7%

BIOMAP CORE HABITAT PROTECTED: 3,150.6 ACRES OR 12.0%

BIOMAP CRITICAL NATURAL LANDSCAPE: 13,943.2 ACRES

PERCENT OF ASHBURNHAM COVERED BY CRITICAL NATURAL LANDSCAPE: 53.2%

BIOMAP CRITICAL NATURAL LANDSCAPE PROTECTED: 6,632.2 ACRES OR 25.3%

BIOMAP LOCAL COMPONENTS: 2,773.3 ACRES

PERCENT OF ASHBURNHAM COVERED BY LOCAL COMPONENTS: 10.6%

BIOMAP LOCAL COMPONENTS PROTECTED: 623.2 ACRES OR 2.4%

BIOMAP REGIONAL COMPONENTS: 13,162.8 ACRES

PERCENT OF ASHBURNHAM COVERED BY REGIONAL COMPONENTS: 50.2%

BIOMAP REGIONAL COMPONENTS PROTECTED: 6,373.3 ACRES OR 24.3%



BioMap

SUB-COMPONENTS

<u>Feature</u>	<u>Acres</u>
Core Habitat	
Rare Species Core:	3,388.9 acres
Forest Core:	462.9 acres
Aquatic Core:	1,337.5 acres
Wetland Core:	1,078.0 acres
Vernal Pool Core:	1,362.0 acres
Priority Nat. Communities:	201.7 acres

Critical Natural Landscape

Landscape Blocks:	11,170.9 acres
Aquatic Core Buffer:	2,191.9 acres
Wetland Core Buffer:	1,621.6 acres

Local Components

Local Landscapes:	104.4 acres
Local Wetlands:	182.2 acres
Local Wetland Buffer:	381.9 acres
Local Rare Species Core:	175.0 acres

