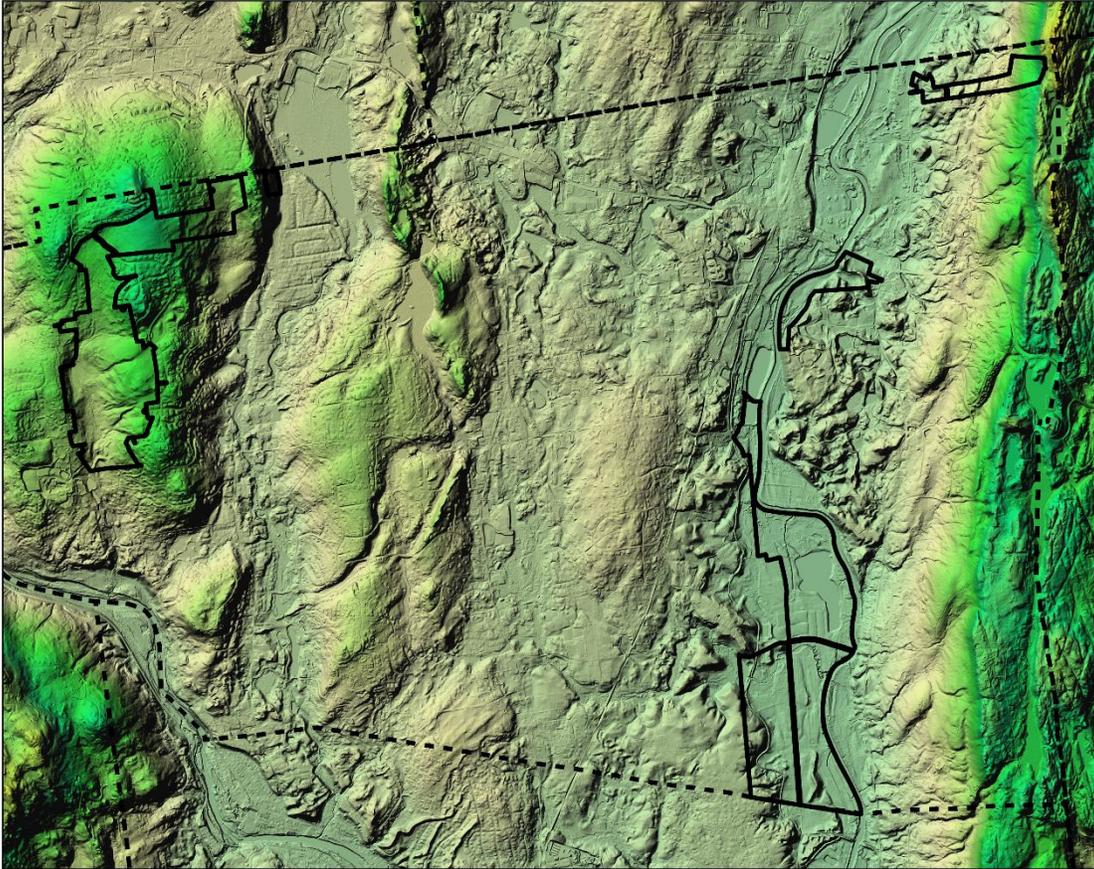


**Management Plan for Town of Avon's
Alsop Meadows, Fisher Farm, Fisher Meadows Recreation Area,
Found Land, Hazen Park, and Huckleberry Hill Recreation Area
1,104.6 mapped acres; 2023-2033
Hartford County**



Ferrucci & Walicki, LLC
Middlefield, CT
Fall 2023

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Executive Summary

This Natural Resource Inventory & Management Plan guides the management of six properties owned by the Town of Avon, CT, including Alsop Meadows Conservation Area, Fisher Farm Open Space, Fisher Meadows Natural Area, Found Land Conservation Area, Huckleberry Hill Conservation Area, and Hazen Park. The natural resources on these properties are to be sustainably managed to improve forest health and habitat conditions for native wildlife, protect any threatened and endangered species, maintain balanced and properly functioning ecosystems, protect water quality, and provide recreational and educational opportunities for the general public. Sound, sustainable land stewardship is the basis for all management decisions within the plan.

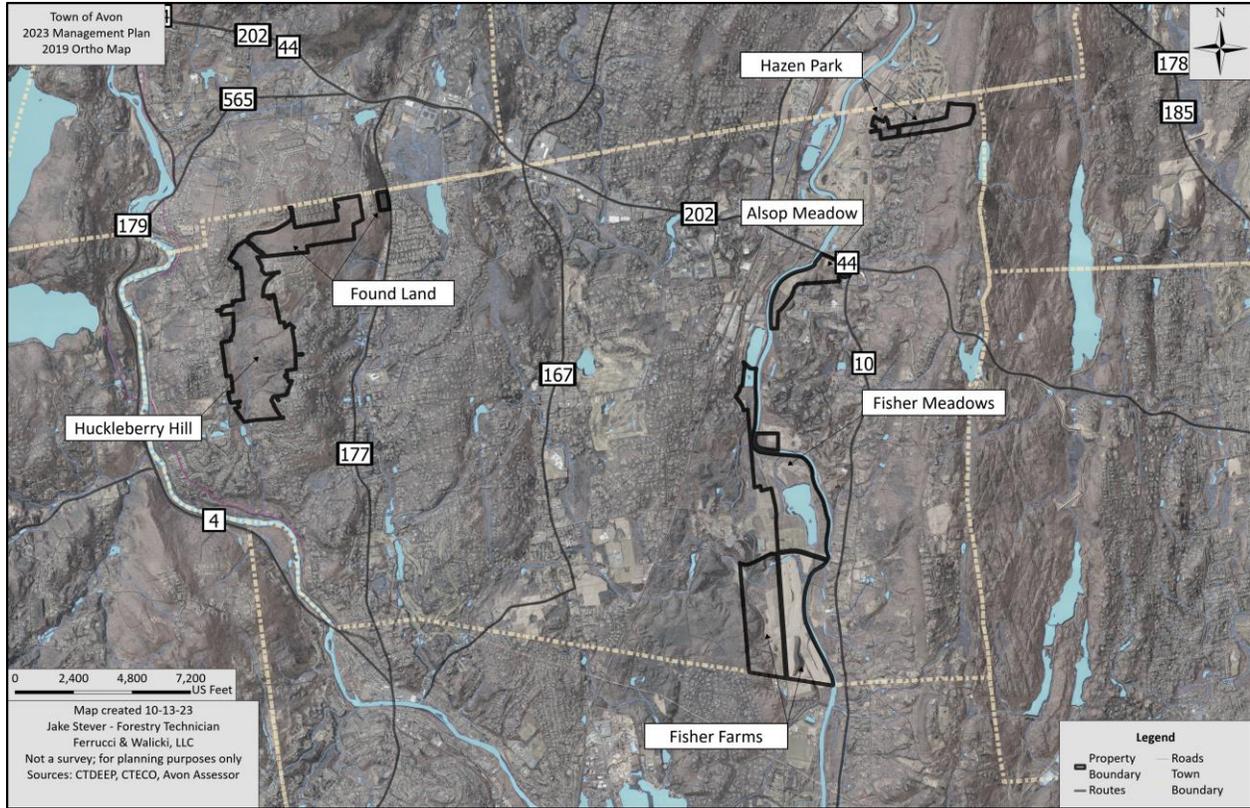
Together, the properties covered by this plan have a total of 1,104.6 acres, the largest being the Huckleberry Hill Conservation Area with over 312 acres, and the smallest being Hazen Park with just under 54 acres. All of these properties have been covered by previous management plans and have had some form of previous management. Since the writing of the last management plan in 2009, only one of these properties, Huckleberry Hill, has had additional management. Changes in property boundaries are noted where applicable.

This is the third plan of this kind that has been developed for most of these properties. For over thirty years the Town of Avon has taken an active role in the stewardship of these properties and others under their care. A range of goals and uses have been encouraged and successfully implemented during this time enhancing the experiences and lives of human, wildlife, and vegetative residents alike. The longevity of the Town's dedication to remaining informed and managing the land with intent is remarkable.

The forest resources on all properties were recently inventoried by Ferrucci & Walicki, LLC. The results of that inventory, as well as forest management recommendations for the next ten years, are included in this report. The inventory revealed that these six properties contain primarily upland hardwood forest with some scattered pockets of softwoods. Although the overstory trees on these properties are, for the most part, in good health, the overall health of these forests has declined somewhat since the last management plan was written. Much of this decline in general forest health is due to rapid increases in the populations of invasive plants on most of the properties covered by this plan. Additionally, some pest and pathogen-caused forest health issues, such as beech leaf disease, emerald ash borer, and spongy moth¹, have become more severe in the intervening years.

Most of the forests are well suited to a conservative open space and forest management program. Such a program involves many elements and actions, including periodic removal of trees in some areas, and a more "hands off" approach in other areas. In general, we have recommended that the forest resources on these properties be managed through a long-term silviculture program designed to maintain and improve overall forest health, encourage diversity of vegetation and wildlife, and maintain aesthetic qualities.

¹ The common name of *Lymantria dispar*, formerly called gypsy moth, has officially been changed by the Entomological Society of America to avoid using a potentially offensive label as a common name. Their press release can be found here: <https://www.entsoc.org/news/press-releases/spongy-moth-approved-new-common-name-lymantria-dispar>



INTRODUCTION

The open space and forestland properties owned by the Town of Avon have and continue to provide recreational opportunities for present and future residents and visitors, and contain valuable wildlife habitat, healthy, productive forests and help to cleanse air and water resources. In an ever-expanding suburban community, such as Avon, the protection of open space areas is increasingly important to the quality of life within town.

<u>Property</u>	<u>Acres</u>	<u>Acquired</u>
Alsop Meadows Conservation Area	61	late 1970s
Fisher Farm	324	2002
Fisher Meadows Natural Area	232	1976
Found Land Recreation Area	121	1950s
Hazen Park	54	1963
Huckleberry Hill Recreation Area	313	1960s

The Town of Avon was on the forefront of the multiple use/multiple benefit approach to municipal natural resource management in 1988 when an initial Natural Resource Management Plan was written. A subsequent plan was written in 1998 to continue the program, followed by another in 2009. This fourth management plan update is intended to guide the management of these properties through the next decade.

Since the program's inception, the health and aesthetics of the forests as a whole have been markedly improved through a series of forest thinnings, forest stand improvement (FSI) operations, road

improvements, boundary location work, conifer plantings, wildlife habitat improvement, and trail building and maintenance work.

During the first management cycle, approximately 380 acres of land were harvested. Mostly diseased, dying, and poorly formed or overcrowded trees were removed, and FSI operations girdled cull-trees and younger poletimber-sized trees to further release the healthiest, fastest growing trees.

During the second management cycle, two management projects were completed at Huckleberry Hill in 1999 and 2003 and one was completed between 2009-2012, and in the third management cycle another treatment was conducted between 2015-2017. Two management projects were completed at Found Land in 2002 and 2006, and one at Alsop Meadows in 2006. At Fisher Farms, management projects occurred in 1986 and again in 2004. Additional trail work and boardwalk construction was done at Hazen Park, and trail maintenance was done on all of the properties.



Regeneration in a canopy gap along the blue trail following the treatments done at Huckleberry Hill in 2015-2017. Pockets of seedlings and saplings like this are common in areas where gaps were created.

The result of past treatments and FSI work is a generally much more vigorous, productive, diverse, and resilient forest. More vigorous trees are better able to withstand insect and disease attacks and also retain nutrients and capture carbon more effectively. Well-managed forests are capable of increased growth of higher value wood products as well.

Some of the revenues generated by the sale of poorer quality or unhealthy trees for timber were allocated for various improvement projects. One of the main goals during the first management cycle was to establish and maintain a network of hiking trails throughout the various properties. Extensive trail systems were developed on the Huckleberry Hill, Fisher Meadows, and Alsop Meadows parcels.

Being the dynamic places that forests are, however, there is additional work that should be done to both maintain successes achieved and make further improvements to these valuable properties. Maintenance activities are required to ensure that property boundaries and hiking trails are properly marked. Routine monitoring is needed for invasive species, and actions should be taken when these threaten to disrupt or replace native species.

This Natural Resource Inventory & Management Plan aims to assess the current conditions of the subject properties, make science-based recommendations, incorporate other goals of the Town related to the properties, and lay out a guideline for management activities for the next 10 years.

BACKGROUND

Landowner Goals and Purpose of Plan

The Town of Avon is interested in continuing a sustainable forest land management program that strives to maintain and enhance resilience, vegetative health and diversity, wildlife habitat, and structural complexity², allow for safe and enjoyable recreational access and experiences, allow for nature study, research, education, and demonstration, enjoyment, community use and engagement, and maintain water quality and soil integrity. Additional goals include preserving historic/cultural features, protecting species of special concern and Critical Habitats, and helping to achieve stated open space goals of the Town.

Over the next ten years, management within the 6 open space parcels addressed in this management plan should:

- Codify location and condition of recreational trails and access
- Remove potential risk trees near frequently used infrastructure including open areas, roads and some trails
- Reduce blights created over time from trash dumping
- Reduce invasive plant populations
- Maintain and enhance habitat conditions for a variety of suites of wildlife species
- Maintain overall species diversity of vegetation
- Increase species, size, and age class diversity of trees, especially in the portions of the canopy lower to the ground (i.e., midstory and understory)

The words “resilient” and “sustainable” are used throughout this document. Occasionally, the two words can be considered fungible, however the word sustainable is more focused on outcomes of management and human-related activities. Sustainable management aims to achieve desired outcomes to maintain or improve current conditions which can be considered strengths of an area without sacrificing long term productivity. For example, sustainable trail systems are those that are well-suited to ground conditions, well-placed on the landscape, and are in sufficient numbers and areas to accommodate expected amounts of and types of traffic comfortably and while maintaining a high quality of user experience and not having outsized negative impacts on ecological features. As another example, sustainable forest management is conducted in a way that maintains or enhances vegetative species diversity, structural complexity, adaptive capacity, and does not degrade site quality of areas in which it is conducted. Sustainable management (of which there is a gradient from significant disturbance to little to no intentional disturbance) can help maintain and enhance resilience.

While there are no perfect definitions of what the word resilient means in the context of forests (forests in general, nor forests in southern New England specifically), it is used in this plan to describe the ability of the forest to survive (persist) and thrive (with vigor) when faced with challenges both known and unknown.

A critical part of resilience is continuing to be able to provide the valuable suite of ecosystem services to humans (i.e., clean water, clean air, temperature regulation, aesthetics, recreation, forest products, etc.),

² Structural complexity is the presence of diverse species mixes, multiple strata (i.e., layers of vegetation in the forest), age, and size classes of vegetation in combination with other physical features such as large standing snags/cavity trees and down woody material. Certain silvicultural techniques that create these conditions can mimic natural disturbances, increase complexity and provide quality, diverse habitat conditions for a variety of plant and wildlife species and communities.

and breadth of habitat conditions for vegetation, wildlife, and others. Some of the major known challenges that are impacting the forest at this property and are likely to continue to have impacts in the future include some human activity (i.e., pollution, certain detrimental property uses including unauthorized motorized vehicle and mountain bike use, etc.), invasive plants, insects and other biotic creatures, and increasing intensity of storms that damage trees. Less clear, but equally real, challenges that may have an impact here include shifting and less predictable climatic patterns such as precipitation and temperature fluctuations among other unknown threats.

There are a variety of forest conditions that help maintain and enhance resilience over the long term. For the purposes of this plan a resilient forest is one that contains a variety of:

- Tree species in all strata (overstory, midstory, and understory);
- Size and age classes of trees and other vegetation;
- Structural conditions; and
- Habitat conditions

Forests with a diverse species mix are better able to withstand and respond to threats both biotic and abiotic. Part of the reason is that diversity reduces the likelihood of massive loss of any given species or suite of species to a given perturbation. The likelihood of catastrophic and simultaneous tree failures in an area is significantly reduced by the presence of many species and sizes of vegetation. Similarly, size and age class diversity facilitate resilience because oftentimes younger and smaller trees are less impacted by severe weather events and even insect and disease outbreaks than older, more established trees. Regardless of tree size, healthy, vigorously growing trees are generally able to withstand insect and disease attacks and physical damage from storms better than trees that are struggling to survive.



Condition and structural attributes in the central portion of Stand 6 at Huckleberry Hill. Note the general lack of understory diversity but the presence of some important developing features including some large downed woody material. Over time as more trees in the stand die and fall these features will continue to be recruited. The overstory trees in this stand are diverse, but the understory lacks some diversity.

These properties contain a diverse mix of tree species in the upper canopy but in many places³ are substantially less diverse in the small and younger age classes in the lower canopy (midstory and understory).

³ The major exceptions to this are the portions of Huckleberry Hill Recreation Area that were part of active management activities that occurred in the late 2000s and 2015-2017. Those areas have regenerated very well and show great diversity in overstory and understory conditions.

Where understory and regeneration diversity are lacking is largely due to a generally closed canopy combined with deer browse⁴. The lack of sunlight reaching the forest floor (due to the mostly closed canopy where disturbances – intentionally human caused as in the cutting of trees or natural due to storms or biotic factors) limits the species of trees and shrubs that can regenerate to those that are fairly tolerant of shade. This lack of diversity in younger age classes results in a forest that is less diverse over time, in effect reducing the forest’s long-term resilience.

Continued active management that includes the cutting of trees individually and in groups is recommended for parts of these properties to achieve stated goals. Among the reasons for tree removals discussed are:

- To continue to improve structural complexity
- To remove potential risk trees
- To assist in controlling invasive species and encourage occupation of the site by more desirable native alternatives
- To help shift tree regeneration from less desired species such as American beech⁵ to more desired species including oaks, pine, hickory, tulip and other species which are less shade tolerant.

A *desirable species* is one that has high ecological, economic, or cultural value. For example, white oak hosts an extraordinary number of insects which provide biodiversity in their own right in addition to being a food source for birds and small mammals. White oak wood is also very valuable, which makes managing around white oak economically feasible and desirable. Finally, white oak is culturally representative of the forests of this region and maintaining white oak on the landscape helps to perpetuate the unique aesthetic and recreational values of these forests. Hemlock is an example of a tree that is desirable for its ecological and cultural characteristics despite having limited economic value. Black birch, on the other hand, is not often actively managed for because it has the potential to dominate forests, and has lesser ecological and economic value than oaks, hemlock, etc.

Forests are dynamic and change over time. Some of these changes occur rapidly such as when a weather event or insect infestation breaks or kills trees or when trees are cut for specific purposes. Other changes can be much more gradual. Change can have positive or negative long-term implications for forest resilience. One of the most important metrics that will be discussed in this plan is species diversity, especially trees. This is examined from the forest floor to the top of the canopy. These properties generally have good diversity of trees in the canopy but are lacking diversity in younger trees where disturbance has not occurred.

The possibility of cutting and removing wood from some of the cut trees is included within the plan, both as a tool to achieve objectives such as those just listed and also to assist with the economic viability of recommended enhancement projects. The specific recommendations that include tree cutting in this plan aim to enhance forest resilience primarily by enhancing vigor of retained trees by increasing the amount of available sunlight reaching their crowns, and by creating conditions closer to the ground that can facilitate the regeneration of tree, shrub, and herbaceous species with diverse shade tolerances, not just the

⁴ No quantitative measurements of deer impacts were conducted as part of the most recent inventory, though evidence of the impact of deer are present, particularly browse damage away from trails.

⁵ Though beech is a native species, it is susceptible to a variety of diseases that make its prospects for remaining a vigorous and viable part of our future forest questionable.

most shade tolerant species or those (like black birch) that are typically not browsed by deer. Where there has been a lack of recent disturbance, the resulting condition is a lack of sunlight reaching the forest floor



The understory in Stand 3 at Hazen Park lacks a functional understory. The downed woody material indicates that trees are beginning to die which is likely to increase overstory vegetation over time. The presence of invasive plants nearby indicates the need to continuously monitor the area as the forest continues to develop to limit the likelihood of their establishment.

which in turn has resulted in conditions dominated by a few shade tolerant species.

Locally used forest products

The awareness of the benefits of purchasing and consuming locally grown food has increased substantially in public consciousness, discourse, and practice in recent decades. Supporting local farmers, keeping land in agricultural production, reducing carbon footprint of transporting food long distances from where it is produced to where it is sold and consumed, and knowing where food comes from, who is growing it, and how it is being grown and harvested are just some of the many reasons that the local food movement resonates with many people.



The Connecticut Grown label associated with locally grown and produced food also applies to wood grown in our forests. Locally grown and utilized wood has many of the same benefits as locally grown food, including helping to keep forests as forests. Regardless of where the wood is ultimately processed and used, when wood products are generated as a result of sustainably managed forests, there are many benefits. These include benefits that are seen and felt hyper-locally (i.e., to the forest or stand-level where resilience, vigor, and/or habitat goals are being met) and globally (i.e., the sustainable production and use of wood products can substitute for more carbon intensive products such as steel and concrete, simultaneously reducing carbon footprints and continuing to store carbon in the wood fibers utilized in long-lived, durable wood products).

The background and definitions are presented here to help the reader more fully comprehend intent both in terms of what words mean and represent and what recommendations are intended to accomplish.

Overview of Property

Land History

Because these properties are spread across the whole Town of Avon, they contain several types of geologic bedrock⁶. The bedrock units that underlie these properties are primarily metamorphic and sedimentary, but the very eastern edge of Hazen Park contains a traprock bedrock unit, which is igneous.

There are many different soil types present throughout the properties ranging from very well drained to poorly drained wetland soils and water. The most prominent soil types are Charlton-Chatfield complex soils and Canton & Charlton fine sandy loams which are average in terms of productivity⁷ for red oak for our region. Pockets of richer soil in places are composed of Woodbridge fine sandy loam are mixed with lesser amounts of loamy sands to generate an overall average productivity, again using red oak as a proxy species. More poorly drained soils including Ridgebury, Leicester & Whitman type are found in areas generally associated with watercourses, their tributaries, or forested wetlands. For more detailed soils information see the descriptions in each stand in Section 2.

Evidence of previous glaciation exists throughout these properties. Many glacial erratics⁸ and other interesting geologic features including sheer ledges and boulder fields remind us that the land has not always looked the way we currently see it.



The boulders seen here in Stand 4 at Huckleberry Hill are remnants of glacial activity.

Land Use History

In addition to the geo-physical history of the land, people have had (and continue to have) substantial impacts on the forests, fields, and even water bodies that exist today. For thousands of years prior to the arrival of European settlers in the early- to mid-1600s Native Americans used the land for agriculture, hunting, gathering and to provide them everything they needed to live. Part of their management tools included clearing land and periodically burning portions of the understory⁹ for a variety of purposes.

⁶ Bedrock is the rocky parent material of which the tectonic plates are made, and on top of which soil forms and plants grow. Because mineral soil is initially formed by the weathering of this rocky parent material the fundamental chemical characteristics of a soil are largely a function of the bedrock from which it was formed, and it is these chemical characteristics that frequently determine what vegetation will grow, and how well.

⁷ Productivity in this case is associated with how well a particular species of tree or suite of species can grow in a specific soil type.