Regional Components

Regional Connectivity:	13,129.2 acres
Regional Rare Sp. Core:	1,045.4 acres

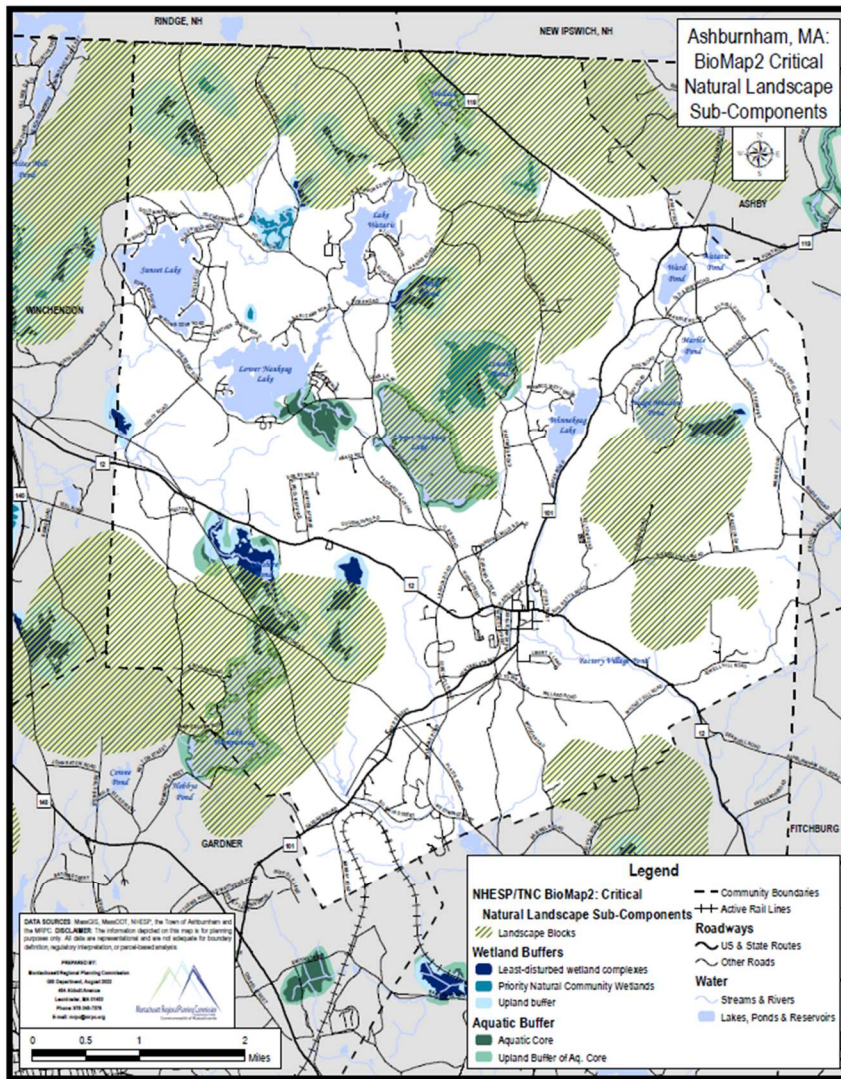


Figure 5.10. BioMap Critical Natural Landscape

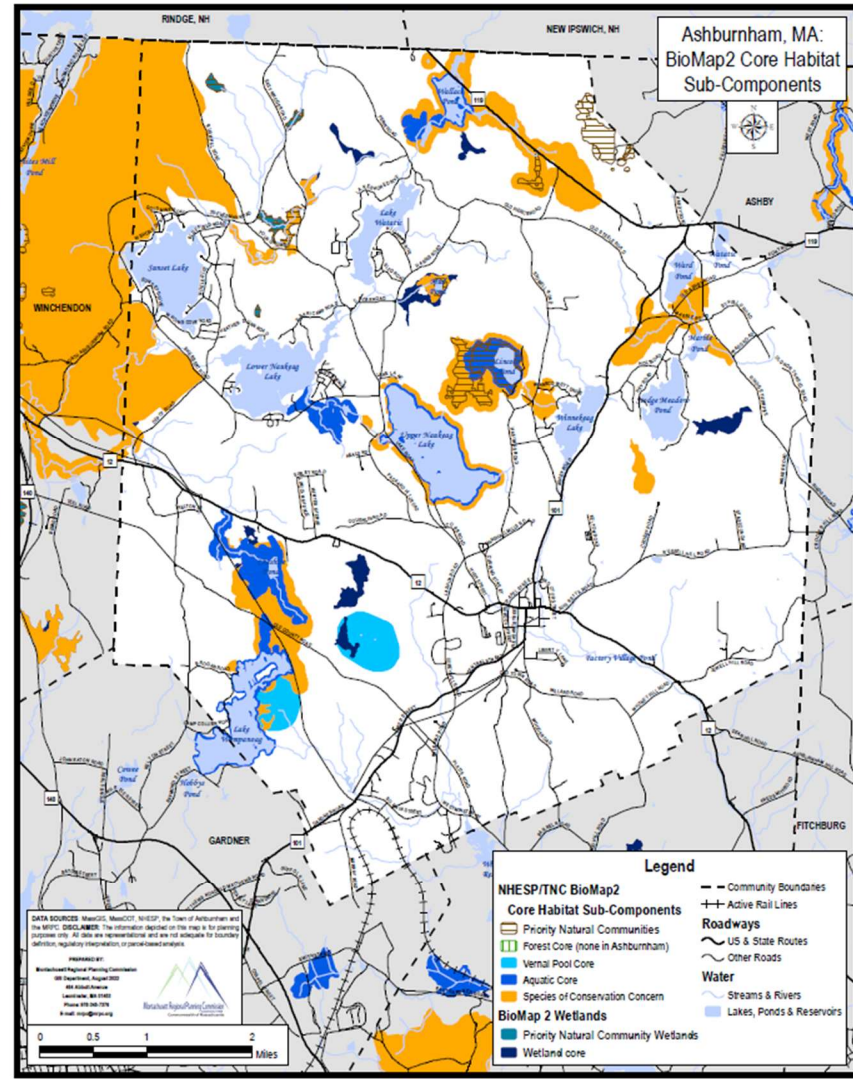


Figure 5.11. BioMap Core Habitat

Opportunities and Challenges

Below is a summary of the current status of the Town's Natural Resources with consideration of existing capabilities, capacities, and current extenuating circumstances or limiting factors, whether assets, strengths, and opportunities, or liabilities, weaknesses, and challenges.

Assets, Strengths, and Opportunities	Liabilities, Weaknesses, and Challenges
▪ Insert here	▪ Insert here

Visions, Goals & Actions

Insert recommended goals, actions, and strategies here following the Public Visioning Session...

Natural Resources Vision

Ashburnham recognizes the value of its Natural Resources and will be a Town that promotes the wise, sustainable use and continual protection of those Resources for the benefit of its environment, community, and people in perpetuity.

Goals and Actions

NR Goal 1: Ashburnham will place a high value on its watershed resources and protect waterbodies and their watersheds to maintain high quality water for drinking water and ecological integrity.

NR Goal 1, Action 1: Protect Watershed Resources through the use of best management practices, implementation of green infrastructure, nature-based solutions, and maintenance of roadside drainage and stormwater outfalls to mitigate pollution, control stormwater runoff, and prevent erosion.

NR Goal 1, Action 2: Inventory streams, rivers, wetlands, water bodies, and aquifer recharge areas. Seek protection for those not included in the Water Supply Overlay District. (Also related to recommended actions of Chapter 6. Open Space & Recreation)

NR Goal 1, Action 3: Adopt and adhere to state-approved Best Management Practices for snow and ice removal and limit the use of salt (sodium chloride) and seek environmentally friendly alternatives on portions of roadways adjacent to, crossing, or directly draining to wetland resource areas, streams, rivers, lakes, and ponds.

NR Goal 1, Action 4: Continue to enforce and promote adherence to the Wetlands Protection Act and Ashburnham Wetlands Protection Bylaw

NR Goal 2: Ashburnham recognizes the value of forests and farmlands and will be a Town that promotes and protects Forests and Agricultural Resources for the benefit of its environment, community, and people.

NR Goal 2, Action 1: Promote the use of land use protection tools and programs, including Chapter 61 Current Use Tax Program, Conservation Restrictions (CR), and Agricultural Preservation Restrictions (APR) to facilitate the protection of forests and farmlands and enhance

the critical natural resources – such as food, clean water, and clean air – which they provide and sustain.

NR Goal 2, Action 2: Continue to protect and encourage sound maintenance and sustainable management of Prime Agricultural Soils, Prime Forest, Interior Forest, BioMap Core Forest, and other large or contiguous tracts of unprotected forest and agricultural lands.

NR Goal 2, Action 3: Seek permanent protection of unique farmlands and agricultural lands identified as high priorities within the inventory of Chapter 61A lands and for those currently in agricultural use and possessing Prime Farmland Soils through Agricultural Preservation Restrictions or other means of land protection. (See related Action in Chapter 6, Open Space & Recreation.)