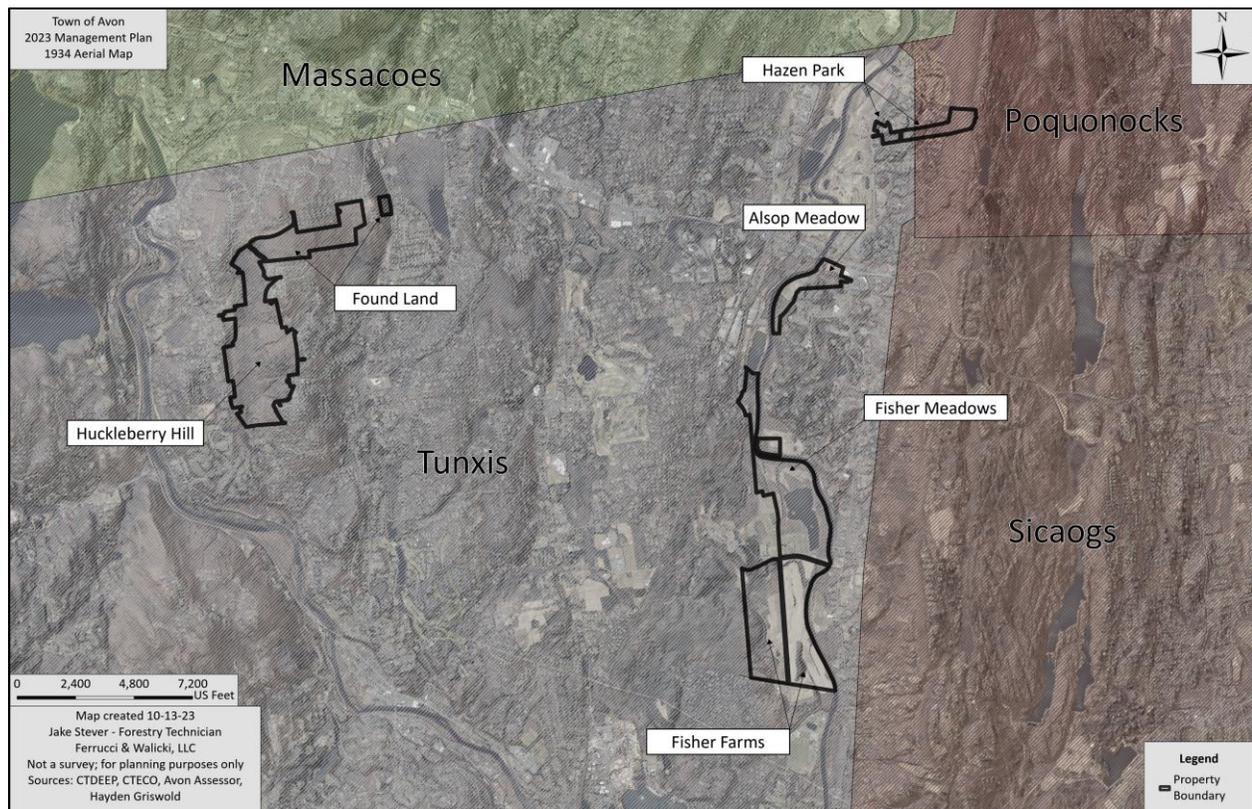
⁸ Glacial erratics are large rocks deposited by glaciers. Because glaciers often carry debris for many miles before depositing it, the chemical composition of erratics is usually different from the bedrock of the area in which they are found.

⁹ For the purposes of this plan, there are three layers (strata) of live vegetation and foliage that will be discussed. Understory refers to the layer of vegetation that grows between ground level and 5 ft. above the ground. Midstory is between 5-30 ft. above

This area of Connecticut and indeed the area on and around this property have been settled for some time. Much of this area was at one time forested. Once the land began to be cleared by the settlers, very little of the forest remained intact. Stone walls, old cellar holes, old roads, and dams found throughout the properties indicate that the forests we see today were cleared in the past either for agricultural purposes or more exploitative purposes such as charcoal production, though no charcoal mounds were noted on the properties. The occasional presence of multi-stemmed trees is a tangible reminder of how fortunate we are in the northeastern United States that the soils and the climate are such that when a tree is cut, other trees can and do grow back, most of the time very quickly.

Based on the 1934 aerial photos from this area, most of Alsop Meadows, Fisher Farm, and Fisher Meadows were open at that time. Found Land, Hazen Park, and Huckleberry Hill appear to have been mostly forested at that time. Though there was forest in 1934, there was a massive and very destructive hurricane that swept through New England in 1938 destroying many of the mature forests, and there may have been damage to these forests in that event as well.

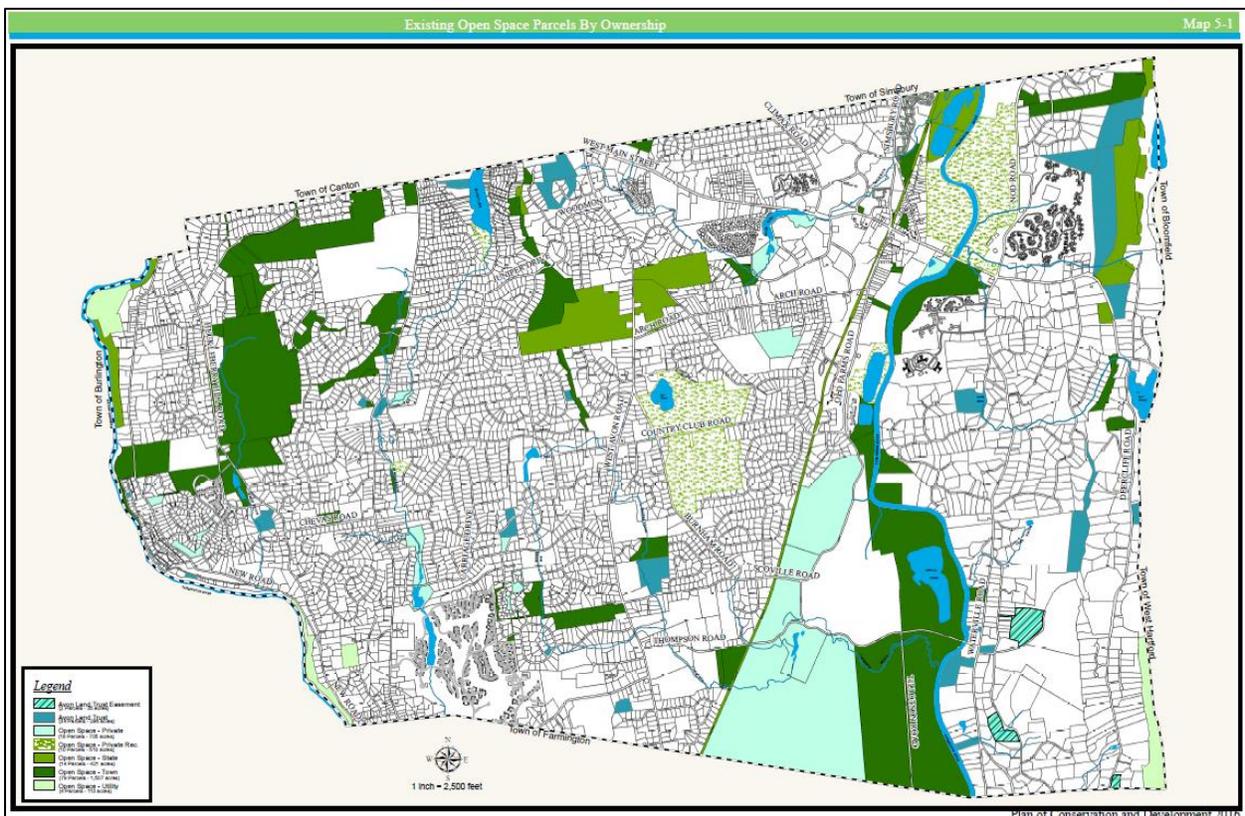
Not all of the land management activities on this property have occurred in the distant past. Stumps of different ages can be found in places throughout the property indicating varying levels of previous management activity that included tree cutting. Four management projects have occurred on Huckleberry Hill in the recent past with the most recent being in 2015-2017. More details on that treatment and its results can be found in Section 2.5.8.



the ground and the overstory is > than 30 ft. above the ground. Each layer means something different ecologically and from the perspective of wildlife habitat.

Landscape Context

These six properties are a significant portion of the non-developed land in the Town and are a critical part of the region's open space portfolio. This region is generally heavily developed with very few large conserved properties. The Avon Old Farms School, Nod Brook WMA, and Horse Guard State Park are the only other large, conserved properties in the town. Because of this, responsible, ecologically oriented stewardship of these six properties is critical to maintaining functional forest and diverse wildlife habitat in the area.



Open space map from Avon's 2016 Plan of Conservation and Development.

The presence of forest cover is important, and its arrangement can have significant impacts on the ways it functions as an ecosystem. Forest cover arrangements that contain a mixture of core, perforated, and edge forest types are generally desirable, as this provides forest structure diversity (which increases the ecological complexity of the area) and additional habitat opportunities. The process where large blocks of unbroken core forest are broken up by development or conversion to other land uses is referred to as fragmentation.

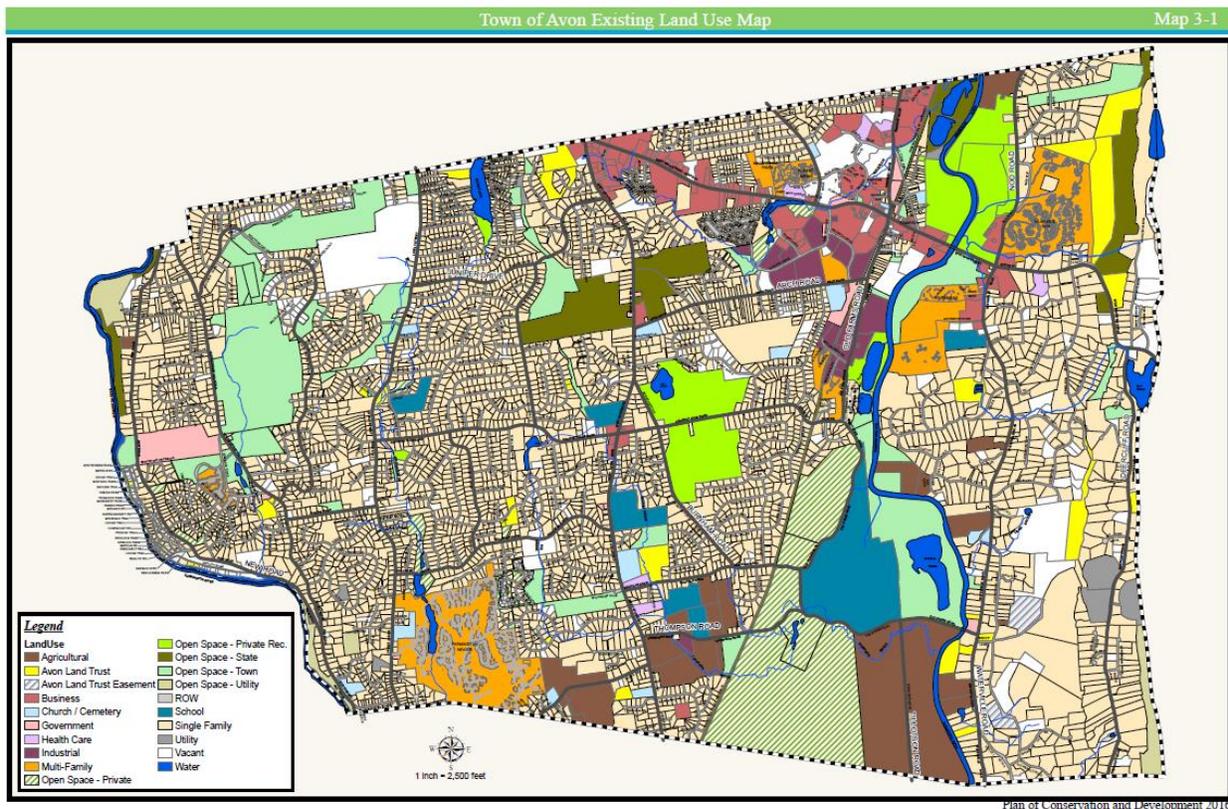
CORE FOREST: Contiguous forested areas at least 250 acres in size, and at least 300 feet in all directions from non-forested areas.

Core forest is the most quickly declining forest type in Connecticut. This loss is a concern because it is accompanied by a loss of habitats and potential loss of the wildlife species that rely on it for survival, and

because core forest best provides other forest functions such as water quality protection. Forest management that involves cutting trees does not generally constitute a loss of core forest because it does not convert forestland to non-forest, but changes to other land uses (i.e., building impervious roads, houses etc.) does.

A recent study by the University of Connecticut’s Center for Land Use Education and Research (CLEAR) used satellite landcover data to examine forest fragmentation and the distribution of various forest types across the State (www.clear.uconn.edu). Based on the CLEAR study, Fisher Farm and Hazen Park contain and are adjacent to the only blocks of “>500 acres” core forest type in the town. Found Land and Huckleberry Hill also contain some of the larger blocks of small core forest in the town. All of these properties contain some amount of edge forest, important for many species such as raptors, songbirds and some mammals, mostly associated with old fields. Most of the non-forest on these properties is either fields or wetlands.

Overall, developing a program to maintain or increase forest type distribution can provide many forest functions and habitat benefits for this property and beyond.



General Property Description

The +/- 1,104.6 acres described in this management plan contain six properties including Alsop Meadows Conservation Area, Fisher Farm Open Space, Fisher Meadows Natural Area, Found Land Conservation Area, Huckleberry Hill Conservation Area, and Hazen Park. Fisher Farm, Found Land, and Hazen Park are each composed of two separate, non-contiguous parcels.

Land use map from Avon’s 2016 Plan of Conservation and Development.

These properties collectively contain a mix of upland forests, forested wetlands, riparian areas, and a large open areas which range in use from open wetland to meadow to soccer field. Water features are ubiquitous and include watercourses, dug channels, vernal pools, an earthen dam, and forested wetlands. Hardwood species present include a variety of species of trees such as red maple, oaks (red, black, scarlet, pin, white, and chestnut), hickory, birches, ash, and some softwoods. Softwoods present include white pine and some midstory hemlock. These properties are currently used for the purposes of passive recreation, more intense recreation including mountain biking, wildlife observation, providing wildlife habitat, and to help maintain water quality within the greater Farmington River and Connecticut River watersheds. Some unauthorized motorized vehicle use and illegal dumping of garbage and yard debris is also occurring and has been done in the past.



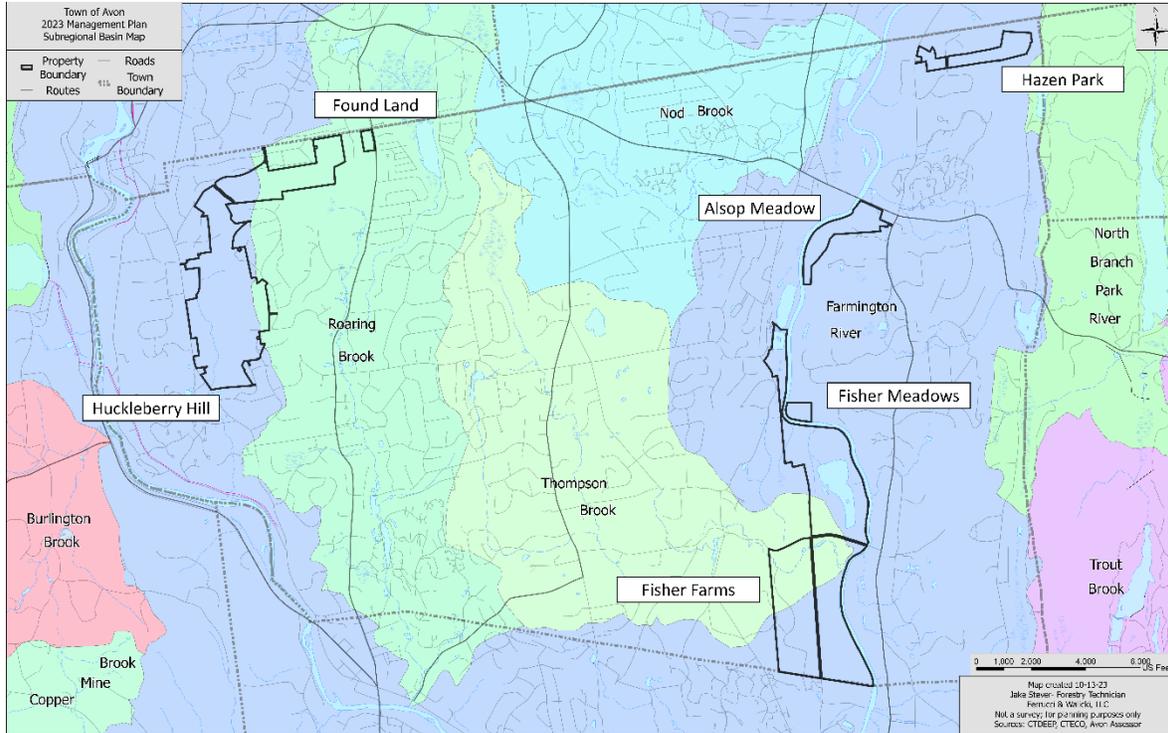
A potential vernal pool in the western occurrence of Stand 10 at Huckleberry Hill.

Water Features

Five of these six properties have notable water features. At Alsop Meadows, Fisher Farm, and Fisher Meadows, the most notable water feature is the Farmington River. Fisher Farm and Fisher Meadows both have open water ponds as well, and Thompson Brook, a small perennial watercourse, flows through both blocks of Fisher Farm before joining the Farmington River. Hawley Brook, a small perennial watercourse, has its headwaters in and flows through Huckleberry Hill. Although no watercourse flows through Hazen Park, there is a notable pocket wetland in the eastern block of the property that has significant wetland vegetation and is particularly special because it is relatively close to the ridgeline. These water features will be covered in more depth within the individual property descriptions later in this plan.



Spring Lake at Fisher Meadows



Forest Age

Tree age on these properties is highly variable. A series of increment cores were taken at the properties to determine relative ages of dominant and co-dominant¹⁰ trees. A chart showing the results as well as a map showing coring locations are shown in Appendix B. Most of the mature trees have straight and relatively branch free form which indicates that the trees grew together in forest conditions as opposed to being open grown. As mentioned earlier, Connecticut was hit hard by the 1938 hurricane, and many of the co-dominant trees likely became established after that event.

Based on the cores described above, and the fact that there are some very large diameter “wolf trees” and others that predate the hurricane, there appear to be old trees present on each property. Old trees are important for a variety of reasons. In addition to the wildlife values some provide, and the sense of awe they can give some of us in their above ground portions, they also provide important below-ground networks acting as a hub for interconnected root systems. When healthy and vigorous they can produce larger amounts of seed or mast which benefits wildlife. In addition, when healthy and vigorous, large trees can store and sequester significant amounts of carbon. When these trees die, they also provide important features for wildlife. Large trees provide greater opportunities for cavities and as they fall, the large,

¹⁰ There are four crown classes of trees as described in the context of this plan. They are dominant, co-dominant, intermediate, and suppressed. A dominant tree is one that has a larger crown spread and is comparatively taller than its neighbors so that it doesn't have much competition. A co-dominant tree is one that shares the top canopy with its neighbors but has direct access to sunlight since it is at the top of the canopy. An intermediate tree is one that may have some direct access to sunlight but is partially subordinate to the co-dominant trees that over top it, and a suppressed tree is one that is completely overtopped by the overstory trees with no direct access to sunlight.

downed woody material provides good cover and over time as they decompose they can act as “nurse logs”, woody substrate good for seed germination¹¹.

One important feature to note in the table showing tree ages from different parts of the properties is that growth rates on some of the larger diameter dominant and co-dominant trees indicate that though large, the trees are still growing relatively rapidly¹². This is confirmed by the outward appearance of the trees in which this was observed. Physical attributes including large full crowns with little to no signs of dieback or decline, no visible areas of rot or other physical damage to the main trunks of the trees, and limited blemishes on bark all help to inform us that these trees are likely to continue to grow well in the near future or beyond.



A wolf tree on a hilltop overlooking Route 44 from Alsop Meadows. This tree is much older than any of those that currently surrounding it.

Wildlife Habitat and Biodiversity

NDDB and Critical Habitats

A check of Connecticut’s Natural Diversity Database (NDDB) indicates that rare, threatened, endangered or special concern species may occur on the property. A request made to CT DEEP’s NDDB program revealed that several listed plants and some listed animal species may occur on the property. Maintaining structurally diverse forest, retaining snags and fallen trees on the forest floor, and following Best Management Practices to maintain soil stability and water quality as well as restricting operations during certain times of year when appropriate are all important to ensuring the continued existence of high-quality habitat for these special species and more common species as well¹³.

<p>NDDB Species & Considerations On and Near Avon’s Properties</p> <p>ANIMALS</p> <p>Freshwater mussels</p> <p>PLANTS</p> <p>Purple giant hyssop, Davis’ sedge, cattail sedge, Wiegand’s wild rye, Virginia, waterleaf, starry campion, Significant Watershed Influence on the Farmington River</p>
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¹¹ Downed woody material of all sizes has ecological benefits, and it is not necessary for the downed tree or log to be large to have utility, but larger trees tend to provide more utility for longer periods of time.

¹² The column in the chart in Appendix B where this is found is the “# Rings in outer inch of growth”. This gives us an indication of how the trees have been growing most recently. Trees 1-3 are growing very well and the remaining trees are growing relatively slowly to very slowly. This assessment is based on species and site.

¹³ As of the writing of this plan only the information from Alsop Meadows had been returned. Update plan as needed when additional results are received.

Important Features

Alsop Meadows, Fisher Farm, and Fisher Meadows all contain significant amounts of open space¹⁴. At Fisher Farm, most of this open space is active agricultural fields. Alsop Meadows and Fisher Meadows both contain considerable amounts of field and meadow that is not currently in agricultural production. At Alsop Meadows, the open space is split roughly in half. The western half is regularly mowed and is kept as a lawn-like feature. The eastern half is mowed perhaps once per year to keep it open. This area contains a Monarch Waystation which is intentionally kept open and planted with pollinator-friendly plants. Fisher Meadows there are several athletic fields, which have limited wildlife value, but also three large meadows mowed occasionally to keep them from succeeding to forest. Meadows and large expanses of grass that are not maintained for athletic or residential purposes are severely underrepresented on the Connecticut landscape and provide invaluable habitat to some birds who require them, and a much greater number of avian, amphibian, insect, and mammal species which will use them when they are available. The meadows at Fisher Meadows flood with high water. Amphibians and reptiles are both present here along with a variety of birds and insect species. Mowing regimes should continue to be sensitive to this and be kept to times outside of the breeding season.



The Monarch Waystation at Alsop Meadows should be cleaned out and replanted with monarch-friendly species.

Structure and Composition

Alsop Meadows, Fisher Farm, Fisher Meadow, Found Land, Hazen Park, and Huckleberry Hill are managed to promote wildlife habitat, to protect the wildlife that resides on the property, and to provide human visitors to the property a chance to connect with nature and the land. The recommendations provided in this Plan for a habitat management program are intended to maintain or enhance habitat for a multitude of species without creating significant, long-lasting negative impacts to non-target species of wildlife. In addition, provisions are included to reduce or prevent potential impact to rare, threatened, endangered species, species of special concern, and/or rare habitat conditions found on the properties. In general, the

¹⁴ In this specific context the word open space is being used to describe undeveloped, non-forest area. In most cases these are open fields, managed meadows, or shrublands.

recommendations provided in this plan aim to increase diversity and move the forest to a more mature condition.



The meadows and shrublands at Hazen Park add an important element of diversity for pollinators, songbirds, and others.

The current forest conditions on these properties accommodate a variety of wildlife species but are limited for species that require a few conditions: young forest, dense understory of tree seedlings and saplings, shrubby areas, and old forests are some of the habitat conditions that are generally absent or in limited supply on these properties. That said, the mix of forest cover types (i.e., softwood, hardwood, and mixedwood¹⁵), along with the fields and water features on the properties all combine to provide a great starting point for habitat diversity.



Large diameter large crowned trees are found throughout Fisher Farms and other properties.

Small to medium sawtimber-sized trees dominate the forested portions of most of these properties, although there are areas, particularly at Fisher Farm, Fisher Meadows, and Hazen Park, where large sawtimber trees are more common. There are few areas within which pole timber-sized trees are dominant and almost negligible acreage in the seedling and sapling size classes; recent operations at Huckleberry Hill have succeeded at regenerating desired tree species, but the gaps created during those harvests were not large enough for tree regeneration and understory vegetation to effectively function as early successional habitat. There are some dense patches of vegetation along maintained field edges, and invasive plants grow very densely in some parts of these properties; although invasive plants can provide functional habitat in the form of cover in the understory, they frequently do not provide the same quality of food source or nectar¹⁶ that native wildlife have evolved to use over millennia, so treating them and replacing them with native alternatives is desirable. Based on aerial photo interpretation, much of

¹⁵ Softwood is generally coniferous, evergreen trees such as pine and hemlock. Hardwood are generally broad-leaved, deciduous trees including maple, oak, and birch among many others. Mixedwood is a combination of softwood and hardwood such that softwood trees make up between 25-75% of the designated stand.

¹⁶ The flowers of some invasive plants including rose, olive, and knotweed are attractive to pollinators including honeybees.

the forest cover adjacent to and surrounding these properties generally contains similar size classes and mixes of species. Because of this, intentionally diversifying the size and age classes of forest on Town-owned properties where it makes sense to do so is important.

Many wildlife species use multiple habitat types and conditions to complete their life cycles. Providing diverse habitats can help ensure successful survival and reproduction of a variety of species because a lack of specific habitat features is often the limiting factor that determines whether or not a species can survive or thrive in a given area. Common habitat requirements include cover from predators, access to water, shelter from weather, breeding areas, and places where wildlife can successfully forage or hunt for food.

As a forest develops, vegetation size and species mixes can and frequently do change. Concurrently, its usefulness for satisfying the requirements of any given species also changes. Because of this, a mosaic of different habitat types is often beneficial and even necessary for most species of wildlife to be successful. For example, wild turkeys use mature forest with down woody material or shrubby areas/edges for nesting habitat or breeding habitat. After the young have hatched, they use open fields where they feed on soft-bodied insects. As the young turkeys develop, they are able to use the mature forest for feeding on hard mast¹⁷ from oak and beech trees¹⁸.

Turkeys are not the only species that utilize open fields for a part of their life cycle. The fields at Alsop Meadows, Fisher Farm, and Fisher Meadows are kept open as part of the management of these properties to provide open areas for wildlife that utilize that habitat. Open fields and grasslands that are not cut regularly for hay production are a habitat component that is largely absent from this region in Connecticut.

Another habitat that is regionally in short supply is early successional/young forest habitat. There is still a paucity of areas with large, contiguous patches of 0-15 year old tree seedlings, saplings and shrubs as the featured¹⁹ vegetation. Some of the management options recommended in this plan are designed to increase the amount of early successional habitat conditions, with a concurrent goal of encouraging the development of desirable regeneration, particularly oak.

Early successional forests currently make up a negligible amount of land of this property. Mature forests, which make up the majority of the forested areas on this



A pocket of young forest at Huckleberry Hill Recreation Area that regenerated following a treatment in which gaps were created in the canopy in 1998.

¹⁷ Mast is fruit or nuts produced by woody shrubs or trees. Examples include acorns (hard mast) and cherries (soft mast).

¹⁸ DeGraff, R. M. and M. Yamasaki, *New England Wildlife Habitat, Natural History and Distribution*, University Press of New England, Hanover, NH, 2001, 126.

¹⁹ Featured indicates that this is the primary (i.e., top) layer of growth in the stand or area.

property, can offer structural complexity (i.e., multiple canopy layers, coarse and fine woody material, snags, etc.), which provides other kinds of habitat features important to many species of wildlife.

There can be many strata in a forest but generally there is the main or upper canopy, the mid-canopy (a.k.a. midstory), the understory, and the forest floor. These strata develop because trees and other vegetation with different tolerances to shade grow at different rates. This, in combination with disturbance, is what leads to complex structure.

As a young forest grows out of the early successional stage and begins to mature, shade tolerant trees begin to fall behind the faster growing shade intolerant species, creating a mid-canopy stratum or mid-story. Some shade tolerant trees (i.e., beech, sugar maple, hemlock) also can regenerate under a dense canopy, which can create another stratum near the ground. This lower stratum (i.e., understory) may also contain shade tolerant shrubs, vines, and herbaceous species.

These strata contribute to the requirements of different wildlife species in different ways. The wood thrush for example, is a migratory songbird that sings from the canopy, nests in the midstory, and feeds on the ground. Managing forests with groups of species like the wood thrush in mind – species that have varied habitat requirements that may be able to act as a proxy for other species of birds and wildlife – can lead to the creation and maintenance of a mosaic of different vegetation types from open fields to mature forests. This helps to provide habitat opportunities for many different species of wildlife.



Above: White pine and white oaks are regenerating along a portion of the yellow trail in Stand 2 at Huckleberry Hill. The canopy gap above them (right) will close in over time as the adjacent trees' crowns continue to expand, but for a time the regeneration will thrive. Where desirable regeneration like this exists, expanding gaps can help keep regeneration vigorous and ensure that these trees become a viable part of the future forest.

On the opposite side of the spectrum, there are not many places in Connecticut and throughout the region that contain old forests. Old forests frequently contain many of the features that managing for structural diversity and complexity creates. These include lots of coarse and some fine woody material, small canopy gaps, trees of various sizes and age classes, and large diameter live and



dead trees. Old forests provide unique habitat conditions utilized by certain species of fungi that generally aren't otherwise present. Though there are no obligate old forest wildlife species in this area, many of the species that utilize diverse, well-managed forests will also use the structural attributes old forests provide.

Recent studies at the University of Vermont have helped increase our understanding of how to manage forests to increase carbon storage, maintain tree vigor, and emulate old forest conditions. These treatments include light thinnings, retaining many of the larger diameter trees, creating small canopy gaps to encourage regeneration, allowing much of the woody material to remain on site, and in some cases purposefully toppling trees using machines with cables to pull trees over with root ball intact to simulate windthrown trees. (Brown, 2017)

Oaks are perhaps the most important species for wildlife both in this region and on these properties, with the exception of a portion of Hazen Park and the northwest portion of Fisher Farm, where white pine is dominant. Flower production in spring, and – when the oak trees produce – acorn production in fall are just two of the features of oak that provide critical sources of food for wildlife. Many species of oaks were noted on these properties. Again, though there are many oaks throughout these properties in the over-story, very few oak were noted successfully growing in the understory, except for in the gaps created by the most recent treatments at Huckleberry Hill which created the conditions required for oaks to become established (i.e., sunlight reaching the forest floor and some areas of bare soil). If these species are to continue their special role in providing benefits for wildlife moving forward, some efforts will need to be made to encourage young oak to become established. Some species of oak found on these properties may be well-positioned to respond to projected changes in climate moving forward if they are able to be perpetuated. Another critical function of oaks is their association with caterpillars. Caterpillars serve as a food source for many species of birds and wildlife, and oaks support more caterpillar species than any of our other native tree species. This food source of insects and caterpillars acts as the bottom of the pyramid that supports many other species.

Insects



Best Caterpillar Trees

Oak	557
Willow	456
Cherry	456
Birch	413
Crabapple	311
Blueberry	288
Maple	285
Dina	202

Above: Oak trees provide a feeding substrate for more caterpillars than any of our other native species of trees (Tallamy, 2007). Slide courtesy of National Audubon Society and Audubon Connecticut.

Photo by Doug Tallamy



The exfoliating bark on this pocket of shagbark hickory on the Stand 1/8 boundary at Huckleberry Hill provides a unique habitat opportunity for insects, birds and some mammals potentially including bats. The bears present in this area could also benefit from the hard mast of the hickory nuts.

Hickory are found throughout these properties. All hickory produce large nuts which can be eaten by insects and some wildlife including bear, squirrels, chipmunks, and some birds. There were a few different kinds of hickory noted on the property, the most prominent of which were bitternut and shagbark hickories. Shagbark hickory provides another feature of value for wildlife in the large flaps of bark that exfoliate in shaggy strips as the trees age. This habitat can be important for species such as bats which can use south facing shagbark hickory with direct solar radiation as daytime roosting areas. One way in which this habitat feature can be enhanced is by cutting trees on the southern, southeastern, and southwestern sides of shagbark hickory to expose the main trunk of the shagbarks to sunlight. Ideally, this

would be done for a group of hickory in relatively close proximity to provide a choice of roosting areas. Adjacency or proximity to open water features as well as open areas (including woods roads) helps improve the likelihood that the shagbark hickory could be suitable for roosting bats.

Only a few individual aspen were noted on these properties. Aspen is another species that is important for wildlife in large part due to the dense cover and browse it can provide especially when in young, regenerating patches. It is a pioneer species that is very shade intolerant so over time, without large scale disturbances, this species will likely continue to dwindle here and across the region. If feasible and practical, attempting to regenerate aspen can be beneficial. This is especially true when pockets of aspen can be regenerated near open areas. If aspen is to be regenerated, creating patches of five acres or larger is preferable, but irrespective of total opening size, canopy gaps should be ideally 75 ft. in radius beyond the outer edges of the aspen to be cut to facilitate best sprouting. Ideally other competing vegetation would be treated the first year prior to aspen beginning to resprout to improve the likelihood of successful regeneration.

Hemlock is currently a relatively minor component the forests on these properties and is found primarily in the midstory. Due to its extreme shade tolerance hemlock can survive in the lower canopy positions better than almost any other native tree species in this area besides beech. Frequently, hemlock can be found persisting in the midstory under an overstory of oak or other mixed hardwoods. As discussed throughout this plan, hemlock health has been declining for decades due to a variety of factors. Overall, hemlock health on the property is fair with some mortality evident. Over the years some hemlock have died after being infested with hemlock woolly adelgid and/or hemlock scale insects.

It is difficult to overstate the importance of hemlock from a wildlife perspective. There are no other tree species native to our area that can exactly fill the biological niche that hemlock occupies. Its shade tolerance, branching structure and pattern, foliage type and density, cone size and production, amount and type of falling woody material it produces, the speed and characteristics of decomposition, and where it grows make it a critical part of the ecological integrity of our region.

Many species of migratory songbirds including black-throated green warbler, Blackburnian warbler, brown creeper, hermit thrush²⁰, goshawk, and some owls among others will preferentially nest in mixed-wood forests with hemlock components. The black-throated green warbler in particular is a species that is defined by Audubon Connecticut as a “focal species²¹” (also listed as one of their [priority birds](#)). Deer and many other species use dense hemlock for cover during difficult winter conditions. Hemlock buds are frequently browsed by deer as well. Salamanders use the coarse woody material produced by hemlock for nesting and cover while mammals including red squirrel, porcupine, and fisher also prefer forests with a hemlock component.

Densely growing stands of vigorous hemlock are better at reducing snow loads, and keep warmer relative temperatures than other softwoods, both characteristics of which can be beneficial for a wide variety of wildlife during severe winter weather. Spruce can act as a closer ecological stand-in for hemlock than white pine can, but regardless of the species, retaining and promoting softwood where possible will help maintain the diversity of habitat offerings on the property.



The emerging hemlock understorey along the property boundary at Alsop Meadows shows good health and is an encouraging sign for this property along the river.

Where feasible, retaining healthy populations of hemlock can help continue to provide all these habitat conditions for the many species of wildlife that depend on it. There are some experimental forest treatments available to reduce the prevalence or effect of HWA²² in some concentrated areas, but nothing at a large scale to limit impacts of HWA or the scale insect. Helping to maintain vigor with light thinnings where appropriate can help individual trees persist if not thrive, at least for a time.

The Importance of Hemlock

Hemlock are important for a variety of reasons including:

- The wildlife associations they provide including specific songbird habitat for breeding and nesting
- Their ability to act as shelter during storms and adverse winter conditions
- The diversity they add to the property
- Their ability to tolerate shade adding structural complexity to closed canopy understories and midstories
- Their effective capture of rainwater reducing potential for erosion, and their efficient use of subsurface water allowing more available water for other plants and trees (Harvard Forest, 2017)

²⁰ All of the listed species could nest in this part of the stand or at least may use the area during migration further north in the state and New England.

²¹ This is one of a dozen woodland bird species in the state that Audubon CT also refers to as the Birders Dozen. A guide for the management with these birds in mind can be found [here](https://ct.audubon.org/sites/default/files/ct_birders_dozen_pocket_guide.pdf): https://ct.audubon.org/sites/default/files/ct_birders_dozen_pocket_guide.pdf

²² This includes the release of beetles that predate the adelgid.

Types of Mast

Mast production is an important part of overall habitat quality. Mast comes in two main forms: hard and soft. Hard mast includes nuts and other physically hard seeds produced by species such as oak, hickory, beech, and hazelnut, among others. Soft mast is present in the form of berries and other soft fruits including black cherry, sassafras, dogwood, and black gum in tree form, but also blueberry, huckleberry, and many viburnums in shrub form.



Crabapple, though not native our area provides important sources of nectar and pollen for pollinators. Ensuring trees like these seen here at Hazen Park can remain a part of the landscape helps maintain habitat diversity and productivity.

Currently, valuable hard mast producing trees (especially oaks) play a major role in many stands on all of these properties. The oaks here are primarily red, white, and black but there are also scarlet and chestnut oaks in places. In addition to oaks, there are also hickories and American beech that are all hard mast producers. Wildlife species that depend on mast generated by this cover type include ruffed grouse, wild turkey, redheaded and red-bellied woodpeckers, blue jay, squirrels, chipmunks, mice, gray fox, red fox, black bear, striped skunk and white-tailed deer. "Wood duck, American black duck and mallard can also benefit from hard mast where... [hard-mast producing trees] occur adjacent to shallow water bodies, streams and other wetlands."²³ With the apparent decline of beech due to beech leaf disease, maintaining viable populations of the other hard mast producing species becomes even more important.

Soft mast-producing species including apple, blackgum (a.k.a. tupelo), sassafras, hawthorn, grapevine, blackberry, raspberry, winterberry, dogwood, spicebush, and some invasive plants are present in various places throughout the property. It is beneficial for many species of wildlife to have a combination of hard and soft mast in

their diet as each mast source provides different dietary elements. Hard mast often has more protein and fats, whereas soft mast tends to be higher in sugars.

Snags, Cavities, and Down Woody Material

As a forest develops and trees become stressed by competition, drought, disease, insects, or severe weather, some trees begin to decline and die. And, in our changing climate, more extreme storms are likely to occur more frequently. As processes of decline happens regardless of cause, columns of rot can develop in affected trees. Following the development of rot, insects often find their way into the tree, which in turn attracts predators including woodpeckers. The woodpeckers create larger openings in the trees, which can lead to the development of cavities. These cavities are useful as shelter and feeding habitat for many small mammals and birds.

²³ DeGraff, R. M., M. Yamasaki, W. B. Leak, and J. W. Lanier. "New England Wildlife: Management of Forested Habitats". USDA Forest Service General Technical Report NE-144. USDA Forest Service, Northeastern Forest Experiment Station, Newtown Square, PA, 1992.

As trees die, some remain standing and continue to rot, becoming what are known as standing dead snags. Standing dead trees provide habitat for insects that birds and small mammals will eat. As these trees, or pieces of them fall, down woody material is created. Larger pieces (greater than 4” inches in diameter) are coarse woody material or CWM. Smaller pieces of down woody material are referred to as fine woody material or FWM. Coarse and fine woody material are both important as habitat features and assist in nutrient cycling, moderate hydrologic regimes, and more. Forest management activities usually result in an increase in FWM, but increasing CWM through management activities requires more intentional planning. Storm damage, recent management activities, and the deaths of some oak and hemlock due to invasive insects have all created additional snags and down woody material in some parts of these properties.



The coarse woody material seen here near the Blue Trail in Stand 1 at Huckleberry Hill was a result of some of the trees that were cut during the 2015-2017 project. Having different sizes and decay classes of downed woody material helps ensure a continuous supply for the insects, fungi, and wildlife that rely on this feature. This can be a result of disturbances such a storm or forest management activities and occurs naturally as trees age, die, and fall to the forest floor.

CWM can provide habitat for salamanders and other wildlife that use it for cover. Also, as CWM decomposes, it holds significant amounts of water and can act as a good germination site for seedlings. During the process of decomposition, carbon in coarse woody material is slowly released back into the atmosphere and reabsorbed into the soil. Fine woody material when aggregated (intentionally – in the form of slash piles – or otherwise) can act as nesting and foraging areas as well as cover for many species. Wildlife biologists, ecologists, mycologists, foresters, and fuels specialists are some of the people interested in down woody material because it helps describe the quality and status of wildlife habitats, structural diversity within a forest, fuel loading and fire behavior, carbon sequestration, and the storage and cycling of nutrients and water.²⁴

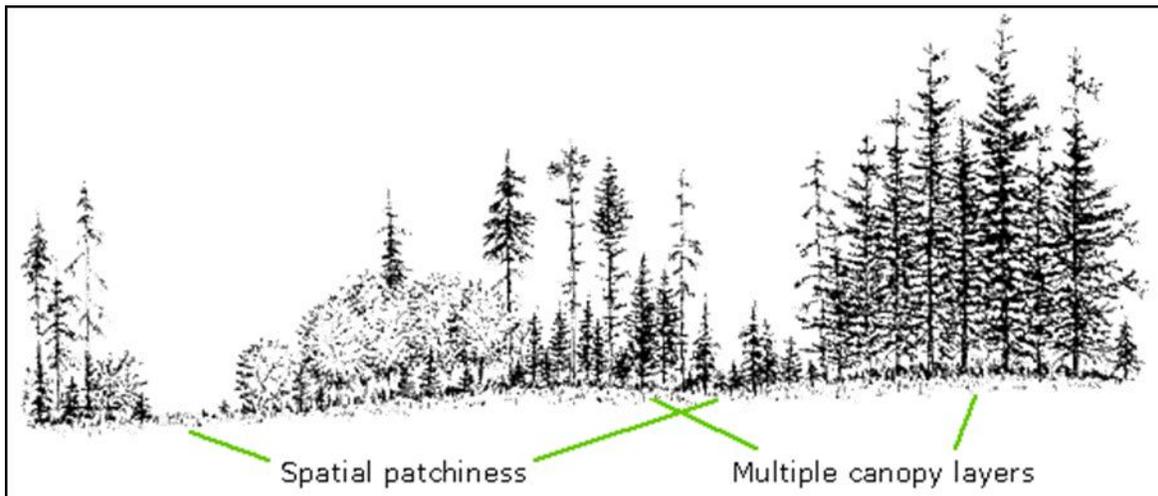
²⁴ Mount, J. R. "Water, Wildlife, Recreation, Timber...Coarse Woody Debris", USDA Forest Service GTR, PSW-GTR 181, 2002.

General management guidelines for coarse woody material (CWM)²⁵

1. Larger pieces of CWM are more valuable than smaller pieces.
2. CWM scattered across a site is more valuable than if it is concentrated (with some piles).
3. It is important to maintain a full range of CWM decay classes (from hard to crumbling).
4. Coniferous CWM is generally more long lasting than wood from deciduous trees.
5. For long-term management, consider the distribution and quantity of future CWM sources, including retention of snags and cavity trees where safety is not an immediate concern.

Forest Health

In general, forest health on these properties is fair. The major issues are a lack of structural diversity in places, infestations of invasive plant species, a lack of tree species diversity and tree regeneration in parts of the understory, excessive herbivory, garbage dumping, decline of some key overstory species, and some native and non-native invasive insect pests. Species that are particularly impacted by non-native insects and diseases are ash, beech, oaks, and hemlock.



The figure above shows the multiple canopy layers in one spot representing vertical structure and the spatial patchiness of horizontal structure over a wider area, both described in greater detail below. Diagram courtesy of the British Columbian Ministry of Forests.

Forest structural diversity is described both vertically and horizontally. Vertical diversity is the presence of vegetation of various heights (also called strata) in a relatively small observable area. Horizontal diversity is the variation of vegetation types and heights on a larger landscape scale. In many places on these properties, desirable tree regeneration is completely or almost completely absent from the 0-5 foot size class. Although this facilitates some kinds of recreation, this lack of understory vegetation greatly reduces habitat value to many species of wildlife that use this level of vegetation for cover, feeding, and nesting. Deer, ruffed grouse, woodcock, rabbits, turkeys, and songbirds, among others, are some of the wildlife that rely on a combination of habitat types including dense understory vegetation for one or more life requirements.

²⁵ Mount, J. R. "Water, Wildlife, Recreation, Timber...Coarse Woody Debris", USDA Forest Service GTR, PSW-GTR 181, 2002.

Species diversity is another important component of diversity in a forest. In particular, maintaining the significant softwood components of Alsop Meadows, Fisher Farm, Hazen Park, and to some extent, Huckleberry Hill, is essential to maintaining their habitat value as well as the habitat value of the area as a whole. Ensuring that there is diverse hardwood regeneration is also necessary to ensure that the hardwood stands on these properties are as diverse in 25, 50, or 100 years as they are today.

Invasive Species

Large populations of non-native invasive plants are established in many parts of many of these properties. Fisher Meadows is exceptionally heavily infested, even relative to much of this part of the state, and most field edges, riparian areas, and areas near access points are heavily infested on all properties. Some of the major invasives noted on these properties include Japanese barberry, bittersweet, garlic mustard, Japanese knotweed, mugwort, autumn olive, multiflora rose, Japanese stiltgrass, and winged euonymus.

Not all non-native species are considered invasive. In fact, some non-native plants such as apple trees and some clovers have become naturalized in our region and are considered beneficial for a variety of reasons, including their values for pollinators, wildlife, and aesthetics. As opposed to native and beneficial naturalized species like those described above, invasive plant species have qualities that make them detrimental to the overall ecological health of an area. These qualities can give invasive plants a competitive advantage over native species and can lead to the development of monocultures of invasives, reducing species diversity. Such features include:

- Vigorous sprouting when above ground portions of the plant are cut;
- Prolific seed production;
- Rapid growth rates;
- Ability to colonize disturbed areas;
- Long periods of seed bank viability;
- Extended growing seasons due to early leaf out and ability to photosynthesize later in the season;
- A lack of wildlife species that browse on buds.