NR Goal 2, Action 4: Commit to supporting the “New England Food Vision – 50 by 60” by working to promote, increase, and enhance Ashburnham’s farmlands to build local and regional capacity to produce at least 50% of our food by 2060 while supporting healthy food for all, sustainable farming and fishing, and thriving communities.

NR Goal 2, Action 5: Continue to protect Ashburnham’s forests and farmlands in support of the “Wildlands & Woodlands” vision of 70% of the protection of New England in forests by 2060, and 7% of the landscape in farmland, to foster a mutually beneficial connection between communities and the land that sustains them.

NR Goal 2, Action 6: Consider adopting the Community Preservation Act at a rate that is acceptable to the Community. (Also recommended Action in Chapter 6, Open Space & Recreation.)

NR Goal 3: Continue to enforce, evaluate and strengthen Land Use Protection Zoning Codes, Bylaws, Regulations and Policies to promote and facilitate the protection of Natural Resources

NR Goal 3, Action 1: Review relevant land use protection bylaws, such as the Watershed Protection Overlay District, and Wetlands Protection Bylaw to protect Natural Resources. Make amendments, revisions as needed and develop new Bylaws, Regulations, or Policies where current protections do not exist. (See also related action within Chapter 6, Open Space and Recreation.)

NR Goal 3, Action 2: Consider adoption of an Outdoor Lighting Bylaw to reduce light pollution and preserve the Town’s rural character in environmentally sensitive areas or districts and other areas where it is deemed appropriate and necessary. (See related Action within Chapter 6, Open Space and Recreation.)

NR Goal 4: Ashburnham will be a community that promotes the protection of natural resources and sustainable development principals to mitigate the risk and vulnerabilities to the impacts of natural hazards and to increase resiliency and adaptability to the impacts of a changing climate.

NR Goal 3, Action 1: Continue to implement and revise the Goals and Actions identified within the Ashburnham Municipal Vulnerability Preparedness Program Community Resilience Building Report and Hazard Mitigation Plan.

NR Goal 3, Action 2: Utilize sound planning and wise land use decision-making strategies to promote sustainable, low-impact development and appropriate siting to mitigate, reduce, and prepare for vulnerability and risks associated with the impacts of natural hazards to homes, people, and critical infrastructure, such as roadways and public utilities especially with regard to flooding and flood related hazards.

NR Goal 3, Action 3: Continue to connect open space lands by identifying and seeking to protect landscape greenways and wildlife corridors to facilitate for the migration of flora and fauna and provision of functional habitats and access to diverse natural landscapes and landscape features.

Resources

US EPA Level III and IV Ecoregions Map, 2009:

https://gaftp.epa.gov/EPADDataCommons/ORD/Ecoregions/ma/new_eng_eco_pg.pdf

<https://www.epa.gov/eco-research/ecoregion-download-files-state-region-1>

Town of Ashburnham Master Plan, 1986:

https://www.ashburnham-ma.gov/sites/g/files/vyhlif266/f/uploads/master_plan_1986.pdf

History of Ashburnham, Stearns, 1887:

<https://www.loc.gov/item/01011218/>

Town of Ashburnham Open Space and Recreation Plan Update, 2023:

MassGIS, Mass Mapper:

<https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html>

MassWildlife Natural Heritage & Endangered Species Program:

<https://www.mass.gov/info-details/natural-heritage-gis-resources>

New England Food Vision – “50 by 60”:

<https://www.nefoodvision.org/>

<https://foodsolutionsne.org/a-new-england-food-vision/>

Wildlands and Woodlands:

<https://wildlandsandwoodlands.org/>

Ashburnham’s scenic natural and historical resources are an integral part of the town’s economy, character, and culture.



Ashburnham Master Plan

Appendix 5. Natural Resources



Ashburnham Farmland Inventory

Before colonial displacement in what is now the town of Ashburnham, native Nipmucks and Squakeags likely used seasonal sites near lakes like Cheshire and Lincoln Ponds for hunting and fishing and forged important trade routes that are still used today as town roads. As the population of the town grew over the 18th century, so did Ashburnham's industry. Following a regional trend, early settlers cleared forests for farming and industry, particularly furniture manufacturing. Due to the poor soil quality and hilly nature of the town, by the 1850's farmers started to specialize in milk, cheese, hay, horses and poultry—traditions that continue today.

Following the decline of industry in North Central Massachusetts, Ashburnham transitioned to more of a bedroom community housing families who work in surrounding cities. As house lot development progresses and Metro-Boston sprawl encroaches west, it is important to protect significant open space to continue local food production and maintain the rural character of Ashburnham. Making up almost 40% of agriculture in Ashburnham, hay production continues to contribute significantly to keeping space open and the legacy of farming in the town alive. Currently, 86% of Ashburnham's farm parcels are unprotected, which could result in this productive farmland being lost to development or reforestation. With over 1,200 acres of remaining farmland in Ashburnham and a community passionate about open space, the town has an excellent opportunity to permanently protect more of its farmland and keep it in the hands of farmers.



Prepared for the Town of Ashburnham in July 2019 by Mount Grace Land Conservation Trust with support from TerraCorps, an AmeriCorps program.

About the Inventory

Purpose

This farmland inventory provides a snapshot of agriculture in Ashburnham and can serve as a tool for towns, conservation organizations, and community members to build support for farming in the future.

Key definitions

Farm parcels are tax lots from town Assessor's data that have farm fields on them. Many farm parcels are partially wooded, with only some open fields being actively farmed.