Invasive Plants Noted at Avon

Ailanthus (a.k.a. Tree-of-heaven)

Asiatic bittersweet

Autumn olive

Black locust

Buckthorn

Garlic mustard

Honeysuckle (shrub and vine)

Japanese barberry

Japanese knotweed

Japanese stiltgrass

Kudzu (mile-a-minute)

Linden viburnum

Mugwort

Multiflora rose

Narrow-leaved bittercress

Norway maple

Phragmites (a.k.a. common reed)

Privet

Purple loosestrife

Winged euonymus (a.k.a. burning bush)



Densely growing barberry seen here in the western portion of Stand 6 at Huckleberry Hill will effectively prevent native vegetation from becoming established.

The reduction in species diversity noted above is important because a diverse ecosystem is more resilient to climate change and other environmental stressors and helps to provide habitat options for wildlife and insect populations, including pollinators. Wildlife and insect species have adapted to be able to utilize the pollen, seeds etc. produced by native species in an area. In general, fewer insect species utilize the nectar of invasive plants. Because significant populations of invasive plant species can have a negative effect on ecosystem health, it is best to treat known infestations while they are small and manageable. For more information on how to identify and control invasive plant species in Connecticut visit: <https://cipwg.uconn.edu/control-information/#>.

Invasive species control generally includes one or more of the following:

Chemical control – using herbicides/pesticides

Mechanical control – physical removal of the invading species

Biological control – introduction of natural enemies or predators

Insect

Several insect-caused forest health issues were observed during the 2023 inventory. Some of the more notable ones are spongy moth, hemlock woolly adelgid, hemlock scale, white pine weevil, beech bark disease, beech leaf disease, and emerald ash borer. All these issues are caused by insects, all of which are invasive apart from white pine weevil.

Some oaks on all of the properties appear to be declining, and some have died within the last 5-6 years after successive waves of defoliation from 2015-2017. Many of the oaks that have died were likely unable to recover after three successive years of defoliation combined with drought. The spongy moth is an early-to mid-season defoliator of a variety of species of trees, but it focuses primarily on oak and aspen. No new egg masses were noted during the inventory, which suggests that this coming year will, hopefully, not have a large spongy moth outbreak.

One method of reducing the negative impacts of spongy moth on forests is to keep individual trees healthy and vigorous through periodic thinning and to manage for species diversity, including trees that the insect finds less palatable. For more information on spongy moth and its control see this website: <https://portal.ct.gov/DEEP/Forestry/Forest-Protection/The-Spongy-Moth-Information-for-Tree-and-Woodland-Owners> .

Hemlock woolly adelgid is an invasive insect from Japan that feeds on the stored nutrients in the twigs of hemlock, thus weakening the tree and causing a sometimes-rapid decline. Hemlock woolly adelgid was first found in Connecticut and 1985 and had become ubiquitous by 1997. Although many hemlock have died since then, many have also hung on in varying levels of health. While there is no single treatment or management activity that is both effective and feasible for protecting hemlock in the forest from HWA, light thinnings to increase the vigor of surviving hemlock can make individual trees more able to survive HWA infestation. Additionally, efforts are underway to control hemlock woolly adelgid with beetles from Japan (HWA's home range), fungi, and silver flies. Although none of these treatments is ready for forest-scale application, colonies of *S. tsugae* beetles can be purchased online which will protect a limited number of trees for at least some time.



The red circled areas surround the white cottony casings of the hemlock woolly adelgid insect seen here in a sunny area at Alsop Meadows.



The red circled area shows the brown scale insect seen here in the southwestern portion of Huckleberry Hill.

Elongate hemlock scale (*Fiorinia externa*) was noted on hemlock wherever they occur. This insect is non-native and invasive and latches itself onto the underside of hemlock needles, injecting its mouthparts into the primary nutrient pathway of the needle and sucking out the nutrients. If enough scale is present on an individual tree, the foliage of that tree will begin to appear greyish-green and can eventually die. It does not appear at this time that the scale infestation is severe enough to cause hemlock mortality, but that may not always be the case and should be monitored regularly. Although the consequences of scale infestation are usually less severe and immediately noticeable than that of hemlock woolly adelgid, it is even more pervasive and can greatly decrease the average health of hemlock across a particular region.

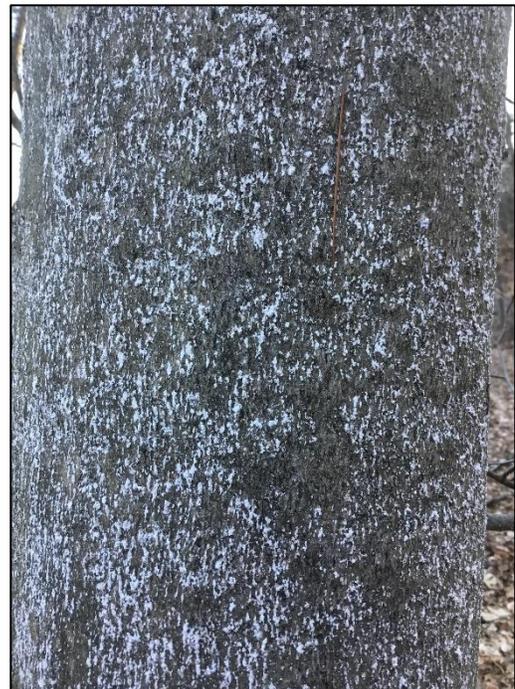
The white pine weevil is a native insect that kills the terminal leader of some species of softwood trees. Common hosts for this insect include white pine, Norway spruce, and blue spruce. White pine is the only one of these species that is native to this area. The white pine weevil female lays her eggs in the terminal leader of suitable white pine trees. When the larvae hatch, they burrow into the terminal leader. Their feeding can deform and kill the terminal leader which then causes the horizontal branches to compete for dominance. This results in poor form, and while it is not fatal to the tree, the new branching pattern usually significantly decreases any future potential timber value. White pine weevil damage was noted on some of the white pine on these properties. Because white pine weevil preferentially infests pine saplings that are in full sunlight, it is common in pine that regenerated during either wave of farm abandonment in the late 19th and early 20th centuries when pine were regenerating in abandoned fields.

This heavily weevilled pine (right) in Stand 2 at Fisher Farms was likely open-grown when it first became established.



Beech bark disease is a complex introduced into the tree when an insect called the beech scale feeds on sap just under the bark by attaching itself to the outside of the tree and drilling into the tree through the bark. A fungus called *Nectria* then finds its way into the vascular system of the tree. The physical manifestation of this on beech trees is black pock marks on the normally smooth light grey bark of the beech. The result of infestation is a loss of vigor and introduction of rot, frequently resulting in structural failure or inability to transport nutrients along the trunk, both of which cause mortality. Since many beech regenerate from root suckers, large areas of beech can be genetically identical. At this point in time, beech without beech bark disease are the exception, and it seems that all or nearly all of the beech on these properties are susceptible and infested.

The white cottony substance covering this beech in Stand 1 at Fisher Farms is the outer covering of the beech scale insect and is the precursor to beech bark disease which is present at the property.



In addition to beech bark disease, beech leaf disease (BLD), which is new to Connecticut (first discovered in 2019 in Fairfield County), has begun to impact large swaths of beech trees in some parts of the state. This disease is not yet well understood in terms of the dynamics of Connecticut's forests and beech's response here, but it has been established in different parts of the U.S. and Canada for almost a decade. The disease is caused by a nematode (small roundworm-like insect) and its presence results in leaf discoloration, leaf curl, and early leaf drop, all of which can impact

tree health. The Connecticut Agricultural Experiment Station is currently working on experimental solutions to help treat infested beech trees. At the writing of this plan (following an inventory in 2023), beech leaf disease was present throughout these properties. For more information see: <https://portal.ct.gov/-/media/DEEP/forestry/BLD/Beech-Leaf-Disease---Updates-2021.pdf>



Beech leaves were noted in a variety of conditions on Avon’s properties this year. The beech at left in Stand 3 at Hazen Park shows no evidence of any leaf issues while the beech at right (Stand 1 at Fisher Farms) shows the telltale signs of alternating light and dark banding and slight cupping/raised areas evident when beech leaf disease is an issue.



Ash on these properties appear to have suffered almost 100% mortality due to emerald ash borer (EAB). EAB is an invasive insect from Asia discovered in Canton, Michigan in 2002. Since then, it has spread wherever there are sufficient populations of ash trees, including Connecticut as of 2012. Currently, there are no forest management techniques known to ensure the survival of ash trees once infected, so ash are often cut to salvage economic value.

Ash (seen here fallen over in Stand 2 at Alsop Meadows) have been rapidly dropping out of the species mix at all Avon’s properties.

Signs of EAB infestation include the telltale serpentine galleries beneath the bark in the sapwood, and the small D-shaped exit holes formed when the larvae exit the tree. Symptoms of infestation include crown dieback, epicormic branching, blonding, and/or tree mortality. There are several ways to dispose of an ash infested with EAB once the tree is felled including chipping it into mulch, turning

it into lumber, hiring a professional tree service to take it away, or burning it. Ash makes excellent firewood even when freshly cut. Since the larvae reside inside the bark, infested trees should never be transported long distances to avoid spreading the borer faster than it would naturally disperse.

On these properties, borer-killed ash that do not have wildlife cavities and are not large enough to foreseeably become high-quality wildlife trees should be felled and left on the forest floor as a source of coarse woody material (CWM), particularly where they are within two tree-heights of a walking trail. If any ash trees that are not infested with emerald ash borer are encountered, they should be retained; in this region where ash mortality is almost complete, any ash that are not infested or killed have the potential to be resistant to emerald ash borer and should be retained as a potential seed source. Although the overall prognosis for ash in this region is very poor, retaining trees that may be resistant is worthwhile to give this ecologically and culturally important species a chance.



The light brown streaks seen on this ash in Stand 5 at Huckleberry Hill are an indication that woodpeckers have been searching for EAB larvae within the tree.

Regeneration and Resource Allocation

During the 2023 forest inventory, regeneration was observed in two ways. The first was a nested 1/100th-acre plot at each inventory point that tallied saplings²⁶ and a 1/1000th- acre plot that tallied seedlings²⁷. The second was visual observations made at each inventory point that recorded whether a species was present or not regardless of the sapling or seedling's height and regardless of whether the sapling or seedling fell within the nested plots.

Overall, forest regeneration on these properties is patchy and is generally not prolific enough or varied enough in terms of species to be considered a viable replacement for the diversity currently present in the overstory, though that is highly variable depending on the property and its management history. Most of the desirable regeneration on these properties is found in stands where past management activities have created gaps in the canopy or in stands where the canopy is less dense and therefore enough sunlight reaches the forest floor to encourage new growth. Some areas are completely lacking a functional²⁸ understory including tree regeneration, which is partly due to their stages of development, a lack of intentional management in the recent past, dense midstory vegetation intercepting light, and/or densely growing invasive plants. A lack of regeneration in a given location is not necessarily indicative of an unhealthy

²⁶ A tree between 0.5" - 4.5" DBH

²⁷ A tree less than 0.5" DBH

²⁸ In this case and throughout this document a functional understory refers to its ability to provide habitat for wildlife (cover, mast, nectar, pollen, nesting substrate, etc.) and to provide a repository of seedlings and saplings that will someday become the future forest.

forest but rather something to keep in mind when managing these stands in the future. More detail on stand management recommendations can be found in 'Stand Descriptions' in Section 2 of this plan.

Despite the fair amounts of regeneration present in parts of these the properties, there are only small patches and strips patches of young forest (i.e., areas between 0-15 years old) as has already been mentioned. In addition, though oak regeneration is present in places, it is not present in sufficient numbers to replace existing oaks in most cases. Most of the stands on the property are not currently at a developmental stage that requires regenerating the entire stand, but moving forward, it may be wise to consider continuing to create some larger openings in the canopy and/or to expand existing gaps to continue to encourage the development of the shade intolerant oak component.



The pine saplings seen here (background) in Stand 1 at Fisher Farms are growing densely in a canopy gap that was created during the treatment that occurred in 2004-2005.

The Importance of Oak

Oaks are important to retain as a major part of this forest now and into the future because:

- They support a wide variety of insects and wildlife, the likes of which no other native genera (i.e., genus or group of species) does
 - This includes black bear one of which was noted in the western portion of Stand 1 in August 2023
- They have very specific associations with some species of birds that nest in our area including (but not limited to) scarlet tanager, cerulean warbler, black-throated blue warbler
- They are well-adapted to current climatic conditions and projected climate changes
- They grow well on this site
- They are aesthetically pleasing and long-lived
- Besides *Lymantria dispar* (a.k.a. spongy moth, formerly known as gypsy moth), there is currently a lack of oak-specific insects and diseases that tend to have large scale negative health implications which makes them an important piece of the puzzle for resilience and forest health and diversity moving forward
- The wood from oak is very valuable and can be used for a variety of purposes from firewood to flooring.

General lack of tree vigor was also noted in some places on the property. Trees in targeted locations from each property were cored during the inventory. These results and many visual observations indicate that

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many trees are growing relatively slowly and some are growing very slowly²⁹. A table and map showing results of cored tree data can be found in Appendix B. Tree growth rates are frequently proportional to tree vigor and associated health for many of the species of interest, primarily oak. Tree growth rates are impacted by several factors including:

- Site conditions (overall site and microsite);
- Genetics;
- Slope position and aspect (i.e. direction the slope faces)
- Competition (primarily for sunlight); and
- Species.



The dark evergreen foliage of hemlock seen here in the midstory in Stand 2 at Alsop Meadows provides important cover for a variety of wildlife and is also important for the hydrologic function of the area.

Shade tolerant trees such as hemlock and some hardwoods (including beech) can be perfectly healthy but growing very slowly. For other species which require more sunlight, individual tree vigor and growth can be increased by active management techniques, such as thinning or crop tree release, that allow each individual more sunlight and room to grow.

In addition to using active forest management to attempt to increase vigor for the sake of healthier trees, a more vigorously growing forest can be more resilient when attacked by insects and/or infested with diseases. Forest management that increases structural diversity and complexity can also help a forest to be better prepared to respond to storm events and the threats posed by climate change.

Although it is important to attempt to ensure tree health and vigor through active management, not all trees that appear to be poorer quality should be removed. Having some trees (standing and on the ground) that show signs of rot etc. helps provide an element of ecological diversity that is critical for a variety of species of insects, fungi, bacteria and wildlife and to the function of a forest.

The bare stems and nipped tops of this oak seedling in the central portion of Stand 1 in Huckleberry Hill were browsed by deer. So far deer browse has not been significant enough to limit successful regeneration of diverse species in this stand.

Deer browse damage was also noted on these properties. Many parts of the state and the region contain an overabundance of deer. In forests, deer impact the abundance and diversity of understory vegetation, including tree regeneration, by preferentially browsing



²⁹ This observation is based on crown sizes in many parts of the property as well as bark appearance.

some species and ignoring others. Some preferred browse species are oaks, maples, yellow birch, hemlock, and pines, while they tend to ignore invasive plants, beech, black birch, and to some degree, red maple. Accordingly, an excess of deer in a given area will make it difficult to successfully regenerate desired tree species. No hunting is permitted on any of these properties.



The rootball of the windthrown tree seen here in Stand 8 at HJuckleberry Hill is now potential nesting habitat for species like the Louisiana waterthrush. The proximity to the watercourse will also enhance the likelihood that the trunk of the tree will serve as habitat for salamanders as it decomposes.

Storm Damage

Several major storm events over the last decade or so including Tropical Storms Isaias, Irene, Sandy, some tornadoes, and the October 2011 snowstorm have all had significant impacts in different parts of the state. Not many treetops appear to have been lost on these properties, but where this has occurred it is likely attributable to one of these events. However, some windthrow has occurred, particularly in wet soils or those with a hardpan reducing the depth to water table. Windthrow is a very natural part of forest dynamics and is not a forest health issue. It can cause personal safety risks, loss of economic value, and difficulty of access, but the addition of coarse woody material to the forest floor and the habitat created by upturned rootballs benefit forest health.

Fire

Wildfire risk on these properties is generally low due to low fuel loading in most places and lack of a ready ignition source. Some stands have a higher wildfire risk than others, but none is particularly concerning. The most likely source of a wildfire on any of these properties is accidental ignition of a field or meadow by a cigarette butt or vehicle, after which the fire could spread to the forested portions of that particular property. No supplemental management activities to reduce fire risk are necessary this time.

Other

Some dumping has occurred on some of these properties in the recent past, most notably at Huckleberry Hill, Hazen Park, Found Land, and Alsop Meadows. Additionally, a small camp and a cabin have been constructed at Huckleberry Hill. Finally, construction of unauthorized mountain bike trails has significantly reduced the size of unbroken patches of forest and increased erosion at some of these properties, most notably Found Land.

Current Uses

Today, these properties are primarily used for passive recreation by the public including hiking, nature study, general wildlife observation, and birdwatching. However, there is also significant use of some of these properties by mountain bikers, and some limited ATV use was noted at Huckleberry Hill. Portions of Fisher Meadows are used as soccer fields, and part of the maintained open space at Alsop Meadows is a community garden. Much of Fisher Farm is still in active agricultural production.

1.1 MANAGEMENT OBJECTIVES

The forests within Alsop Meadows, Fisher Meadows, Fisher Farm, Found Land, Hazen Park, and Huckleberry Hill provide numerous benefits to the community surrounding them and to the wildlife that live within them. Some of the properties can also provide a sustainable flow of wood products to the regional economy. One premise of modern, scientific forest management is that these benefits can be obtained in perpetuity if the forests are properly protected and cared for. Maintaining healthy, diverse, and resilient forests is the overall objective of the open space and forest management program recommended herein.

Goals of the open space and forest management program:

1. Demonstrate sound, sustainable land stewardship
2. Improve forest health
3. Protect and enhance wildlife habitat
4. Provide recreational and educational opportunities
5. Conserve soil and water resources
6. Help achieve stated open space goals of the Town

These goals, the conditions of the resources, and the inter-relationships between all of the elements of the forested ecosystem were considered while developing this plan. The properties are suited to varying degrees of a sustainable open space and forest management program. Such a comprehensive program involves many elements and actions, including periodic cutting and removal of trees on some properties, and the maintenance of other parts of the properties' forests as "reserves".

The recommended treatments and other actions have been carefully considered and balanced within the general overall objectives of the Town of Avon, and specifically, as stated within existing documents including the Town's 2012 Plan of Conservation and Development.

1.6 FOREST MANAGEMENT

1.6.1 Introduction

The following are four important considerations when developing a long-term open space and forest management program.

1. Maintain Site Quality
2. Obtain Desirable Regeneration/maintain vegetative diversity
3. Maintain High Growth Rates/Ensure tree vigor
4. Protect vulnerable species

1.6.2 Silviculture

These properties have relatively high stocking levels throughout. Where there has been a lack of active management the result is a mostly closed canopy with unevenly distributed regeneration of mostly shade tolerant and deer resistant trees. Desirable regeneration is concentrated in areas where some disturbance (including intentional canopy gap creation during management activities) has suddenly reduced canopy closure. Moving forward, in accessible portions of the properties where active management is

appropriate, uneven-aged management should continue to be practiced to increase the spatial and compositional diversity of the forest by simulating natural disturbances. Essentially, this type of management speeds up the development of desirable structural attributes while increasing resilience by encouraging regeneration of diverse species.

The various oak species currently play a significant role in the ecology of these forests. The long-term presence of oak in our forests is critical for many reasons (some of which are discussed in the Wildlife Habitat and Biodiversity Section of this plan), but overall oak is declining regionally. Where feasible, successfully regenerating oak over time in parts of these properties can help to ensure the long-term sustainability and productivity of the forest. As Tom Worthley (Associate Extension Professor in Forestry from the University of Connecticut) would say, “If we want people 100 years from now to be able to experience 100-year-old oak trees, we have to start today with a seedling.” Details regarding silvicultural recommendations can be found in the *Stand Descriptions and Recommendations* part of this plan in Section 2.

Silviculture³⁰ on this property will be driven by the goals stated at the beginning of this plan. Some of the treatments recommended in this plan will result in the cutting of trees; where site conditions allow, removing and selling the commercially valuable portions of cut trees can make management activities more financially feasible. While production of forest products is not one of the goals for this property, wood is a renewable resource and using the proceeds generated from the sale of sustainably produced wood products to pay for ecologically-oriented management activities can simultaneously support the local economy and improve forest health outcomes. Durable, long-lasting wood products continue to store carbon in their fibers while retained trees in the forest adjacent to trees that are felled and removed can increase their rates of carbon uptake and storage due to increased resource availability (primarily sunlight).

Demand for forest products is largely independent of regional production, and lack of production in one region of the state, nation, or world just shifts demand elsewhere. We are fortunate to live in a region that does produce, and is capable of producing, forest products more sustainably and with better environmental and labor regulation than essentially anywhere else in the world. Forest products produced as part of management activities have a real and positive influence on both local and global economies, and are something of which the Town can be proud.

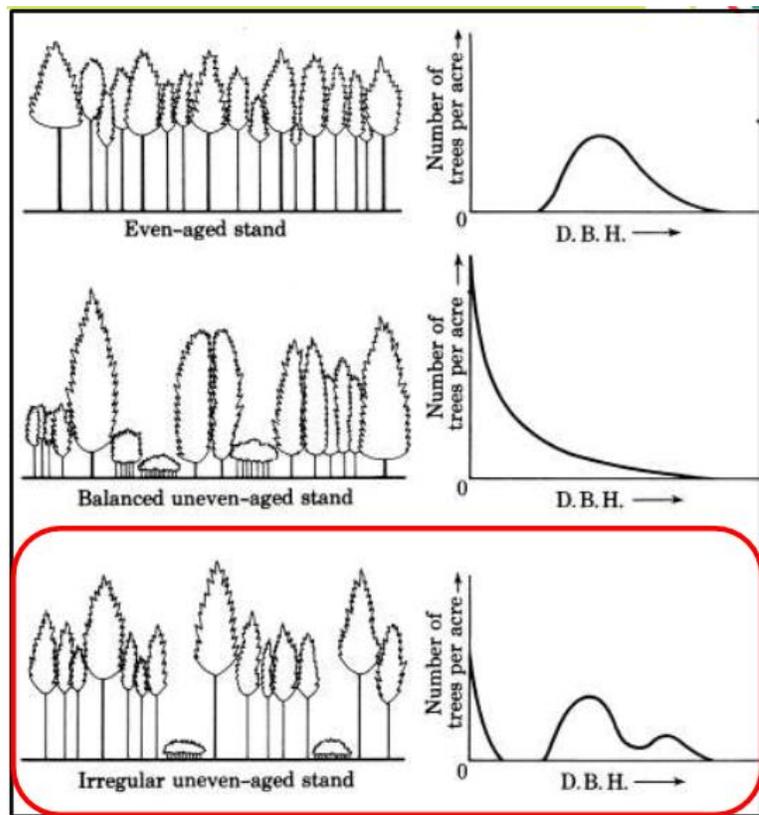
Where active management is proposed, the silvicultural systems suggested are primarily group selection systems or thinning. Group selection is an uneven-aged system while thinnings are intermediate treatments in an even-aged system. Both of these treatments, to varying degrees, allow sunlight to reach the forest floor. With some exceptions, the trees targeted for regeneration (oaks, hickory, pine, sugar maple, tulip, yellow birch) are less shade-tolerant than the trees which regenerate without or with limited disturbance (black birch, beech, red maple), so creating larger gaps helps ensure that the desired species can outcompete undesired species.

In traditional even-aged silvicultural systems designed to optimize timber production, *rotation age* is used to determine the timing and size of treatments. Rotation age is essentially the age to which the trees are grown before being harvested; in places like the southeast US rotation age can be as short as 23 years, while it can be a hundred years or longer in places where high-quality hardwoods are grown. However, in

³⁰ Silviculture is defined as the art and science of growing trees.

uneven-aged systems where diversity and ecological function, instead of timber production, are the primary goals, rotation age makes little sense. Large quantities of trees are not removed from an entire management unit at the same time, so there can be no one age to which trees are grown. Instead, *canopy residence time* can be used to calculate treatment timing and size. Canopy residence time is simply the amount of time that a given tree is estimated to spend in the main canopy, which is effectively its lifespan. Assuming trees of many different ages exist in a stand, the canopy residence time can be used to determine the average annual disturbance rate. For example, in a stand with an estimated 200-year canopy residence time, approximately 0.5% of the canopy would be disturbed in any year through the natural death of canopy trees. Of course, natural variation occurs and significantly more or less than that much could be disturbed in any given year.

When managing uneven-aged stands, or transitioning even-aged stands to uneven-aged management, which has significant ecological benefits, canopy residence time allows managers to determine the size and timing of treatments to maintain or create uneven-aged conditions. If a stand with an estimated 200-year canopy residence time is managed with an uneven-aged system and treated every 20 years, approximately 10% of the stand would be disturbed, or put into canopy gaps, at each entry. By creating a baseline disturbance rate of 0.5% per year, with natural variation on top, the stand can effectively be managed in a way that approximates natural disturbance regimes. This kind of system allows for the rapid – ecologically-speaking – transition from even-aged to uneven-aged forest and allows managers to achieve management objectives (wildlife habitat, regeneration, forest products, etc.) in stands that are already uneven-aged.



Smith. 1986. *The practice of silviculture*. 8th ed. John Wiley & Sons
 Above: Comparison of even-aged and uneven-aged structures.

Using concepts from recently published guidelines for “Exemplary Forestry³¹” can help ensure the management activities undertaken can maintain and enhance resilience and productivity.

³¹ Exemplary Forestry is a concept developed and promoted by the New England Forestry Foundation. It is intended to help increase the awareness of important and potentially measurable forest management outcomes with a wide breadth of goals
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- a. Continuously improving forest stands in terms of both quality and quantity.
- b. Providing conditions which are well-suited to the umbrella wildlife species known to be representative of the habitat needs of the great majority of native species
- c. Maintaining connectivity between habitats.
- d. Achieving a diverse size class distribution of 5-15% of stands in seedlings, 30-40% in saplings and poles, 40-50% in sawtimber and including up to 10% of the landscape in large diameter multi-storied stands³².
- e. Growing tree species well-suited to each site (e.g., matched to soil and physiographic conditions as well as expected changes in climatic conditions).
- f. Addressing climate change

Recommended actions in this plan are intended to achieve stated goals with care and balance for as many features and factors as possible. Dates and recommendations should be flexible based on changing conditions and goals. Ensure equipment is site specific. When possible, create educational opportunities when management actions are undertaken at these properties. The potential of these properties to educate both the general public and other land managers about the possibilities of ecological forest management is great due to their size, location, ecological diversity, history of stewardship, and the Town of Avon's strong commitment to a practical approach to conservation that is sustainable for both the land and the people who depend on it.

Summary of Silvicultural Objectives

- Increase structural and compositional diversity through the use of group selection creating gaps from ½ acre to 1 ½ acre or more expanding existing gaps and/or creating new gaps where appropriate. This is intended to create areas of dense growth of both tree regeneration and native vegetation. This will also continue the transition to an uneven-aged forest structure, which can provide greater structural diversity, wildlife habitat, and resilience to climate change. Using this system with periodic entries (every 15-20 years) to diversify age classes and size classes can move forest ecosystems toward old forest characteristics faster than generally occurs without such disturbances (intentional or otherwise). This is especially true when trees of all sizes (including very large trees) are retained in varying densities and patterns throughout an area increasing the heterogeneity of the structural components.
- Increase growth rates of retained trees by creating gaps in the canopy around their crowns. Additional physical growing space and access to additional sunlight increases the ability of trees to expand leaf area. With expanded leaf area trees are able to capture more sunlight, photosynthesize more, and grow larger more quickly. Having access to additional resources can increase growth rates and overall tree vigor. This is important because vigorous trees are better equipped to be able to respond to stressors (i.e., insect infestation, pathogens, disease, etc.). More vigorous trees also tend to produce more seed which can result in an overall increase of seed source for new generations of trees as well as additional food sources for wildlife. Enhanced vigor frequently

driven in large part by regionally appropriate presence of wildlife species- and site-specific potential for production of wood. Because wood production is not a goal on this property, some concepts that are not applicable have been omitted.

³² Because wood production is not a goal on this property, these ratios may need to be adjusted. A higher proportion in large-diameter multi-storied stands would make sense here.

results in faster growth rates as well. Faster growth generally means more carbon uptake and storage and, concurrently, larger trees for improved forest products where that is relevant.

- Use a continuous cover irregular shelterwood system in places where large, retained trees but dense regeneration is desired. The continuous cover variant of the shelterwood system rapidly (compared to the time it takes for these features to be created with passive management over time) creates old-forest characteristics, such as large leave trees (i.e., “legacy trees”) and spatial heterogeneity, while effectively regenerating large areas of shade intolerant to mid-tolerant trees, such as oaks, hickory, and sugar maple.
- Control invasive plants. This may either be performed by Town employees or contractors with appropriate licensing or certifications. Where necessary, invasives control should be performed prior to any activities that involve tree cutting, and all of the properties should be monitored frequently to detect new infestations and to ensure existing populations are stable, or, ideally, shrinking.

Management Design and Mitigation

- Retain at least 50% canopy closure within 150 feet of wetlands, streams, and vernal pools.
- Exclude steep slopes and thin soils from management activities that involve equipment.
- Minimize skid trail distances and avoid water crossings except as necessary.
- Leave tops and slash on site for both nutrient cycling and wildlife habitat. Use some tops and slash to create brush piles.
- Leave all snags, where not a safety concern, for wildlife habitat. If the number of snags is inadequate³³, consider creation of snags through girdling of large diameter trees at least 2 tree lengths away from a walking trail or access road³⁴. Potential off-trail use of an area by hunters, researchers, or others should also be considered before intentionally creating snags.
- Avoid disturbance to stonewalls and other historic features as much as possible.
- Require any management equipment to be pressure washed and thoroughly dried before being brought onto the property to reduce the risk of additional invasive seeds being transported into the forest.
- Any seed mix used to stabilize soils or skid trails must be certified invasive-free and should be composed of native plants. Where mulching is necessary, attempt to use invasive free straw as opposed to hay mulch to cover seed until successful germination can occur.
- Follow all Connecticut Best Management Practices not covered above to maintain water quality and soil stability. Published BMPs should be viewed as a minimum requirement and actual measures taken to protect water and soil resources will likely exceed legal requirements.

General Recommendations

With any activity undertaken on the property, attempt to:

1. Improve forest health and species diversity.

³³ Target numbers of snags per acre should be 1 per acre greater than 18” dbh and 3 per acre greater than 12” dbh. *Managing Forests for Trees and Birds in Connecticut*. Audubon Connecticut. 2020.

³⁴ This should only be done in areas where future trail development and active forest management is unlikely to happen due to the danger that girdled trees can create.

1. Improve vertical and horizontal structural diversity and complexity, including retaining snags and cavity trees where doing so is not counter-productive to the goal of the activity or creates a safety hazard for property users.
2. Ensure water quality and soil stability.
3. Maintain accessibility, or in places where it is desired, increase accessibility.
4. Limit spread of invasive plant species. Treat populations of invasives in and adjacent to the area where trees are to be cut prior to forest management activities.
5. Coordinate management philosophies and activities with neighbors to amplify the activities' impact, build community, and strengthen each participant's commitment to sustainable, adaptive management.

Forest Health and Productivity

- Encourage desirable regeneration of target species in all managed areas.
- Attempt to limit populations of invasive plant species. Remove invasive plants where feasible. Some pockets of invasives are dense enough to provide functional understory habitat. Treat these areas with a staggered approach to avoid eliminating a particular habitat type all at once and replace with native species where conditions allow.
- Keep abreast of information regarding invasive insects, especially the spongy moth, hemlock woolly adelgid, hemlock scale, beech bark disease, beech leaf disease, emerald ash borer, and Asian long-horned beetle. Work with relevant state, school, or other organizations that offer help with managing these issues.
- Attempt to perpetuate and expand the softwood component of these forests by using treatments to increase the vigor of retained trees and to successfully regenerate softwood where and when feasible.
- Conducting treatments that require the use of machinery simultaneously will make the non-commercial treatments more feasible by reducing the cost incurred by transporting equipment to and from the site multiple times for non-commercial treatments.
- Borer-killed ash that do not have wildlife cavities and are not large enough to foreseeably become high-quality wildlife trees can either be removed and used as firewood on-site, left to remain standing where safety is not an issue, or felled and left on the forest floor as a source of coarse woody material (CWM). Ash trees that are not infested with emerald ash borer should be retained; in places like these properties where ash mortality is almost complete, any ash that are not infested or killed have the potential to be resistant to emerald ash borer and should be retained as a potential seed source.

Wildlife

- Use gap creation to encourage dense growth of tree regeneration and desirable non-tree understory vegetation (i.e., blueberry, huckleberry, maple leaf viburnum, etc.)
- Attempt to recruit some large trees scattered throughout the property, even if these trees are not "wolf trees" to increase structural diversity. These large trees could become "legacy trees" and be allowed to mature and die naturally.

- Whenever possible, avoid cutting trees during the songbird breeding season (i.e., early April-early August) if it makes sense given operational concerns and goals of the treatment. Bat protections may also need to be considered which could also impact operation windows.
- During or after forest management activities that involve cutting trees, consider piling tops of some felled trees to increase value for wildlife. Pile tops near edges of openings where they exist and do not create more than 2-3 piles/acre. See Appendix B for NRCS recommended brush pile construction methods.
- Maintain softwood cover wherever possible, and use treatments to improve the vigor of retained trees. Softwoods are underrepresented on the landscape and provide habitat that many species require for one or more major life activities, so perpetuating the softwood component of these forests is important
- Follow BMPs and other specific documents such as Forestry Habitat Management Guidelines for Vernal Pool Wildlife (Calhoun, 2004)

Recreation and Boundaries

- Mark and maintain all boundaries.
- Continue to maintain woods roads, trails, trailheads, kiosks, and other accesses and limit erosion.
- Determine if there are any additional trails or trail connections that can allow for greater access but not have a significant negative impact on the vegetation or wildlife on the property

Education and Research

- Coordinate with colleges and universities, such as University of Connecticut, or organizations such as the Connecticut Agricultural Experiment Station (CAES) to increase knowledge of the property and assess the efficacy of proposed stewardship activities. Where feasible conduct experimental treatments to maintain or enhance forest health and productivity.



The view from near the trail on the western block of Fisher Farms Trail (the old Farmington Canal) looking east over the fields and Tillotson Road.

Section 2:
Property Descriptions & Recommendations

2.1 ALSOP MEADOWS CONSERVATION AREA

2.1.1 Property Description

Alsop Meadows Conservation Area consists of 61.25 acres in the northeastern portion of Avon. The property is bounded to the west by the Farmington River, to the north by Route 44, to the east by Route 10 and commercial buildings, and to the south by the River Mead condominium complex.

The Alsop Meadows property contains a mix of several forest types and open field areas that are used for recreational and community gardening purposes.

The most distinctive elements of this property include the long frontage along the Farmington River, and a mix of rolling woods and fields that create several local vistas, including one looking south from Route 44. The mixture of hardwoods and softwoods present as well as the shrubby areas and distinctive early season vegetation (especially the Dutchman’s breeches) are all important features of the vegetation here. Pitch pine, a native pine species once much more prevalent in our area than is currently found is present on the ridges in Stand 3. In addition, Connecticut’s Natural Diversity Data Base (NDDDB) notes that there may be some important species present there described later in Section 2.1.5.



The recreational field (Stand 6 – foreground) is mowed regularly during the growing season. The meadow (Stand 5 – background browner area) is mowed once or twice annually.

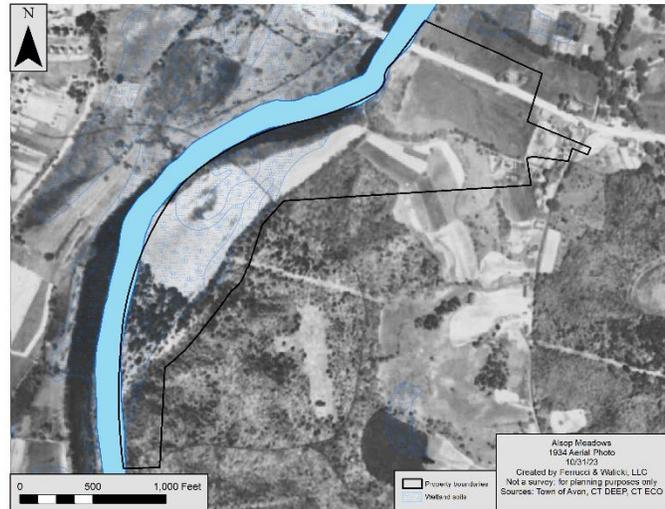
Notable bird species observed during early spring visits to the property in 2023 include wood ducks (noted along the river), pine warbler, red breasted grosbeak (noted along field edges), and brown-headed cowbird. The combination of field, forest, and some shrubland all very close to the river, as well as the combination of hardwood and softwood trees growing here make this a potentially important stopover area for migrating birds, and a potential nesting area for breeding birds.

2.1.2 Property History

Alsop Meadows was acquired from the Woodford Farm Corporation in the late 1970s. Alsop Meadows is named for Steward Johonnot Oliver Alsop (1914-1974), an Avon native who was a prominent newspaper

columnist and political analyst. Many native American spear and arrow points have been found in the vicinity of this property.

1934 aerial photos show that a mixture of fields and forest has existed on the property since at least that time. In the 1930s, it appears that the southwestern portion of the property contained more softwood than it currently does, and the northeastern portion of the property was in more of an open field condition. Except for the portion of Stand 2 south of the meadow and some trees in the main western block of Stand 2 the entire remainder of the property was open at that time. No stonewalls and only scattered wire fence remains are found on the property. There is an old quarry or sand-pit located on the property near the southwestern boundary.



The property was almost completely open when this photo was taken in 1934.

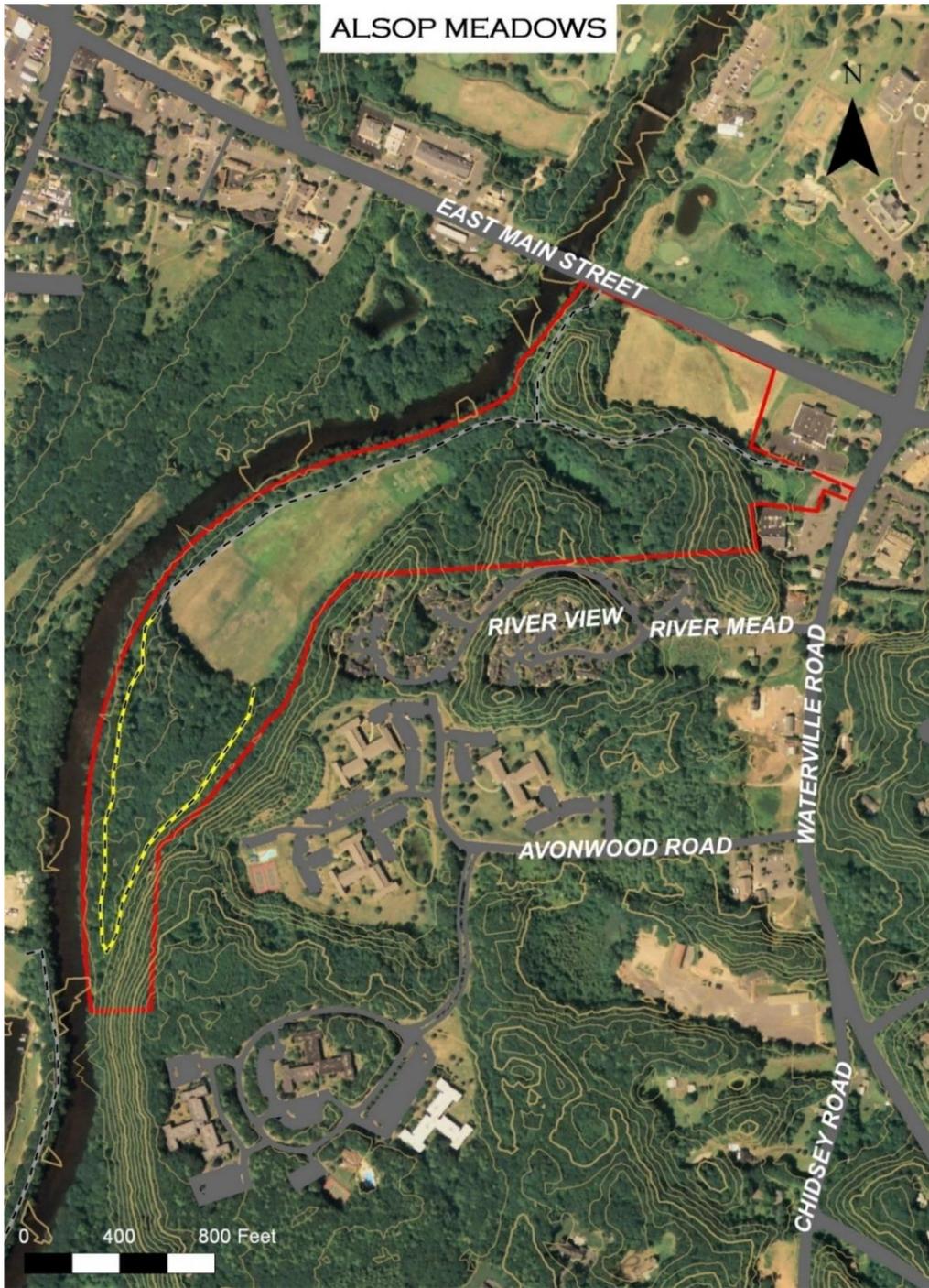
In 2005-2006 there was a management project that occurred on approximately 10 acres of forestland here. The project was intended to encourage some regeneration and increase growing space around retained trees to enhance their vigor and appears to have been successful. Primary trees removed were black oak, white pine, hemlock, and red maple.



2.1.3 Access

Excellent access currently exists throughout Alsop Meadows. A mixed pavement and gravel access road leads through most of the property from Route 10, off the end of Nassau Drive, extending as a trail/woods road into the southwestern portion of the property. In addition, a short section of woods road leads north from this driveway. At least light vehicle access via all these roads is possible if necessary. There is a large sign indicating the entrance to Alsop Meadows near Route 10. Some unauthorized trail creation has occurred in the southwestern portion of the property that leads to the top of the hill along the boundary with the condo complex. Access to the water is via a boat launch area with a relatively steep dropoff and some erosion. A ladder at the launch helps people get down to the water.

The trail markings (left) are a combination of paint and aluminum medallions. This portion of the trail doubles as an access road.



2.1.4 Water Resources

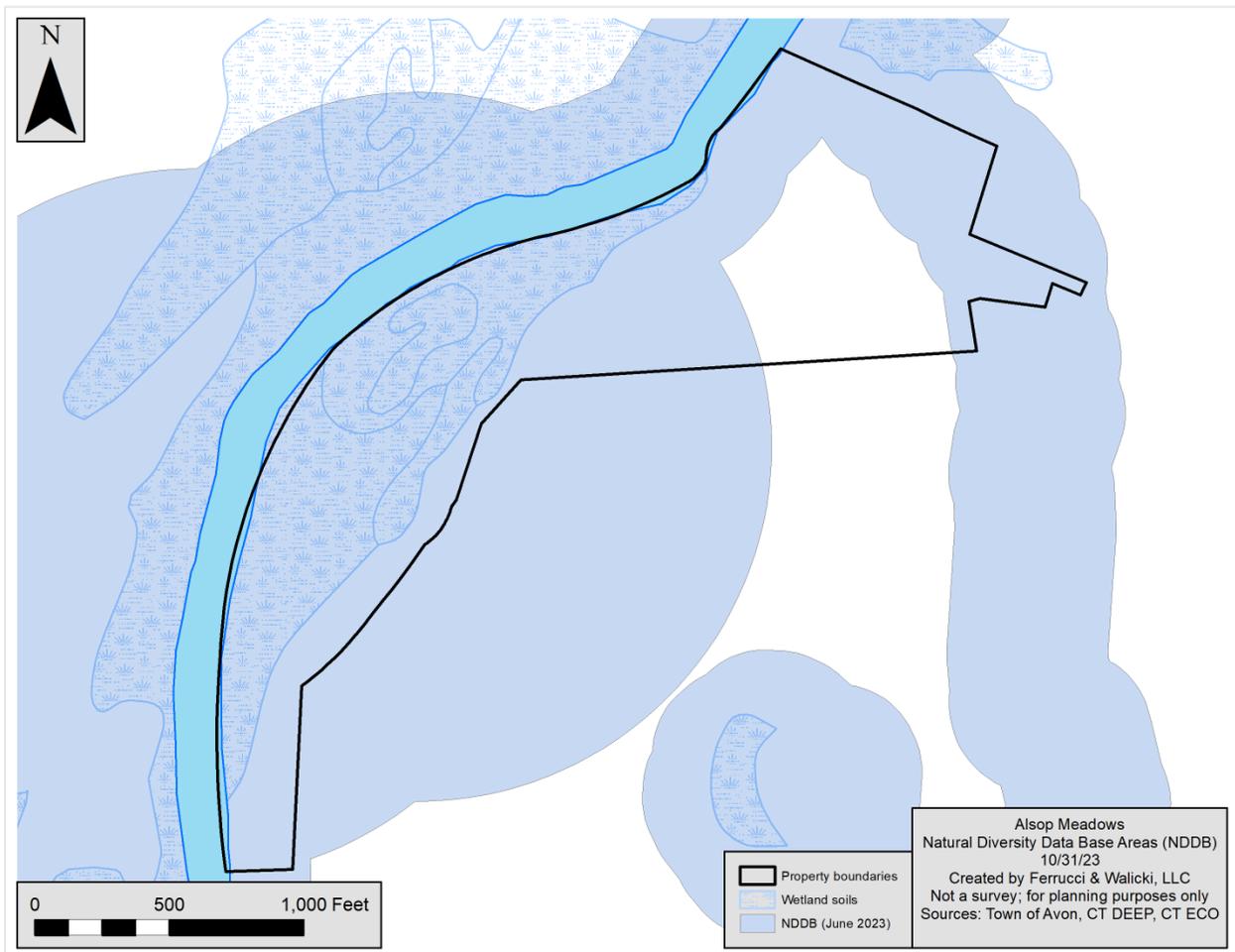
The Farmington River, which forms Alsop Meadows’ western boundary, is the most significant water resource associated with the property. Forested areas in Alsop Meadows form an excellent riparian buffer for over 4,000 feet of riverfront, helping to protect this river that has both local and regional significance.