Farm fields are open fields being used for pasture or crop production.

Disclaimer All calculations are based on assessor's data and MassGIS datalayers. These calculations are meant to give an overview and estimate of the town's agricultural land, not an exact acreage count.

Community conversations

- Meetings with the Ashburnham Agriculture Commission and Town Assessor
- Interviews with other community members and farmers

Infographics

- Modeled on Whately Community Food Assessment Infographics, created by the Franklin Regional Council of Governments

Historical Context

- Ashburnham Open Space and Recreation Plan (2014)

Massachusetts Bureau of Geographic Information Systems data-layers

- Land Use (2005)
- Level 3 Assessor's data
- USDA prime and statewide important farmland soils for Worcester County (2015)
- MassGIS Protected open space (2019)

Authors

The inventory is a project of Mount Grace Land Conservation Trust, with support from TerraCorps, an AmeriCorps program. This factsheet was prepared by Kat Kowalski, TerraCorps-AmeriCorps 2017-2019, with help from Jamie Pottern, Mount Grace Land Conservation Trust, and builds off previous reports by Maggie Hensel MassLIFT-AmeriCorps 2016-2017, Kathleen Doherty MassLIFT-AmeriCorps 2015-2016, and Bradley Kennedy, MassLIFT-AmeriCorps 2014-2015.

A Snapshot of Agriculture in Ashburnham



There are **229** acres
of farm fields in
Ashburnham.

2,058 acres of
land in Ashburnham
are covered by prime
and statewide
important farmland
soil, or

8% of the total
land area.

93% of prime and
statewide important farmland
soils in the town are **not** being
utilized for food crops, fodder,
or pasture.



Hay and Livestock are the most
commonly raised products in Ashburnham.

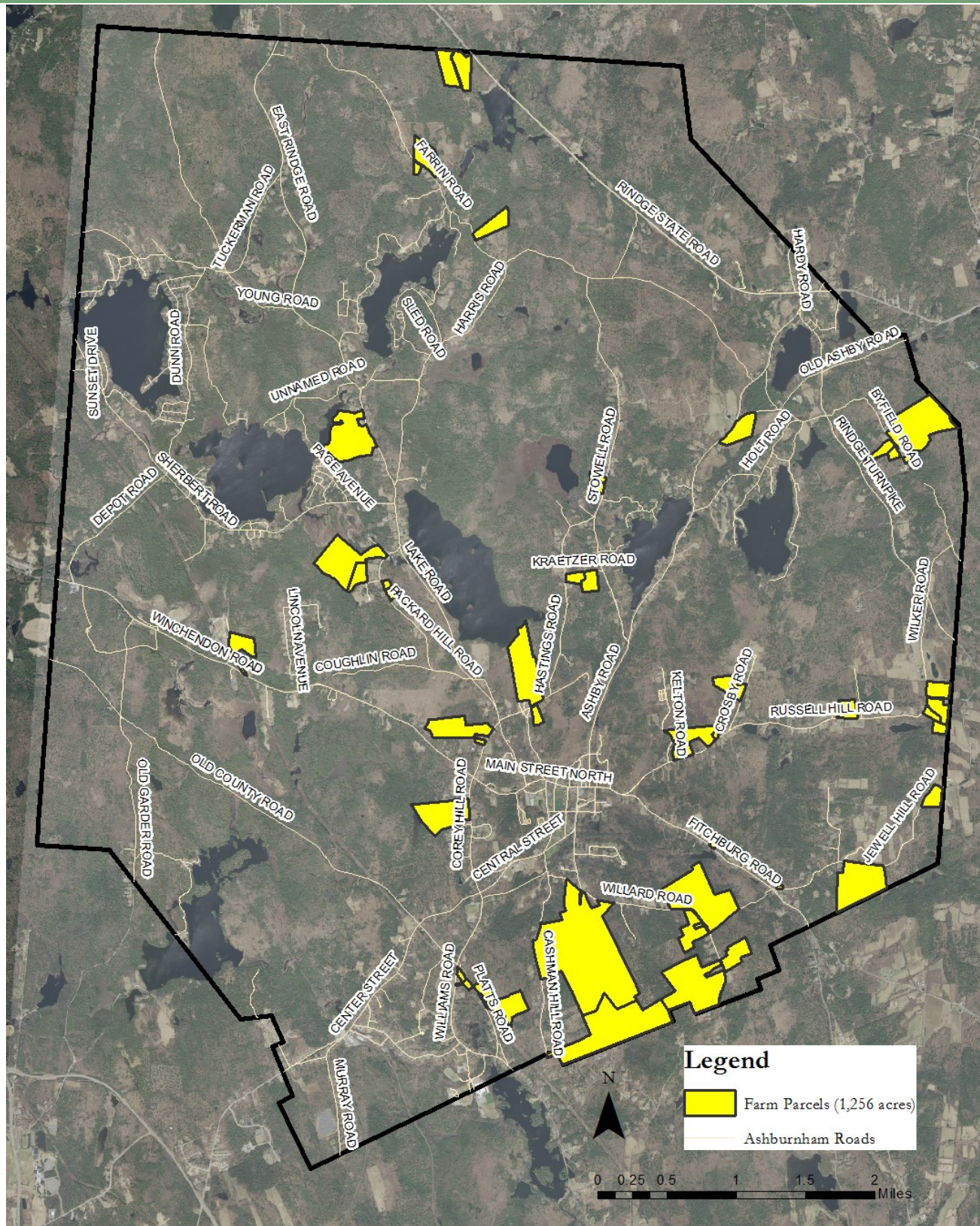


86% of farm
parcels in Ashburnham
are not permanently
protected.