Other hydrologic features within Alsop Meadows include a handful of small, seasonally wet areas throughout the property, and two intermittent watercourses in the property's eastern portion. Both drainages appear to be largely made up of stormwater runoff from upstream development, and both are being impacted by sedimentation. The easternmost watercourse runs under the Alsop Meadows driveway and feeds a wet meadow area just south of Route 44.

Since the writing of the last plan in 2009 the Farmington River has been designated as a Wild and Scenic resource, potentially improving the Town's ability to secure funding for recreation and habitat-related projects here.

2.1.5 Rare, Endangered or Species of Special Concern

According to the State's Natural Diversity Database (June 2023 update), there is a possibility that rare or endangered species are present throughout all of Alsop Meadows (see map in Section 2.1.5).



A 2006 Metropolitan Conservation Alliance Report called "The Farmington Valley Biodiversity Project: A Model for Intermunicipal Biodiversity Planning in Connecticut" notes the presence of the rare Davis' sedge. Town of Avon Forest Management Plan Update 2023

(*Carex davisii*). The Alsop Meadows sighting is cited as being part of “the largest New England occurrence” of this sedge. The updated NDDB listing (2023) also includes the potential for finding:

- Purple giant hyssop (*Agastache scrophulariifolia*)
- Cattail sedge (*Carex typhina*)
- Wiegand’s wild rye (*Eluymus wiegandii*)
- Virginia waterleaf (*Hydrophyllum virginianum*)
- Starry campion (*Silene stellata*)
- Freshwater mussels

2.1.6 Invasive Species

Many invasive species were noted within Alsop Meadows and are discussed below. The Farmington River Watershed Association has previously applied for grants to help with invasive species control – such efforts should be supported and continued.

Japanese barberry, multiflora rose, Asiatic bittersweet, mugwort, Japanese knotweed, burning bush (a.k.a. winged euonymus), garlic mustard, bush honeysuckle, autumn olive, and Norway maple were all noted here. In some areas, particularly to the southeast of the parking area and just southwest of the southernmost field, invasive plants are very densely established, though they are present in varying densities throughout the property. Where invasives are dense multiflora rose, Japanese barberry, and bittersweet are the most common. A small stand of Norway maple is found along the toe of a slope just south of Route 44. Along the river, bittersweet, barberry, and burning bush were the primary invasive plants noted. Mugwort is growing very densely outside the fencing between the main access road and the garden plot fence and is also present in the portion of the meadow that surrounds the garden.



Densely growing barberry in Stand 3. Barberry provides habitat for black legged ticks which carry Lyme.

Interestingly, the area west of the meadow that is more regularly mowed (Stand 6) does not contain mugwort although it is surrounded by it. Black locust trees are also present in places throughout the property (though usually scattered individuals) and are on the list of plants known to have invasive tendencies. Their populations are currently not overwhelming. Due to their attractiveness for pollinators and their limited populations, it is potentially useful to retain the existing trees and monitor them for spread. If locust populations begin to expand, a contingency plan to cut, remove and replace them with native alternatives would be a good idea. The presence of the locust are especially relevant given their landscape position adjacent to open

areas and water sources which are ideal for pollinators.

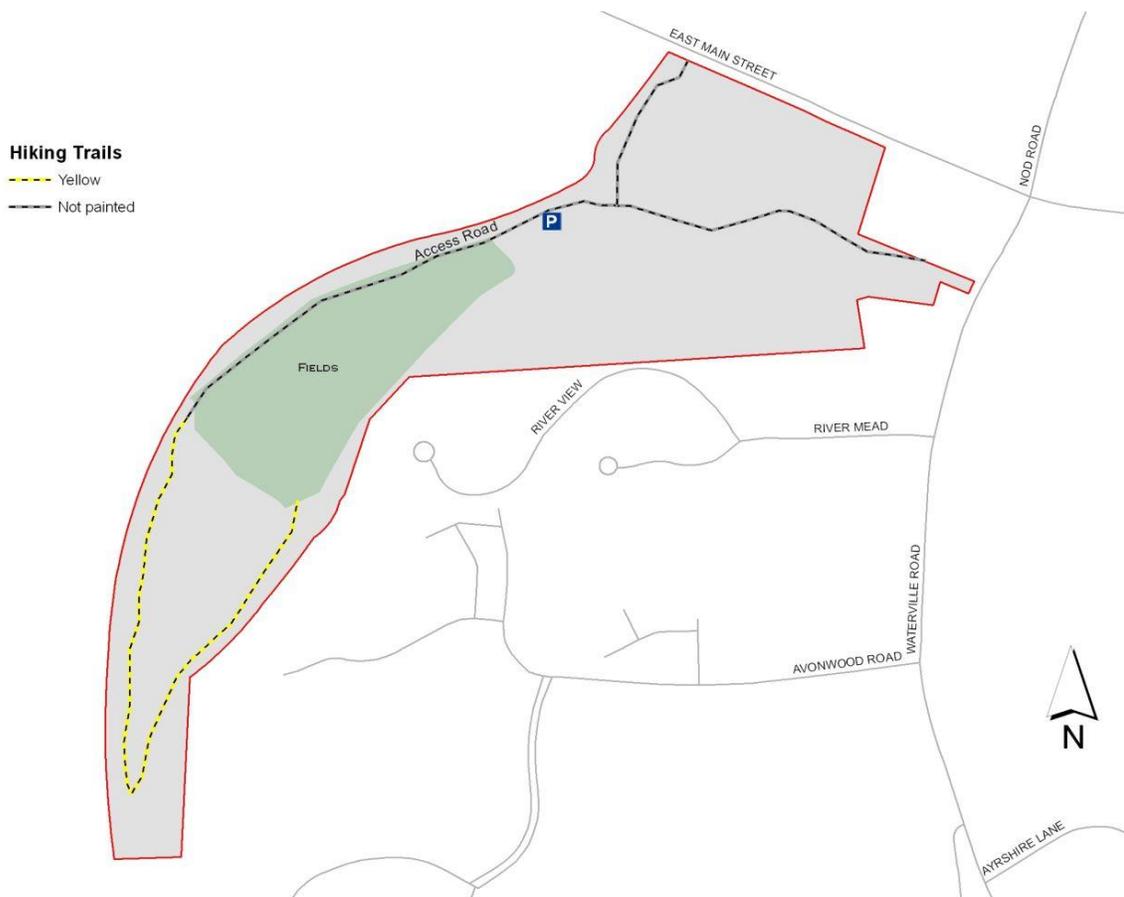
Although the structure provided by densely growing invasive plants and some of the nectar and fruit produced by some invasives is useful to some wildlife, invasives frequently do not provide the same food

source that native plants do, which native wildlife have evolved to use over millennia. In addition, their presence results in a decrease in biodiversity over time as they overwhelm native species and reduce populations of native plants. Treating invasive plants and either intentionally replacing them with native alternatives or creating the conditions required for comparable native vegetation to become established would improve the overall habitat quality of this property.

2.1.7 Recreation

Trails

A yellow-blazed hiking trail currently runs through the southern portion of the property in a loop (see map below). This trail connects to two unmarked trails that lead off the property at its southern end. The driveway between the fields and the property's entrance from Route 10 also functions as a de facto walking trail, and a short woods road runs between the parking area and the meadows along Route 44. A former trail along the river has been largely abandoned, as recommended in an earlier management plan. All existing trails are rather flat and dry, and only minor signs of erosion are present. In general, the trails appear to receive a good amount of use and dog-walking is one of the primary activities. Continue to maintain the trails (including with updating the blazes), and the area around the property sign close to the driveway entrance at Route 10. Increase signage at the kiosk to explain about the property.



Canoe Launch

A somewhat informal, but active, canoe launch is located at the property's parking area. A series of rope swings are adjacent to the launch area. Some erosion was noted at the launch. Where publicly accessible fishing areas are present, organizations such as Trout Unlimited can sometimes provide grant funding for improving fishing access and limiting soil erosion. It would be worth attempting to establish a relationship with this organization to determine if there could be a mutually beneficial set of actions that can help stabilize the banks and enhance the access.



A small ladder currently provides access directly to the river at the canoe launch.

Picnic Areas

A small picnic area is located along the yellow trail near to the river in a white pine grove; several small access points to the river (presumably for fishing) are also in this location. These access points are showing signs of erosion. A second picnic area is found along the main driveway into the property; this area is very lightly maintained.

Community Garden

A community garden (Garden Plot Program) administered by the Town's Department of Recreation is in the northern portion of the property's large field. A functioning hand pump well is in place, and several garden plots are established. This garden is actively used and well maintained by Avon residents who have garden plots there. The existing arrangement for gated access to the community garden appears to be functioning well.

Environmental Education

Some previous environmental education efforts within Alsop Meadows appear to have stalled. Improvements that have been started over the years, but not completed, include the renovation of an old barn for use as a nature center, the release of a 2-3 acre stand of young sugar maple trees which someday could be an excellent sugar bush, and the planting of many rare and exotic trees for education and diversity purposes along the western edge of the field in the central portion of the property. Based on the numbered signs found on trees and in other places on the property it appears as though there may be a geocaching or letterboxing series placed here. If this is the case, and if it is still active it should be publicized and maintained.

2.1.8 Forest Management

The current open space and forest management program should be continued to maintain the health, aesthetic appeal, diversity, and resilience of this valuable forested property.

NOTE: Given the size, orientation, and location of the forested stands within Alsop Meadows, only limited or minor forest management activities are recommended in some stands. Those activities recommended

(such as invasive species control or FSI) are generally not for timber production purposes, but rather to encourage vigorous growth and diverse forest conditions. While relatively limited forest management activities are recommended in most areas of Alsop Meadows at this time, the process of regularly collecting forest inventory data can provide valuable insights into changes that are occurring over time on the property in terms of species compositions, tree growth rates, etc.

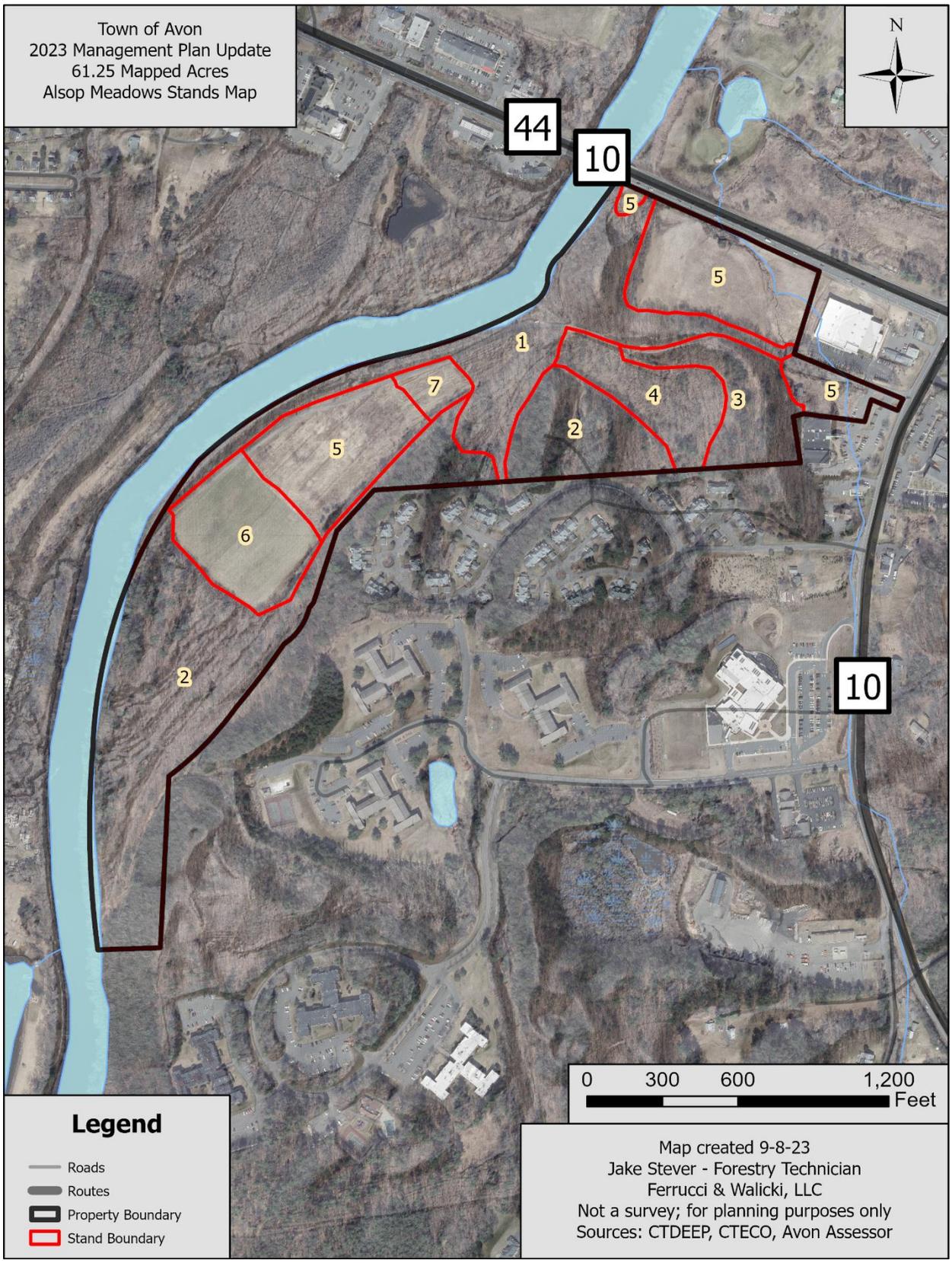
Stand Descriptions and Management Recommendations

Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it easier to describe the property in detail and to make appropriate recommendations. Once identified, each stand is treated separately based on its unique characteristics. Non-forested areas are also broken out as “stands” for descriptive purposes. Although not specifically called out in the table of recommendations for each stand, invasives should be treated wherever they occur throughout the property.

Alsop Meadows Stands

<u>Stand</u>	<u>Acres</u>	<u>Description</u>	<u>Recommendation</u>
1	10.8	Mixed Hardwood Sawtimber	Crop Tree Release (CTR)
2	22.6	Mixedwood Sawtimber	Thinning/patch cut
3	4.0	Mixedwood Poletimber and Sawtimber	Light thin/CTR
4	3.9	Old Fields (unmaintained)	Monitoring
5	13.5	Meadow	Mowing/nest box install
6	5.3	Recreational Field	Mowing
7	1.1	Community Garden	None
Total	61.3 acres		

Town of Avon
2023 Management Plan Update
61.25 Mapped Acres
Alsop Meadows Stands Map



Legend

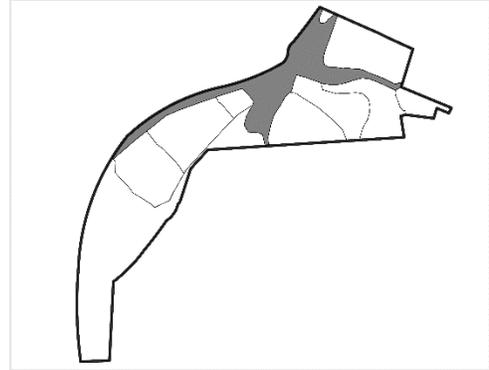
- Roads
- Routes
- ▭ Property Boundary
- ▭ Stand Boundary

Map created 9-8-23
Jake Stever - Forestry Technician
Ferrucci & Walicki, LLC
Not a survey; for planning purposes only
Sources: CTDEEP, CTECO, Avon Assessor

Stand 1: Mixed Hardwood Sawtimber and Poletimber

Description:

This stand is in one contiguous block covering 10.8 acres in the northwestern and north-central parts of the property. It is located on flats and gently sloping hillsides easily accessible by an old woods road, secondary trails, and skid roads from previous management activities. There are very few, if any, rocks and some moderately steep slopes, but the entire stand is easily operable. Most of the area was probably pastureland at one time.



This stand contains primarily sugar maple, red maple, and white oak. The dominance of sugar maple in this stand is likely to continue increasing based on the current number of sapling and poletimber sugar maple trees. The current composition of the overstory trees in this stand is a result of the abandonment of pastureland in the early 1900s. Thus, many of the dominant overstory trees are approximately 110-130 years old. Herbaceous vegetation observed included Canada mayflower, Dutchmen's breeches, white wood aster, trout lily, Virginia creeper, and maple leaf viburnum in patches. Occurrences of Christmas fern, false Solomon's seal, various fern species, jack-in-the-pulpit, goldenrod, sedge, shinleaf, Soloman's sea, violets, wild oats, and witch hazel were also noted.

In the strip of this stand between the river and Stands 5-6 species include locust, sycamore, silver maple, occasional black walnut, basswood, and ironwood among others. Invasive plants noted in this strip include dense bittersweet and occasional buckthorn, rose, barberry, and olive. There is a massive old wolf white oak tree at the top of hill in this stand just south of Route 44 and other wolf trees in the area indicating the open grown nature of the tree when the area was cleared for agriculture.



This wolf white oak tree can act as a magnet for migrating and nesting birds, insects, all kinds of mammal species and others.

The current basal area is 90 square feet per acre, which is within the range considered optimal stocking for this forest type. Many of the stand's trees are in fair to good health and are benefiting from the increased space and light created by previous management. Some rot and poor form are present in this stand, particularly in the area just south of the parking area which is somewhat wetter than the rest of the stand.

The understory is fairly open in most places. However, there are also some areas where invasive plants grow densely, particularly near the parking area. The portion of the stand adjacent to the parking area contains a wide variety of vegetation including red maple, poletimber- and sawtimber-sized red maple and sugar maple, Norway maple, and occasional black locust and honeylocust. Ash, hickory, and black cherry seedlings are all present. Herbaceous species noted include Dutchman's breeches, violets, spring beauties, sedge, bloodroot, goldenrod, chokeberry, grapevine, ferns, and poison ivy, among

others. Invasive plants noted include rose, garlic mustard, buckthorn, honeysuckle, burning bush, barberry, bittersweet, and Norway maple seedlings.

Soils

There are two different soil types found within this stand. They are identified in the Hartford County Soil Survey as Occum fine sandy loam and Manchester gravelly sandy loam. The Occum soils are well drained and considered prime farmland soils and the Manchester soils are farmland of statewide importance. Both soils grow trees well.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			10,000			
Saplings			200		4.7^ cord	3.9^ cord
Sawtimber trees	70	60	40	37	6.6 MBF	5.8 MBF
Poletimber trees	20	20	45	45	2.6 cord	2.6 cord
Snags	10		2			
Total	90	80	85	82		
MSD*	13.9					

*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

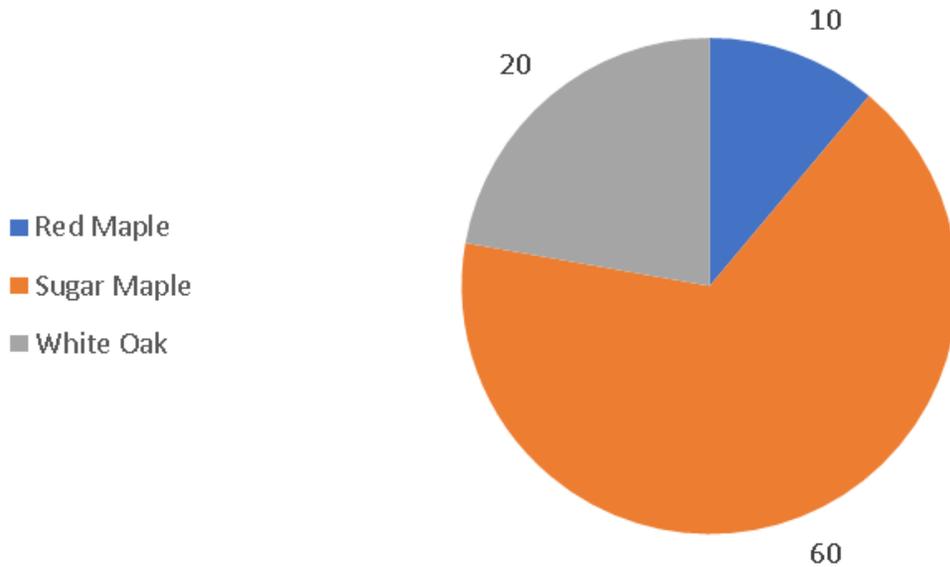
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

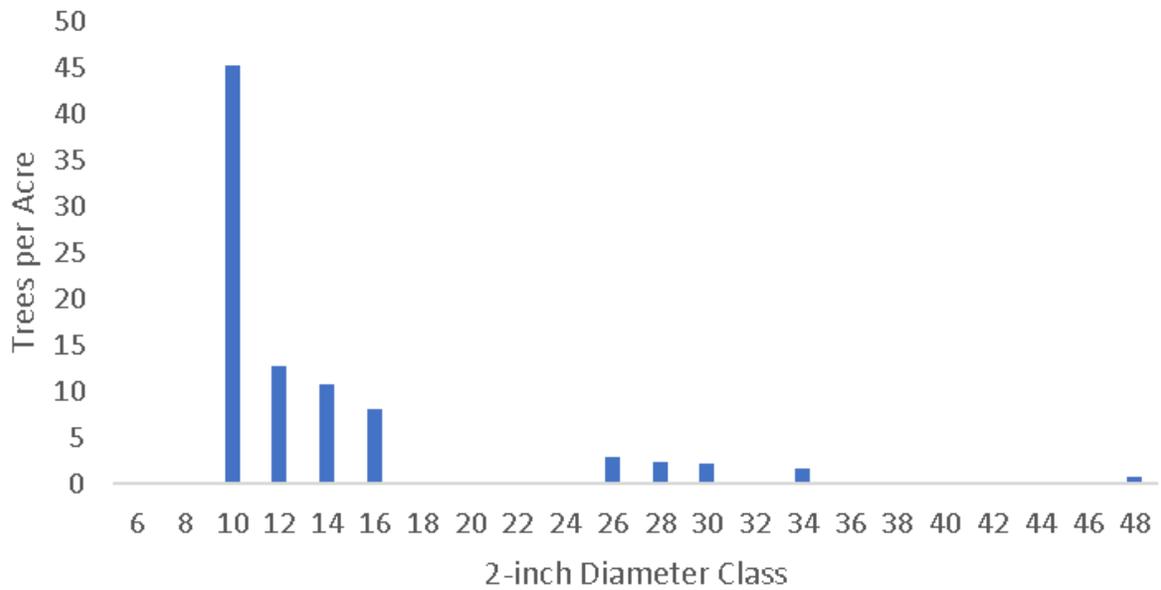


The narrow strip of riparian forest between the banks of the river and Stands 5-6 contains a variety of trees as well as invasive plants.

Stand 1 Basal Area (ft²/ac) by Species



Stand 1 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain and enhance diversity, resilience, and productivity of forest
- Viable softwood component on edges or in interior where present
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics
- Maintain historic features including wolf trees

Management Recommendations:

The goals for the management of this stand are to continue maintaining a mixed species forest with a high degree of diversity, continue to improve wildlife habitat, and maintain aesthetics along the trails. To accomplish these goals, invasives treatment and a crop tree release of desirable poles and small sawtimber trees should be conducted in combination with the creation of one small (1-acre) patch cut to increase the stand’s structural complexity and encourage more vigorous growth of understory vegetation.

Treatments that alter the structure of the forest and allow more light to reach the forest floor should only be conducted after successful control of invasive plants to prevent them from expanding into recently treated areas. After the crop tree release and small patch cut, monitor the entire area and spot treat invasives as needed. If tree regeneration in the patch cut is insufficient, augment with plantings. If plantings are needed, they will likely need to be protected from deer with tree tubes or temporary deer fencing.

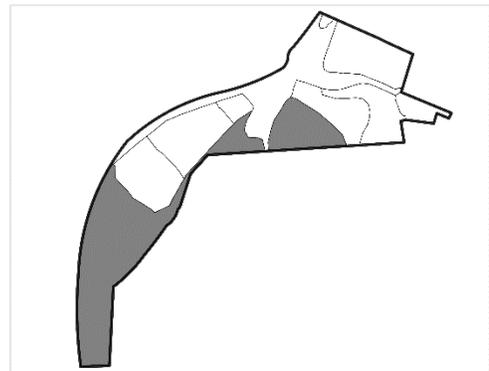
Future Management:

Monitor invasives and treat as necessary. Monitor regeneration in the patch cut and augment as necessary, protecting plantings until they have outgrown the reach of deer.

Stand 2: Mixedwood Sawtimber

Description:

This 22.6-acre stand is the largest forested stand within Alsop Meadows. Most of the stand lies in the southwestern portion of the property; small portions lie in the central portion. The stand’s terrain ranges from flat to gently sloping with relatively few rocks and good access via an old woods road (much of which is blazed as a yellow trail) and also some secondary trails.



This stand contains both hardwood and softwood sawtimber-sized trees with some poletimber as well. Most of the softwood trees growing along the river are medium to large diameter white pine with some hemlock in the understory and midstory. The hemlock in the central and southern portions of the stand along the river contain HWA and scale, but the ones in the

north appear to have scale but not HWA. Larger hemlock in the interior of the stand is in fair to poor condition though some have good live crown ratios (see glossary for definition) of up to around 30%.

Several of the white pine in this stand are very large, with diameters greater than 30 inches at breast height. The most common species observed are white pine, red oak, and hemlock, although the hemlock are primarily in the midstory. Sugar maple, black oak, and black birch are the next most common tree species in this stand. The understory contains a mix of sparse areas and somewhat dense areas where the initial treatments +/- 18 years ago created canopy gaps in the overstory which allowed sunlight light to reach the ground, although these areas are starting to lose that character. Much of the understory in the northwest portion of the stand is dominated by Dutchman's breeches, which is unusual and indicates high calcium content in the soils, partially explaining the prevalence of sugar maple. There are pockets of regenerating hemlock in this stand as well as some midstory Norway maple (an invasive tree) and overstory locust (another tree that can act invasive). Some of the younger trees' needles are infested with hemlock woolly adelgid (HWA) and scale, and some are not, though in general, the health of the younger hemlock appears to be good.



The overstory composition is diverse and trees near the river in this stand are generally in good condition. Some HWA and scale was noted on midstory hemlock further south on this property along the river.

Understory species present here include a variety of seedlings and saplings as well as herbaceous species and invasive plants. Red maple, hickory, ash, hemlock, white pine, and scattered oak seedlings and saplings were noted. Virginia creeper, false Solomon's seal, eastern starflower, maple-leaf viburnum, and occasional winterberry found along the edges.

The current basal area is 126 square feet per acre, which is within the stocking range considered optimal for this forest type. Most of the trees in this stand are in good health, although some show signs of decline or internal rot, especially the larger white pine and some of the large red and black oaks. The treatment conducted in 2005-2006 appears to have resulted in desirable regeneration (sugar maple) as well as good vigor in the retained trees. Some of the white pines experienced recent storm damage during visits in 2023. Many of the ash growing on the site have died or are nearly dead. White pines in the stand are producing cones in 2023 and appear to have done so in 2022 as well. Some limited white pine weevil damage is present in the stand. The white pines appear to be relatively healthy and vigorous based on the appearance of their bark and crown size. Live crown ratios are around 40% for the largest trees.

There is a narrow band of this stand that runs along the southeastern sides of Stands 5-6 (the recreational field and meadow) in the central portion of the property. This narrow band contains shrubby vegetation and young trees (saplings and some small poletimber-sized trees) and is important because portions of it

act as a gentle transition from the open areas (a.k.a. soft edge). Gradual transition zones like this from field to forest provide important habitat for edge nesting birds and other wildlife and important travel corridor for species like fox that prefer not to traverse large, exposed open areas. Species noted in this strip include white pine, cottonwood, elm, sycamore, shagbark hickory, bitternut hickory, black birch, aspen, and black cherry. Goldenrod, bedstraw, *rubus spp.*, black-eyed Susan, nettles, and occasional Dutchman's breeches were noted here along with some invasive plants including rose, bittersweet, autumn olive, burning bush, buckthorn, barberry, and bittersweet.

Soils:

There are three main soil types within Stand 2, They are identified in the Hartford County Soil Survey as Manchester gravelly loam, with 0 to 3 percent slopes (McA), Manchester gravelly loam, with 3 to 15 percent slopes (McC), and Suncook loamy sand, with 0 to 3 percent slopes (StA). Very small amounts of Pootatuck sandy loam, Hartford sandy loam, and Occum fine sandy loam are also present.

The Manchester gravelly loam, with 0 to 3 percent slopes is also found in Stand 1. It is an excessively drained, shallow, droughty soil underlain by coarse sand and gravel. The Manchester gravelly loam, with 3 to 15 percent slopes is very similar to the last except for the increased slope.

The Suncook loamy sand is an excessively drained soil that lies on the flood plain along the Farmington River where fresh material is deposited during periods of flooding. It is derived from chiefly from granite, gneiss, schist and quartzite. The site index for white pine averages 59 and for mixed oaks it averages 54. The trees grow slowly because the soils are droughty and their available moisture capacity is low. Plant competition is moderate for white pine and mixed oaks and their growth can be increased by thinning the stand. Windthrow is only a slight hazard because the root systems tend to be deep and rapid percolation of water through the soil prevents waterlogging.

A very uniform low ridge runs through the central portion of the stand which appears to be human made. Soils here may be variable if excavation has occurred to create this feature.



The uniformity and straightness of this berm in the central portion of Stand 2 (midground in this photo) has the appearance of having been human made.

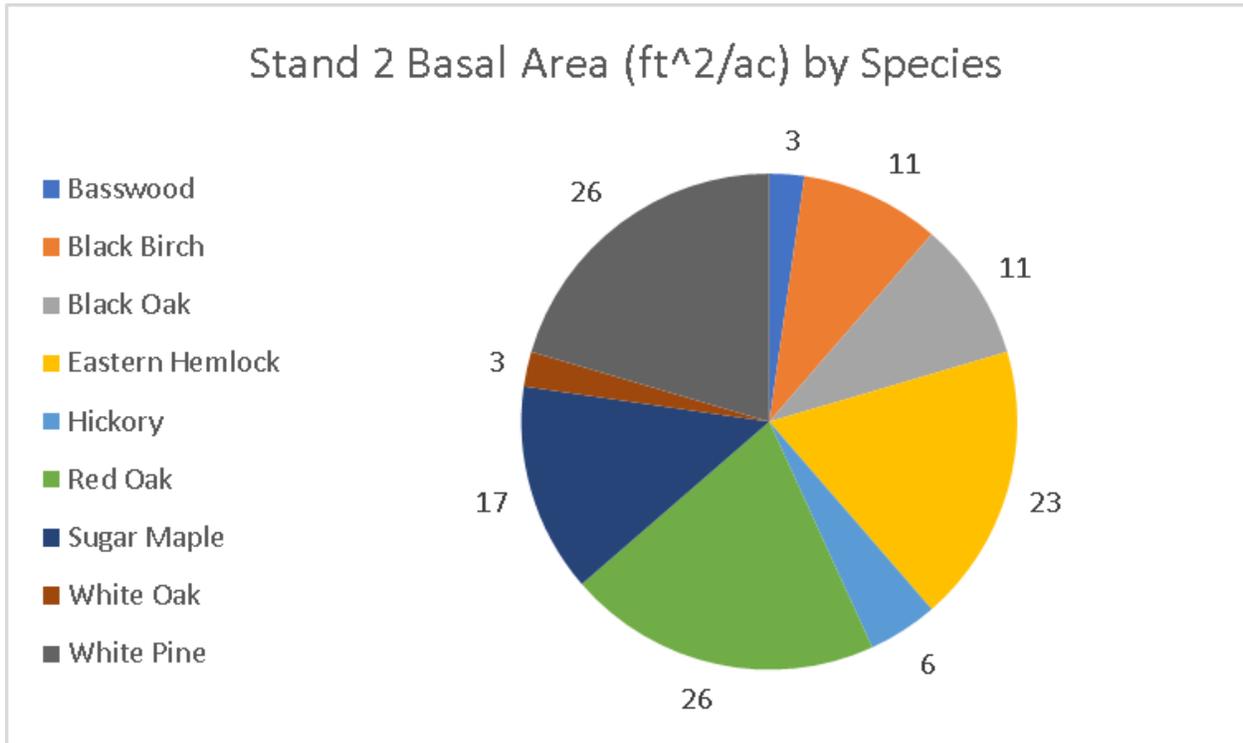
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			6000			
Saplings			143		7.4^ cord	6.1^ cord
Sawtimber trees	91	80	51	43	8.8 MBF	8.3 MBF
Poletimber trees	34	29	89	77	2.8 cord	1.9 cord
Snags	0		0			
Total	126	109	140	120		
MSD*	12.8					

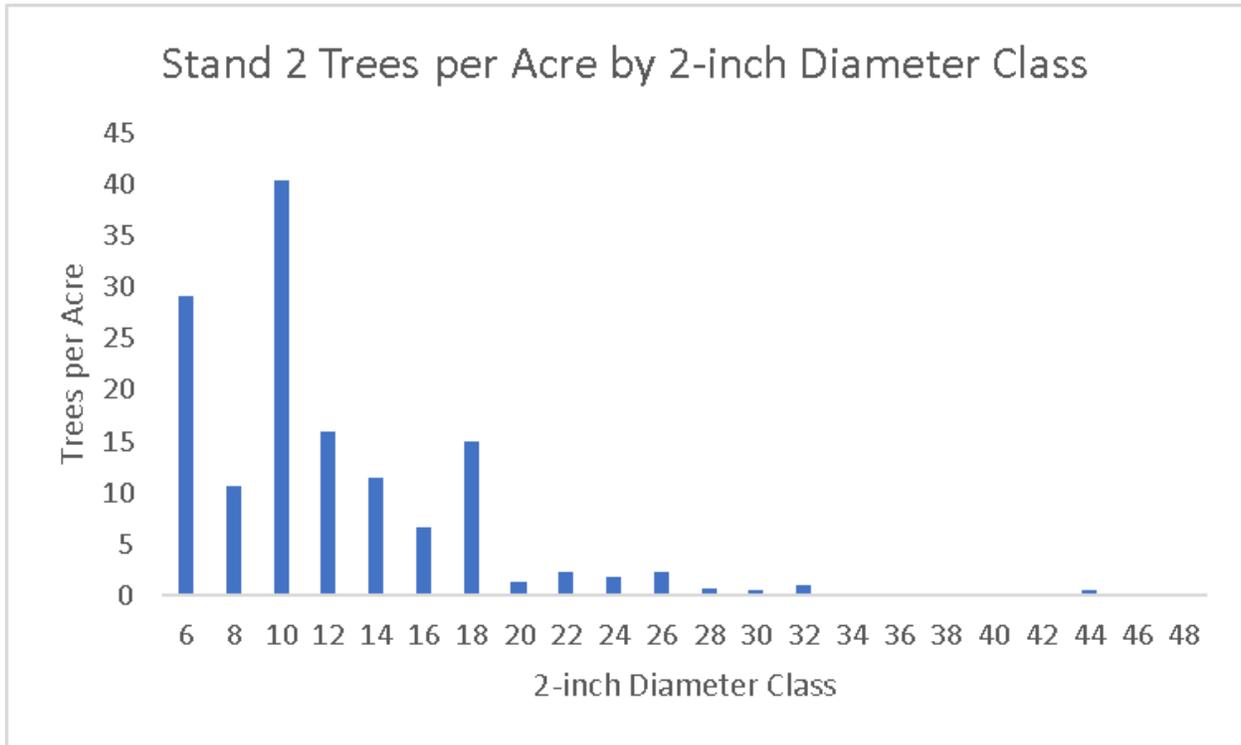
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet; ^= Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre





Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain and enhance diversity, resilience, and productivity of forest
- Viable softwood component including pine and hemlock; augment with plantings if needed
- Continued safe access for variety of property users
- Continued collaboration with local scout and other such groups
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

The goals for the management of this stand are similar to those in Stand 1, but the actual techniques are different due to the difference in composition and structure. To both perpetuate softwoods on the landscape and increase the stand’s structural diversity, two small patch cuts of approximately 1 acre should be created. Because both white pine and red oak, two of the more important tree species in this stand, require a large amount of sunlight to regenerate and become established, it is necessary to remove most or all trees in small canopy gaps to create conditions conducive to their establishment. This treatment will also increase the stand’s structural complexity and encourage denser growth of understory species, greatly increasing this stand’s habitat value.

Invasive plants should be treated successfully before carrying out this operation to limit the likelihood of their colonizing the newly created gaps. Monitor regeneration within the gaps and augment with plantings

if it is insufficient. If plantings are needed, in addition to white pine and red oak, swamp white oak, tulip poplar, and sweetgum should be considered as well. If plantings are undertaken, temporary fencing to exclude deer may be required. If this is done, it can be a useful educational tool.

Regularly monitor and treat invasive plants in the strip of this stand on the southeastern sides of Stands 5-6. Periodically cut groups of trees in this area to maintain the young forest condition that provides a semblance of soft edge. If locust trees in this area begin expanding, develop a plan to remove them or reduce the populations. Cut and remove buckthorn.

Monitor the condition of the hemlock along the river and in the interior of the stand. Having densely growing softwoods aids in water quality and water temperature regulation and hemlock's growth habit is the densest of the large softwoods we have in this area. If hemlock begin to decline due to HWA, scale, or another factor, attempt to maintain their vigor through light release work to increase some sunlight to provide them more resources for defense by increasing potential for photosynthetic activity. Hemlock is very shade tolerant, but increasing available sunlight can help provide additional resources. If hemlock appear to be declining rapidly, where conditions permit plant species with similar growth habits as potential future replacement. Examples include spruces and firs.

Future Management:

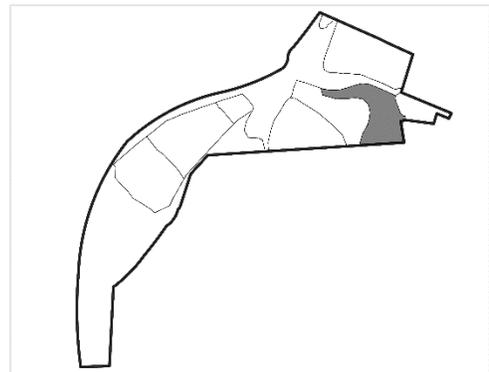
- Monitor this stand for invasive plants and treat as necessary.
- Monitor regeneration within the gaps and augment with plantings if necessary. If plantings are necessary, protect plantings with tree tubes or deer fencing until they have outgrown the reach of deer.
- Periodically cut all or portions of the shrubby/young forest edge along the meadows to maintain the shrubby/young forest conditions
- Continue to monitor the hemlock.

Stand 3: Mixedwood Poletimber and Sawtimber (4.0 Acres)

Description:

Stand 3 is a 4.0-acre stand in one contiguous block in the eastern portion of the property. This stand is essentially a curving ridge and its western slope. Access to this stand is via the property's main driveway and previous skid roads.

The stand is adequately stocked, with a basal area of 100, and has an interesting mix of species. The ridgetop itself contains primarily pitch pine with some white pine, while its western slope contains sugar maple, black oak, and hemlock. Pitch pine is an uncommon species in this area and only does well on very specific sites that are dry and relatively sandy. The understory and ground layers are generally open throughout the whole stand. Herbaceous understory vegetation is relatively sparse in this stand. Species noted were Canada mayflower, goldenrod, poison ivy, sedges, white wood aster, and wild strawberry.



Soils:

There are three main soil types within Stand 2, They are identified in the Hartford County Soil Survey as Manchester gravelly loam with 15 to 45 percent slopes (McA), Manchester gravelly loam with 3 to 15 percent slopes (McC), and Occum fine sandy loam.

The Manchester gravelly loam, with 3 to 15 percent slopes is an excessively drained, shallow, droughty soil underlain by coarse sand and gravel. The Manchester gravelly loam, with 15 to percent slopes is very similar to the last except for the increased slope.

The Occum fine sandy loam is a very deep, well-drained loamy soil formed in alluvial sediments, and subject to common flooding. It is commonly found within flood plains and along rivers.

The Suncook loamy sand is an excessively drained soil that lies on the flood plain along the Farmington River where fresh material is deposited during periods of flooding. It is derived from chiefly from granite, gneiss, schist and quartzite. The site index for white pine averages 59 and for mixed oaks it averages 54. The trees grow slowly because the soils are droughty and their available moisture capacity is low. Plant competition is moderate for white pine and mixed oaks and their growth can be increased by thinning the stand. Windthrow is only a slight hazard because the root systems tend to be deep and rapid percolation of water through the soil prevents waterlogging.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Vol-ume/acre	Volume/acre AGS
Seedlings			3500			
Saplings			100		7.3^ cord	5^ cord
Sawtimber trees	70	60	61	51	3.9 MBF	3.9 MBF
Poletimber trees	30	10	74	29	3.4 cord	0.7 cord
Snags	0		0			
Total	100	70	135	80		
MSD*	11.7					

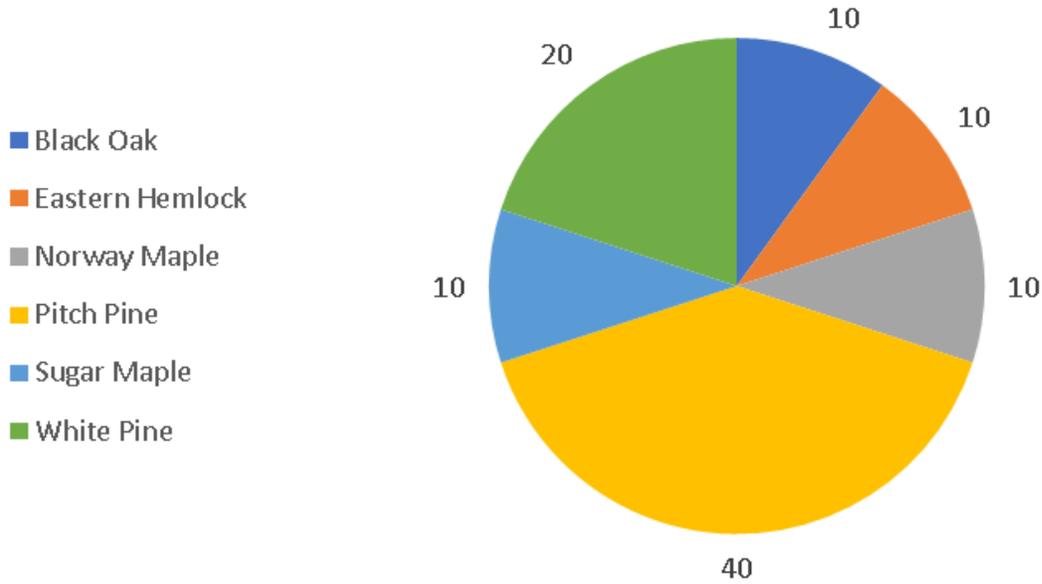
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

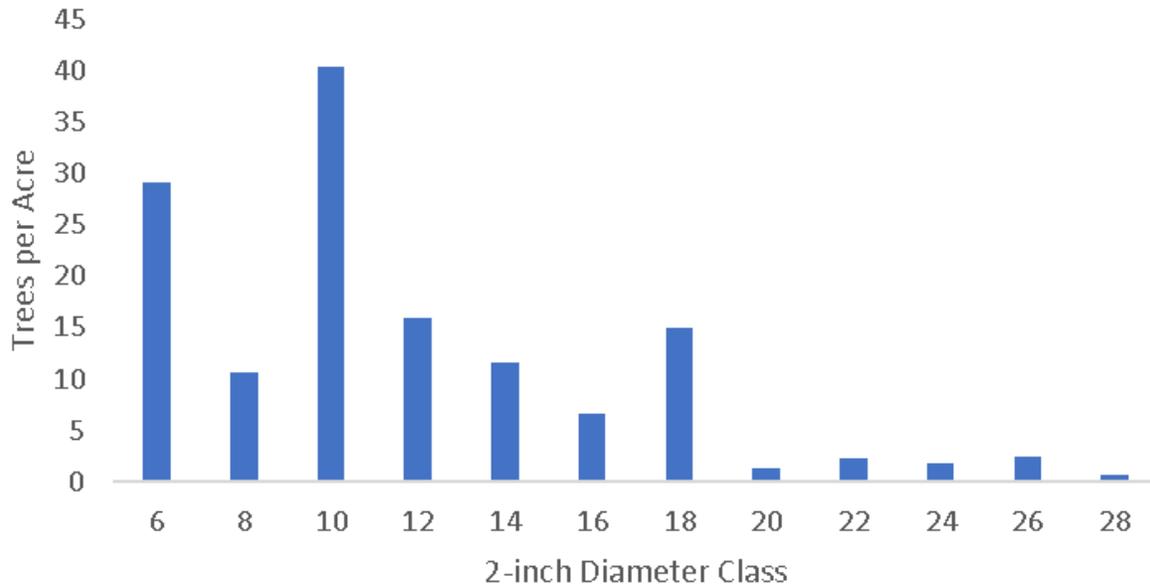
MBF= Thousand board feet; ^= Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

Stand 3 Basal Area (ft²/ac) by Species



Stand 3 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain and enhance diversity, resilience, and productivity of forest
- Viable softwood component especially pitch pine
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Management within this stand should aim to perpetuate the pitch pine component because of its uniqueness and uncommon wildlife value as well as to improve the general forest health of the rest of the stand. To accomplish this, the pitch pine portion of the stand should be lightly thinned, favoring the healthiest and most vigorous trees to allow them to grow more rapidly and increase their vigor. In the remainder of the stand, a light crop tree release favoring the healthiest individuals of all species should be performed. This will allow the crop trees to grow faster and more vigorously, increasing their ability to resist disease and insect pests, as well as to produce more seed and mast.