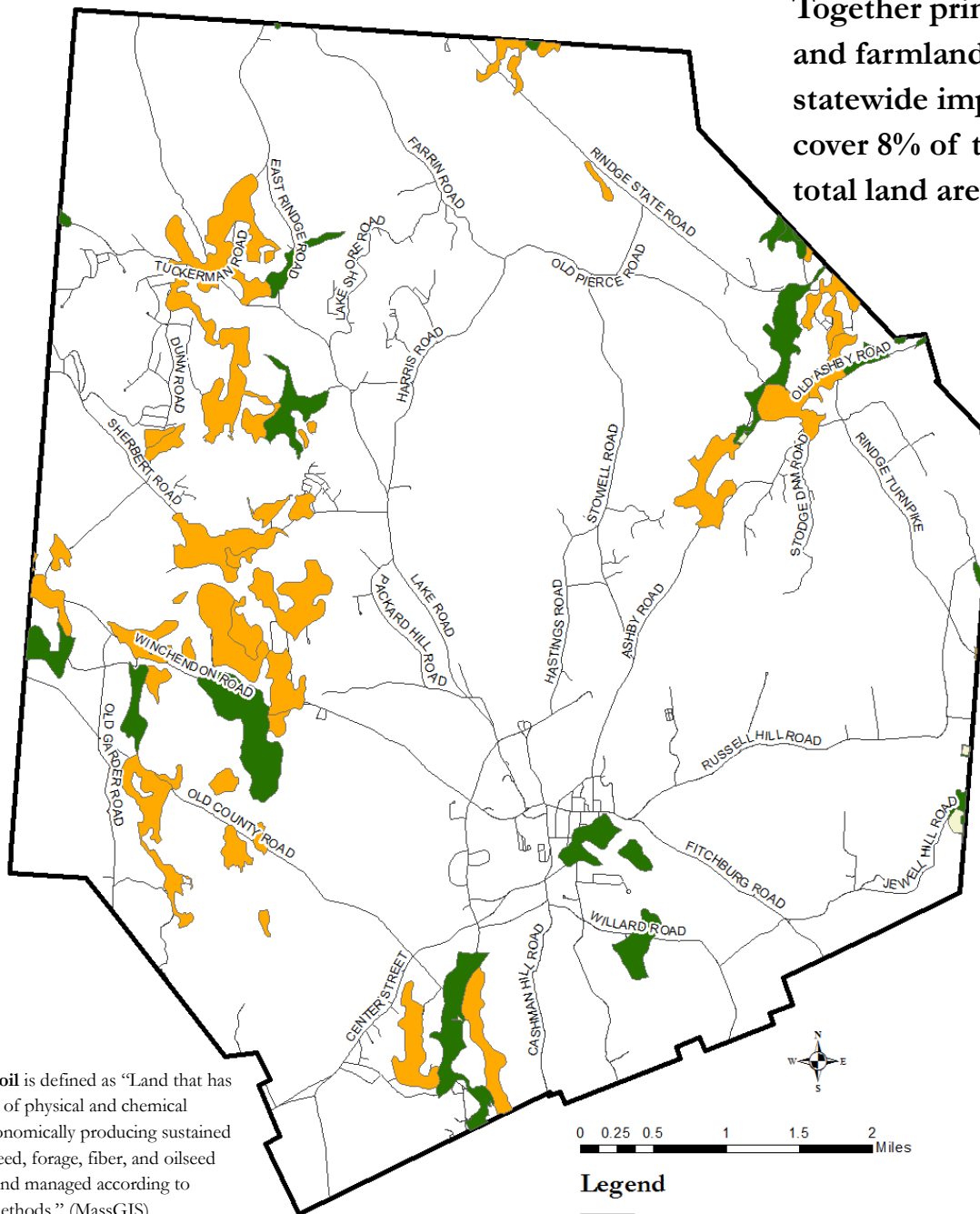
Only **18%** of farm parcels
in Ashburnham are utilized for
open fields, with the rest
covered by forest.

Farm Parcels in Ashburnham



Ashburnham's Agricultural Soils

Together prime farmland and farmland of statewide importance* cover 8% of the town's total land area.

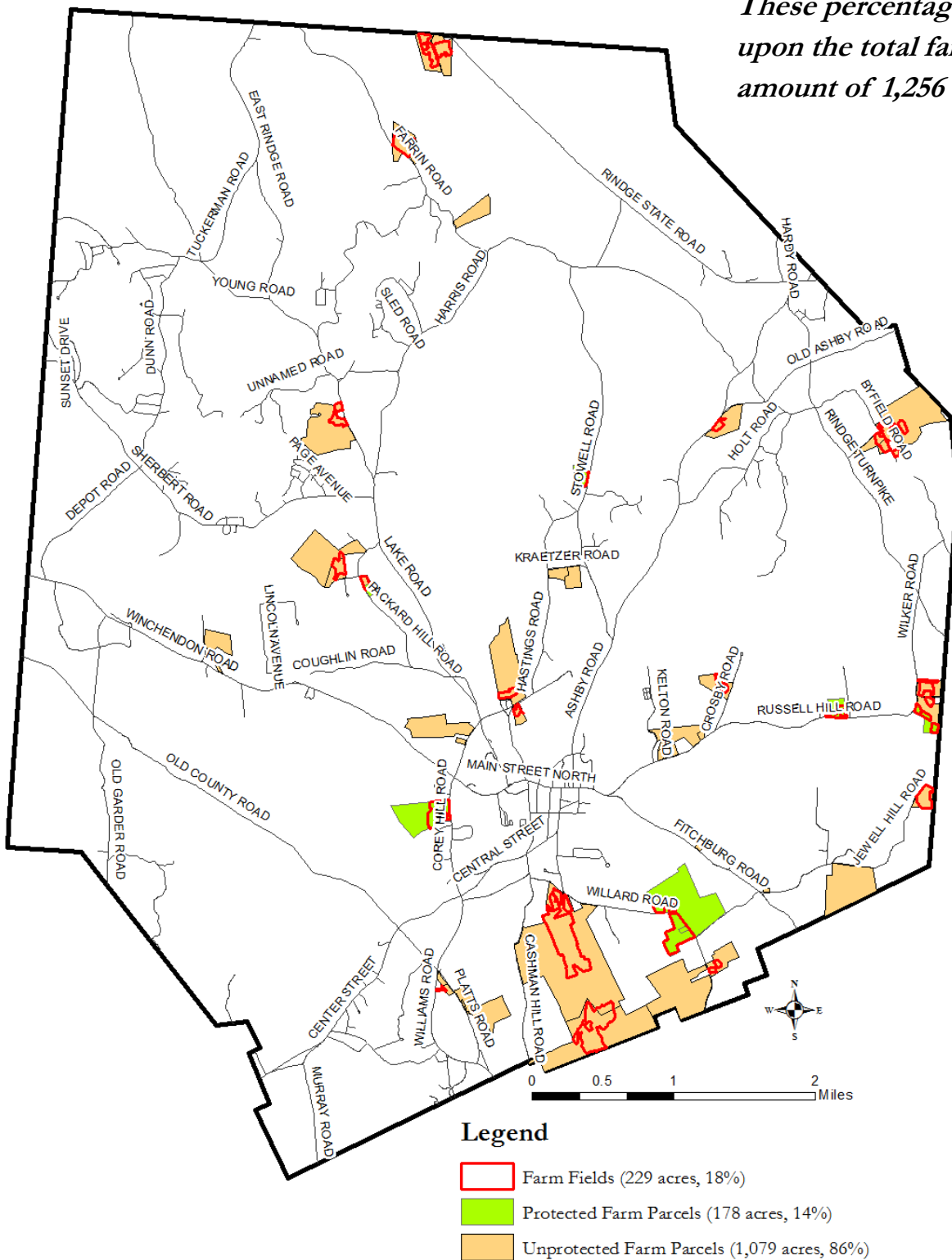


***Prime Farmland Soil** is defined as "Land that has the best combination of physical and chemical characteristics for economically producing sustained high yields of food, feed, forage, fiber, and oilseed crops, when treated and managed according to acceptable farming methods." (MassGIS)

Farmland of statewide importance is important "for the production of food, feed, fiber, forage, and oil seed crops, as determined by the appropriate state agency or agencies. Generally, these include lands that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods." (MassGIS)

Unprotected Farm Parcels in Ashburnham

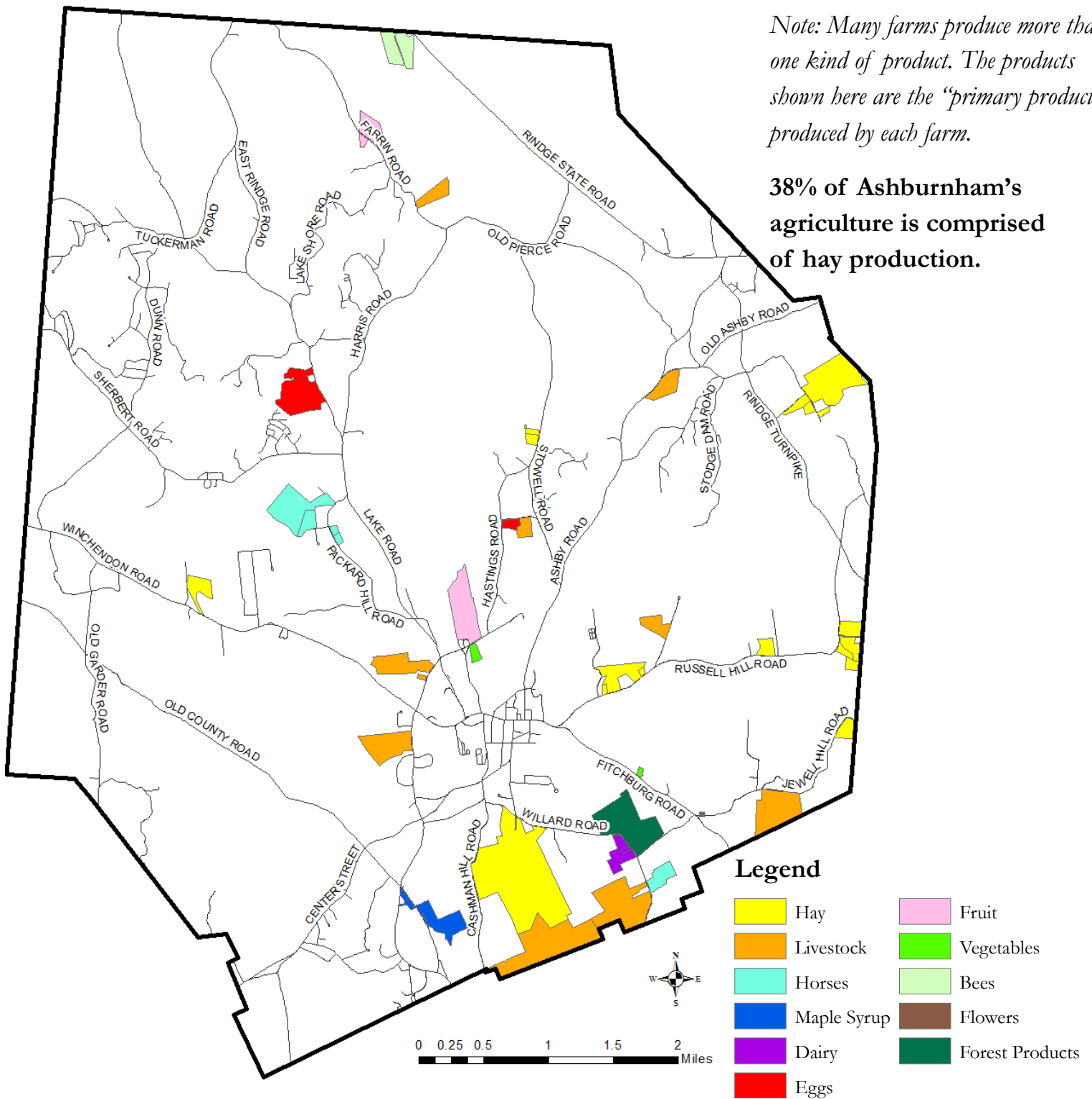
These percentages are based upon the total farm parcel amount of 1,256 acres.



Primary Products Produced in Ashburnham

Note: Many farms produce more than one kind of product. The products shown here are the “primary product” produced by each farm.

38% of Ashburnham’s agriculture is comprised of hay production.



Landowner Name	Farm Name		Farm Address	Book	Page	Parcel Acreage	Field Acres	Conserved
Allen Walter D Iii		98	Byfield Rd	1227	418	7.0	12.0	No
Ashburnham Wood Lot, Llc.	Border Ridge Farm	228	Willard Rd	6914	199	81.0	0.0	No
Baker Bruce L			Byfield Rd	4894	350	3.0	12.0	No
Baldic Joey Alan Jr	J & K's Good Thyme Farm	103	Fitchburg Rd	8314	249	2.0	0.0	No
Cag Realty Trust	Kalon Farm	28	Corey Hill Rd	7083	37	44.0	14.0	Yes
Caron Kenneth - Trustee		171	Willard Rd	8030	175	83.0	22.0	Yes
Carrington Jr Walter A		100	Byfield Rd		LNC T 8577	4.0	12.0	No
Charron Thomas E	Wind Ridge Farm	10	Ferin Rd	3386	307	17.0	0.0	No
Crocker Alfred C	Jewel Hill Farm		Jewell Hill Rd	8755	275	5.0	2.0	Yes
Crocker Kendall F Iii	Jewel Hill Farm		Jewell Hill Rd	8758	82	11.0	8.0	No
Durkee John S		39	Hastings Rd	7782	208	57.0	4.0	No
Foster Gretchen R	Wildwood Farm	50	Woods Rd	8127	108	112.0	35.0	No
Heins Karl William	Sunny Knoll Farm		Willard Rd	5453	210	20.0	22.0	Yes
Heins Karl William	Sunny Knoll Farm		Willard Rd	5453	210	1.0	22.0	Yes
Helenius Irrevocable Trust	Odd Pine Farm	122	Ferin Rd	7087	216	23.0	8.0	No
Henrie Ernest		93	Williams Rd	2937	204	2.0	1.0	No
Henrie Ernest		8	Platts Rd	2937	204	2.0	0.0	No
Henrie Ernest J Sr		25	Platts Rd	1912	314	33.0	0.0	No
Henrie Ernest J Sr		39	Platts Rd	5155	352	1.0	0.0	No
Jaillet Joseph H		39	Lashua Rd	3259	2	34.0	0.0	No
Joyce Cynda Warren - Trustee	Crowover Farm	178	Hastings Rd	7030	152	6.0	0.0	No
Koljian Kevin Carrie	Koljian Farm	70	Cushing St	8769	63	6.0	2.0	No
Lafferty Mark A Sr	Breezy Hill Farm	35	Lashua Rd	3855	336	1.0	0.0	No
Lewis Ingalls David		60	Willard Rd	3285	257	250.0	2.0	No
Livergood Joseph R		37	Crosby Rd	5371	108	15.0	5.0	No
Maguire Dennis M		287	Russell Hill Rd	5186	258	12.0	1.0	No
Maguire Dennis M			Russell Hill Rd	5186	258	11.0	2.0	No
Maguire Dennis M			Russell Hill Rd	7279	207	4.0	1.0	Yes
Munroe Peter G			Stowell Rd	1459	224	3.0	5.0	Yes
Munroe Robert A			Stowell Rd	1459	228	5.0	5.0	Yes
Murphy Thomas M			Winchendon Rd	3387	2	18.0	0.0	No
Parenteau James M		130	Packard Hill Rd	7780	60	3.0	3.0	Yes
Parenteau James M		142	Packard Hill Rd	8655	288	2.0	3.0	No
Petersen Timothy H		18	Heald Rd	2175	308	11.0	7.0	No
Petersen Timothy H			Heald Rd	3573	296	53.0	7.0	No
Pierce Catherine		231	Willard Rd	3964	72	18.0	2.0	No
Polcaro Sandra M	Little Bitty Counry Farm an Gift Barn	1	Jewell Hill Rd	8213	233	1.0	0.0	No
Somero James M		7	Stearns Rd	1042	425	35.0	3.0	No
Spacek Wayne L			Russell Hill Rd	1335	221	1.0	0.0	No
Spacek Wayne L			Russell Hill Rd	1335	221	29.0	0.0	No
Spacek Wayne L			Russell Hill Rd	1759	153	2.0	0.0	No
Stewart David W	Hames and Axle	18	Kraetzer Rd	3006	252	10.0	0.0	No
Storm Edmund F		323	Lake Rd	1498	336	58.0	6.0	No
Thibert Gerard A & Rose Marie - Trustees		195	Russell Hill Rd	7733	299	10.0	4.0	Yes
Van Hoof Robert L - Trustee		35	Byfield Rd	2139	242	72.0	12.0	No
Waugh Donald		106	Jewell Hill Rd	8495	313	58.0	0.0	No
Wright Richard H Jr	Timberlost Farm		Ashby Rd	8107	137	20.0	2.0	No

Note: Each row represents a different “tax parcel”. Some farm fields span across multiple parcels, explaining the disparity between some of the parcel and field acreage sizes. Acreage is based on calculations done by mapping software and is meant to be used as an estimation, not an exact acreage count.

Strategic farmland conservation plan: Suggested Criteria to rank farms for conservation

Suggested Criteria for Farm Conservation Priority Ranking						
	Description	Criteria for Rank Number:				
		1	2	3	4	5
Acreage	Total acreage of parcel	1-10 acres	11-50 acres	51-100 acres	101-200 acres	200+ acres
Prime Soil - Total	Percent of total acreage covered by prime ag soil	1-20%	21-40%	41-60%	61-80%	81-100%
Prime Soil - Fields	Percent of open fields covered by prime ag soil	1-20%	21-40%	41-60%	61-80%	81-100%
Development Threat	Likelihood land will be lost for commercial agricultural use, based on availability for development, ownership status, relationship to excluded parcels, rental/lease security and other specific factors	Threat is very low or non-existent	Threat is low	Threat is somewhat serious	Threat is high	Threat is imminent
Infrastructure	Presence of farmhouses, barns, and other buildings.	No infra. present	Minimal infra. in poor condition	Some infra. present, but condition is poor	Sufficient infra. for future farm operations	Infra. in good condition and more than sufficient for farm operations
Proximity to Protected Land	Distance from farm parcel to permanently protected land	>10 miles	>5 miles	>2 miles	>1/4 mile	Abutting
		<p>Larger farms will be prioritized in order to conserve more acres of farmland at once and improve regional food security.</p> <p>The presence of prime soil is an indicator of the land's potential capacity for food production, regardless of current land use.</p> <p>Farms whose prime soil is not covered by buildings or forest will be prioritized for conservation.</p> <p>Once farm fields are converted to building lots, their potential utility for food production is effectively destroyed forever. Farms that are imminently threatened by development should be prioritized for conservation.</p> <p>Beginning farmers especially need infrastructure, including a farmhouse, to get their farm business started. Farms with at least one farmhouse and a sufficient number of barns and other farm structures in good condition will be prioritized for conservation.</p> <p>Clustering protected land promotes wildlife movement and landscape connectivity. Farms that abut other protected land will be prioritized for conservation.</p>				

Suggested Criteria for Farm Conservation Priority Ranking							
	Description	Criteria for Rank Number:					Rationale
		1	2	3	4	5	
Historical/ community significance	A qualitative measure of the value placed on the farm by the community that accounts for the length of the farm's history and community connections to the land	Not at all significant	Not very significant	Somewhat significant	Very significant	Extremely significant	Community buy-in is an important piece of any conservation project. Farms that are significant to the community for historic or other reasons will be prioritized for conservation.
Scenic Value	The farm's aesthetic value as understood by community members	Not scenic or not visible	Not very scenic	Somewhat scenic	Scenic	Iconic	Certain farms are likely to be recognized by community members as iconic landmarks that tie them to the history of their town. These farms should be protected from development in order to preserve community identity.
Economic Significance	How much income the landowner makes from farming, and how much of that income comes from local sales	Minimal	-	Average	-	High	Farming can form an important facet of the regional economy. Farms that contribute significantly to the health of the local and regional economy should be prioritized for conservation.
Product	The types of products produced on the farm	Hay; eggs; forest products (1 point each)	Vegetables; meat; dairy; value-added products; orchard (2 points each)	Any combo. of products adding up to 3 points	Any combo. of products adding up to 4 points	Any combo. of products adding up to 5 points	Farms that produce a diversity of products that directly feed people will be prioritized for conservation.
Other	Other considerations that may affect the importance of a farm or farm cluster for development						The criteria listed above may not capture the whole picture for every farm; this category allows managers and community members to identify farms that wouldn't traditionally be prioritized for conservation but that have value in other respects.

These criteria were developed by Mount Grace staff as a method of ranking farms in terms of conservation priority. They are included here to provide guidance if the Town is interested in designing its own strategic planning process for farmland conservation. It should be noted that any ranking system is inherently subjective, and the Town should engage with farmers and residents to identify their own priorities for farmland conservation.