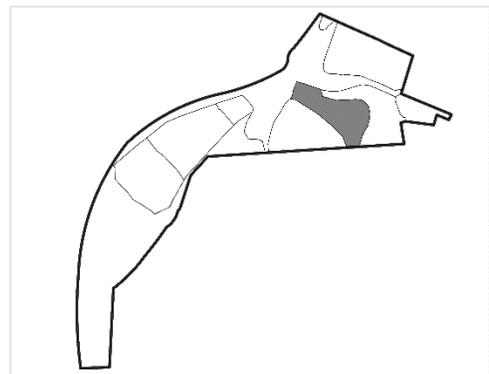
These treatments should only be performed after invasive plants have been treated throughout this property. After treatment, monitor the stand for invasive plants and spot treat as necessary.

Future Management:

Monitor and spot treat invasive plants. Continue to periodically thin the pitch pine portion of this stand with the goal of creating a pocket of mature, vigorous pitch pine on the ridgetop that ideally can regenerate itself and spread over time.

Stand 4: Old Fields - Unmaintained (3.9 Acres)

This is a 3.9-acre stand in the southeast portion of the property, located on generally flat terrain with good access via the property’s main driveway. The stand was likely pasture or agricultural land in the somewhat recent past. The stand was described in the 1998 Management Plan as being dominated by seedling and sapling size trees and shrubs, along with some open areas, but has matured somewhat since then into smaller trees. Recently there has been some clearing to create a disk golf course.



Description:

This stand is currently being severely impacted by invasive species, notably Asiatic bittersweet, which are smothering previously noted seedlings and saplings and preventing more desirable understory vegetation from becoming established. Other invasive plants noted include ailanthus (a.k.a. tree-of-heaven), rose, olive, buckthorn, garlic mustard, and privet. Other vegetation in the interior of the clearing includes patches of large invasive shrubs, primarily olive and some scattered individual trees. Some of the trees

are butternut which is a relatively rare tree in Connecticut. Tree condition is uniformly poor, but many have resprouted. Species noted in this area include goldenrod, poke-weed, nettles, *rubus spp.*, alder, bedstraw, poison ivy, sensitive fern (indicating the high soil moisture), and greater celandine.

Soils

There are three closely related soils within this stand, identified in the Hartford County Soil Survey as Manchester gravelly sandy loam with 0 to 3 percent slopes (McA), Manchester gravelly sandy loam with 3 to 15 percent slopes (McC), and Manchester gravelly sandy loam 15 to 45 percent slopes.



Stand 4 was brush hogged this fall. Over time, removing the large olive shrubs and replacing them with native alternatives that provide nectar, mast, and cover can improve habitat conditions and ecological values.

The Manchester gravelly sandy loam with 0 to 3 percent slopes, which makes up the majority of the stand, is an excessively drained, shallow, droughty soil. They are underlain by coarse sand and gravel.

The Manchester gravelly sandy loams, with 3 to 15 and 15 to 45 percent slopes are very similar to the last except for the increased slopes.

Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain and enhance diversity, resilience, and productivity of native vegetation
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Invasive species control is urgently needed within this stand. A combination of mechanical and chemical controls is recommended to return the stand to a more meadow-like condition. This will require the cutting of trees as well.

This stand has the potential for being valuable to many species of wildlife for foraging, nesting and shelter. Meadow conditions should be encouraged through regular cutting and mowing on a rotating schedule so that multiple habitat ages and conditions are present within the stand at any given time. Construction and placement of nest boxes and planting native fruiting and flowering shrubs around the edges of this stand could also enhance habitat conditions, especially for pollinators. If nest boxes are installed, attempt to install two boxes approximately 10-15 ft. apart to provide one box for a species like tree swallow and another for eastern bluebird.

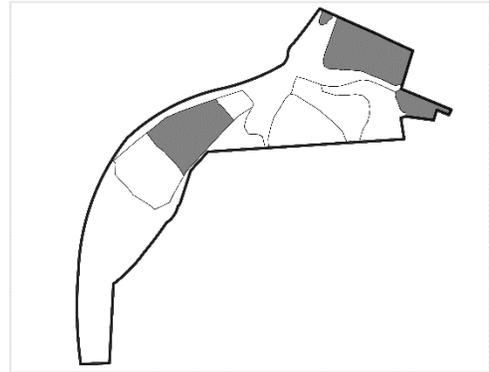
Future Management:

- Monitor and spot treat invasive species in this stand.
- Mow this stand on a rotating schedule to maintain several different habitat conditions at the same time.
- If nest boxes are installed, regular maintenance will be required to ensure they are functioning properly.

Stand 5: Meadow (13.5 acres)

Description:

This is a 13.5-acre stand containing meadows found in three areas on the property: along Route 44, within the property's large central field area, and at the eastern end of the property near the entrance along Route 10. All portions of the stand are flat to gently sloping, contain no rocks, and are easily accessible.



All portions of Stand 5 are kept open either by regular or periodic mowing. Currently, the mowing is done by Town crews as time allows perhaps twice each year. The portion along Route 44 was maintained as a hayfield in the past but has taken on the character of a wet meadow since the haying was stopped. The western portion of the stand also contains a collection of ornamental tree specimens planted along the edges to create a small arboretum, established in the early 1990s through a grant from the Connecticut DEP (now DEEP). Most of these trees are in fair to good health, but some are dead or dying largely due to lack of proper care and maintenance. Unusual species noted here include paper bark maple, dogwoods, cultivars of weeping Norway spruce, Japanese maple, and weeping white pine among others. Species noted in the meadows include goldenrod and mugwort with small groups of catalpa trees covered in dense vines. These species and others including more shrubs are present in the fields along Route 44. Bittersweet is beginning to encroach on the other herbaceous species and may at some point become the dominant vegetation in the meadow. Some Callery pear and little leaf linden trees are growing along the edges of this stand.



The large western meadow in early spring before the catalpas leafed out. Continuing to mow this area once or twice per year before and/or after the meadow flowers are done blooming can provide a valuable source of pollen and nectar.

The block of this stand closer to Route 44 has some patches of mugwort, bittersweet, garlic mustard, rose, and Canada thistle (all invasive plants), but there is primarily grasses and herbaceous species like milkweed, Virginia creeper, mullein, iris, Joe-pye weed, aster, *rubus spp.*, sunflowers, sensitive fern, and some dogwoods among other species. The ribbon of drainage that snakes through the eastern portion of the field contains very dense vegetation of primarily native species. The edges of this field contain bittersweet, barberry, buckthorn, olive and others among the native shrubs and trees.



The eastern meadow closer to Route 44 after a fall mowing. Most of the vegetation in the interior of the meadow is native though there are some patches of invasives. The narrow riparian area surrounding a drainage (barely visible in the far center of the photo) provides excellent late-season pollinator habitat.

There is a small partially fenced area in the main (western) block of this stand with signage indicating that the area is a Monarch Waystation. The area seems to have been unmaintained for some time, though at one time contained species including milkweed that would be useful to monarch butterflies. The area is now dominated by goldenrod and mugwort with grapevine, rose, and bittersweet also present as well as some remnant milkweed. A structure for native solitary bees was recently installed to help provide suitable nesting habitat at the Waystation.

Desired Future Conditions:

- Maintain populations of sensitive plants
- Limit invasive plant populations
- Keep area open and not allow to revert to forest
- Functional and diverse wildlife habitat
- Maintain and enhance diversity of native plant species including those that can provide nectar, pollen, mast, and cover
- Continued safe access for variety of property users
- Continued collaboration with local scout and other such groups
- Maintain water quality and soil stability
- Maintain aesthetics
- Find a local beekeeper to keep bees on the property

Management Recommendations:

These areas should continue to be managed as meadows. They provide valuable wildlife habitat, aesthetic backdrops from surrounding areas and land uses, and enhance the diversity of Alsop Meadows as a whole. Continue to brush hog these areas. Ideal timing of mowing would be outside of the active season for pollinators so very early season (before April 15) or late season (after all the flowers are finished blooming (perhaps late October). Some of these areas are likely to be too wet to mow during the early spring (especially the areas along Route 44) so a late fall mow may be more appropriate. Where feasible allowing the meadows or portions of the meadows to remain uncut over winter can provide some cover and seed sources for wildlife.

Attempt to locate populations of endangered, threatened, and special concern species on the property. If they can be found develop a plan of management to help protect and ideally enhance their populations.

The ornamental trees planted along the western edge of the large field complex continue require maintenance and care. Some of these trees have been overtopped by surrounding trees and are also being overwhelmed by vines. Vines are also strangling several catalpas in the portion of this stand adjacent to the community garden. The vines hindering the growth and survival of the trees in this stand should be removed as should some trees that are overtopping the ornamental trees to allow them more access to sunlight. No important large trees should be cut to release the ornamentals. Cut vines in catalpas islands in the western block of this stand.

Along all field edges, other rare tree species and/or that are beneficial to wildlife could be released by cutting adjacent vegetation. After this release work is done, some brush piles should be created to reduce aesthetic impacts and to provide additional cover for wildlife.

Invasive plants are prevalent in all parts of this stand and should be treated. Mugwort, bittersweet, and multiflora rose are of particular concern. Treating invasives throughout this stand would greatly increase its habitat value and reduce the amount of invasive seed that can be transported into forested stands on this property. Remove and replace large invasive trees and shrubs along edges over time using a phased approach. Some recommended replacements include shadbush, dogwoods, hawthorn, hazelnut, though there are many other useful options.

In the Monarch Waystation, if desired, attempt to remove the existing vegetation and replant with monarch-friendly species including mugwort. If this is to be done, portions of the fence that have fallen into disrepair should be fixed.

In fall, when mowing is done if any patches of bare soil are noted, seed with a native mix of wildflowers to enhance diversity and to attempt to limit spread of bittersweet.



Maintaining some portions of unmowed areas after the growing season can provide some additional structure and cover and potential seed source for wildlife that use this area in winter.

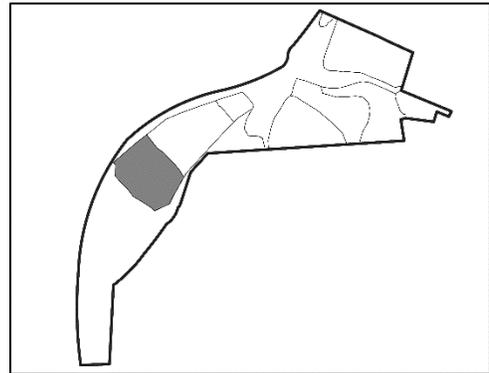
Install two sets of paired nest boxes.

Future Management:

- Continued mowing and cutting should be done to maintain field or meadow conditions for habitat diversity.
- If nest boxes are installed, regular maintenance will be required to ensure they are functioning properly.
- Maintain Monarch Waystation as needed to maintain functionality.
- Monitor ornamental trees along edges and maintain with release or pruning as needed

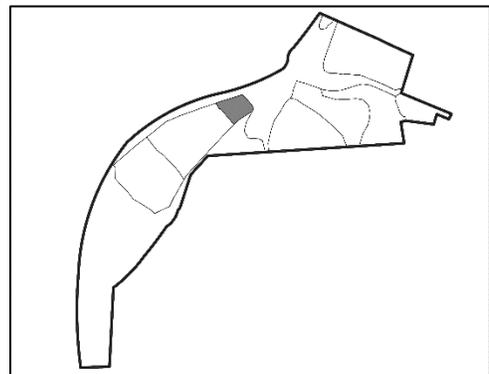
Stand 6: Recreational Field (5.3 Acres)

This is a 5.3-acre regularly mowed active recreational field in the western portion of the property. Over time, some tree trimming around the field may be necessary as trees abutting the field encroach on the field's edges.



Stand 7: Community Garden (1.1 Acres)

This is a 1.1-acre community garden in the western portion of the property. A hand pump well has been installed, and many garden plots appear to be well-maintained. The use of this area as a garden is an excellent diversification within Alsop Meadows, and its continuation is recommended. If interest in the program grows, it could easily be expanded into the field area to the south.



2.1.9 Recommendations

Previous management plans have called for management activities that promote species diversity, mixed habitat types, and aesthetics. A continuation of these overall goals is generally recommended for this plan. In addition to the stand-specific recommendations above, more general recommendations include the following:

1. Boundaries have been previously blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place. The property's existing blazes and signs are becoming faded/worn in places. Additional markings, especially at the southwestern tip of the property, are also recommended.
2. Two intermittent watercourses that flow through the property are being impacted by sedimentation from upstream sources. An outreach effort should be considered by the Town to promote more aggressive cleaning and maintenance of stormwater systems that discharge onto or through Alsop Meadows.

3. Ten-year management plans should be used to guide future forest management activities on this parcel.

Recreation Improvement Recommendations

Alsop Meadows is an active recreational area, due in part to the array of activities available. Activities include hiking/walking, dog walking, canoe launching, swimming, fishing, and gardening. In addition to continuing these activities, it is generally recommended that efforts be restarted to develop and use Alsop Meadows as an environmental education/demonstration park.

1. Better signage is highly recommended at the southern end of the property. Under current conditions, it is very easy for trail users to wander off Town property.
2. Both existing and new trails could be developed into an interpretive nature trail with several stations or teaching areas that illustrate the property's natural features and demonstrate silvicultural techniques, wildlife habitat management techniques. Signage that has been used at Fisher Meadows would be an excellent model. A printed guide to the nature trail could further explain the features at each station and be made available on-site or placed on the Town's website.
3. Erosion control measures are recommended at the property's canoe launch site. This area appears to be heavily used and some significant erosion has taken place. Establishing more vegetation on the slope and/or creating a more formalized launch with steps to limit traffic to one area are possibilities to assist with this goal. A collaboration with the Farmington River Watershed Association and/or an organization like Trout Unlimited may help provide technical expertise and/or funding for this kind of activity.
4. Efforts to revitalize the previously established arboretum area along the boundary between Stands 1, 5, and 6 are recommended. This would entail maintenance of both the planted trees and surrounding vegetation.
5. Existing trail blazes are faded and should be refreshed.
6. Regular maintenance of all trails is recommended to remove trash and debris such as fallen branches/trees and check for erosion.
7. Monitor the creation of new unauthorized trails and attempt to close them off if noted. Install signs to indicate trail users must stay on authorized trails and make sure trail maps are readily available.
8. Install information at kiosk

The "soft edge" along the Stand 2-5 boundary consists of a mix of tree saplings and shrubby species. Over time periodically resetting forest succession in this area by cutting the edge back can help maintain this transition zone for maintained cover, nectar, and pollen production.



Alsop Meadows Conservation Area

Summary of Management Activity by Stand

2024-2033

Year	Stand/Area	Treatment
2024-2033	All	Monitor and Treat Invasive Plants
2024-2033	All	Maintain Trails/Recreation Infrastructure
2024-2033	All	Maintain Boundaries
2027	1	Crop Tree Release
2027	1	One (1) Acre Patch Cut
2024-2033	2	Monitor Hemlock Along River
2027	2	Two 1 Acre Patch Cuts
2027	2	Maintain Young Forest Edge on Border with Stands 5 & 6
2027	3	Thin Around Vigorous Pitch Pine
2027	3	Crop Tree Release
2024-2033	4	Cut Areas of Meadow on Rotating Schedule
2024-2033	4	Construct and maintain Bird Boxes on Edges
2024-2033	4	Plant and maintain Flowering/Fruiting Trees and Shrubs on Edges
2024-2033	5	Mow Meadow Once Per Year
2024-2033	5	Maintain Growing Space Around Ornamental Plantings and Rare Trees on Western Edge
2024	5	Plant Monarch Waystation With Monarch Friendly Vegetation
2024-2033	6	Maintain Recreational Field
2024-2033	7	Maintain Community Garden Infrastructure

2.2 FISHER FARM NATURAL AREA

2.2.1 PROPERTY DESCRIPTION

Fisher Farms Natural Area consists of two parcels totaling 323.38 mapped acres in the eastern portion of Avon adjacent to the Farmington River. The property is bounded to the south by land owned by the Town of Farmington and operated as a working farm by Sub Edge Farm, to the west by Avon Old Farms School, to the east by the Farmington River, and to the north by Old Farms Road and the athletic fields of Avon Old Farms and the Town of Avon within the Fisher Meadows property. The property is on both sides of Tillotson Road which roughly bisects the property. The adjacent forest to the west owned by Avon Old Farms is undeveloped which increases the size of the forest block in this part of the town.

The eastern half of the property is mostly flat except for small hill near the southern portion. The western parcel of this property is also mostly flat throughout except the western and southwestern portions. Most of the eastern and southeastern portions of the western parcel are also agricultural fields with two small ponds. The northern, forested section is mostly flat and has some wet areas and a watercourse. The hilly section rises from the old Farmington River Canal at 170 feet above sea level to 250 feet, after which it flattens out on the hilltop closer to Avon Old Farms' property. The slopes face mostly to the east and average approximately 25 percent.

Bedrock is the origin of soils, and the underlying bedrock of this property is New Haven arkose. There are many different soils on this property, but most are sandy loams. These soils originate from the glaciers 10,000 years ago that ground the bedrock into soil particles. These soils are therefore called glacial till. Glacial till has a blend of many mineral particle sizes (clay, silt, sand, and stones) that the glacier mixed up and deposited. These nutrient rich soils encourage vigorous tree growth.

The Fisher Farms property contains a complex mix of forest and agricultural areas that are primarily used for recreational and active farm production purposes respectively. Sub Edge Farm is an organic farm that produces organic plants, vegetables, meats and eggs for their Community Supported Agriculture program, farm-shop, and local restaurants in this corner of Avon and south into Farmington.

The most distinctive elements of this property include the long frontage along the Farmington River, an intricate mix of important water features, agricultural lands, forests containing hardwoods and softwoods, variable topography including a prominent esker³⁵, and a range of important uses.

2.2.2 Property History

The old Farmington River Canal ran north-south through the middle of the parcel. It was used to transport goods in the Farmington River Valley. It was part of a canal that ran from New Haven to Northampton, Massachusetts. Draft animals would walk along the raised edges of the canal and tow rafts of goods and

³⁵ An esker is a geologic feature that was created during the last ice age. "An esker results when sediment is deposited by water flowing through an ice tunnel in a melting glacier. When the glacier finally melts completely, the accumulated sediment is left resembling the tunnel in the ice, resulting in a hill or ridge. Some eskers continue for many miles." (from the "Town of Avon Fisher Farm Open Space" [brochure](#))

passengers up the shallow canal. The canal was started in 1825 and finished in 1828. Railroad tracks were constructed starting in 1848 along a similar route and spelled the end of the canal.

At one time, most portions of this property were cleared and used as pasture or cropland. The areas that are currently being farmed have been farmed for many years because they are in the floodplain of the river where soils are generally highly productive. The remaining portions of the property that were dry enough were likely used as pasture.

Beginning in the late 1800s and early 1900s, the pasture lands and some of the less productive cropland was abandoned and the reversion of these areas to forest began. In the ensuing 80 to 100 years much of the forest grew without any formal management until the 1980s. In 1986 a timber harvest on the northern portion of the property removed a lot of good quality white pine. Then in the late 1980s the rest of the property was harvested heavily as well.



Trail map from the brochure created in 2009 for the Fisher Farms property.

2.2.3 Access

Good access is present throughout Fisher Farms for a variety of purposes. A well-maintained gravel parking area is located on the east side of Tillotson Road near the northern end of the property. Farm roads are found throughout the agricultural areas and walking trails facilitate access on foot to the riparian forest in the eastern block along the Farmington River and in the upland forest in the western block. The trail at the toe of the slope in the western block is mostly flat and could support vehicle traffic as needed. There seems to be some unauthorized motorized vehicle use (likely ATVs) occurring based on recently noted tire ruts. Some unmarked trails have been created along the property's western boundary and connect with trails on Avon Old Farms property. In addition, there has been a trail reroute that has occurred in the southern portion of the western parcel to avoid close contact with Sub Edge Farm's operations. The reroute was noted in 2020 though it may have occurred prior to this. None of the publicly accessible maps on the Town's website show the new route so that information should be updated. Several bridges are found throughout the property that provide good access for trail users.



The bridge on the main trail over Thompson Brook as it exits the wetland (Stand 4) in the northwestern corner of the property. The photo at left was taken in early 2020 and the photo at right in fall of 2023 shows the relatively new wooden bridge over the stone bridge.

Access for forest management purposes is slightly more complicated due to water features, topography, location of forest and abutting roads. There is an access point that joins a woods road from Old Farms Road along the property's northern boundary, but the access is narrow, and there is a curve in Old Farms Road just west of the access point. That in combination with the speed at which drivers operate vehicles on this road reduce the feasibility of using this area as a viable and safe access point. If forest management activity is to occur here it is likely that the best option will be to create a log landing either in the woods or on the edge of the woods near the northern edges of the fields west of Tillotson Road.

2.2.4 Water Resources

Fisher Farms contains several significant water resources:

The **Farmington River** runs along the eastern border of the property; Fisher Farms contains approximately 1.1 miles of river frontage. Most of the eastern block of the Fisher Farms property lies within the river's floodplain. The Farmington River is designated as Wild and Scenic by the National Park Service, potentially making funding for projects along the river more available.

A small pond is in the northern portion of the eastern block of the stand adjacent to the parking area. A forested wetland west of Tillotson Road drains under the road and into the pond.

Thompson Brook, a relatively small watercourse runs through the northern portion of the property. It drains the semi-open wetland area in the northwest corner (Stand 4), and heads easterly toward another wetland complex before crossing Tillotson Road at a beautiful stone bridge. The brook then runs through the pond (Stand 5) and continues meandering southeast before its confluence with the Farmington River.

There are also two semi-open wetlands on the property: one in the northwestern corner and one along the field edge of the western block. Both of these features provide important and unique habitat conditions useful for a variety of wildlife as well as for hydrologic function in the area.



The open wetland in Stand 4 in the northwestern corner of the property. Note the presence of larger dead trees in the center of the wetland and the oxbow that Thompson Brook creates before it exits the area. This photo is from 2020. The dense phragmites visible in the background has since spread and covers a little more of the area as seen below left.



DEEP GIS data (current as of September 2023) shows that nearly half of Fisher Farms lies within a **Level A Aquifer Protection Area**. Most of the southern portion of the property outside this aquifer.

2.2.5 Rare, Endangered or Species of Special Concern

According to the State's Natural Diversity Database (June 2023 update), there is a possibility that rare, threatened, endangered, or special concern species are present on nearly all of Fisher Farms (see map

at right). At the writing of this plan, the results of request for additional information from the NDDDB report had not yet been received. When the results are received, they should be appended to this document.

2.2.6 Invasive Species

Many invasive species were noted at Fisher Farms. Japanese barberry, multiflora rose, bittersweet, mugwort, burning bush, honeysuckle, Japanese stiltgrass, bittercress, and privet were all noted here, but populations are not ubiquitous nor are they dense in most cases where they are present. In the northern portion surrounding the trail along the Farmington River, the invasive plants are very dense, but in most places the populations are still manageable. Where invasives are dense multiflora rose and Japanese barberry are the most common though bittersweet has begun to increase in density over the years as well. Although the structure provided by dense invasives is useful to some wildlife, they do not provide the same food source that native plants do, which native wildlife have evolved to use over millennia. Treating invasive plants and either intentionally replacing them with natives or creating the conditions required for comparable native vegetation to become established would improve the overall habitat quality of this property. One of the locations in which this may be most feasible is near the pond (Stand 5) and along portions of the trail system. Before any work occurs, check with Sub Edge Farm to ensure plantings will not negatively impact access or plans they have for future work.

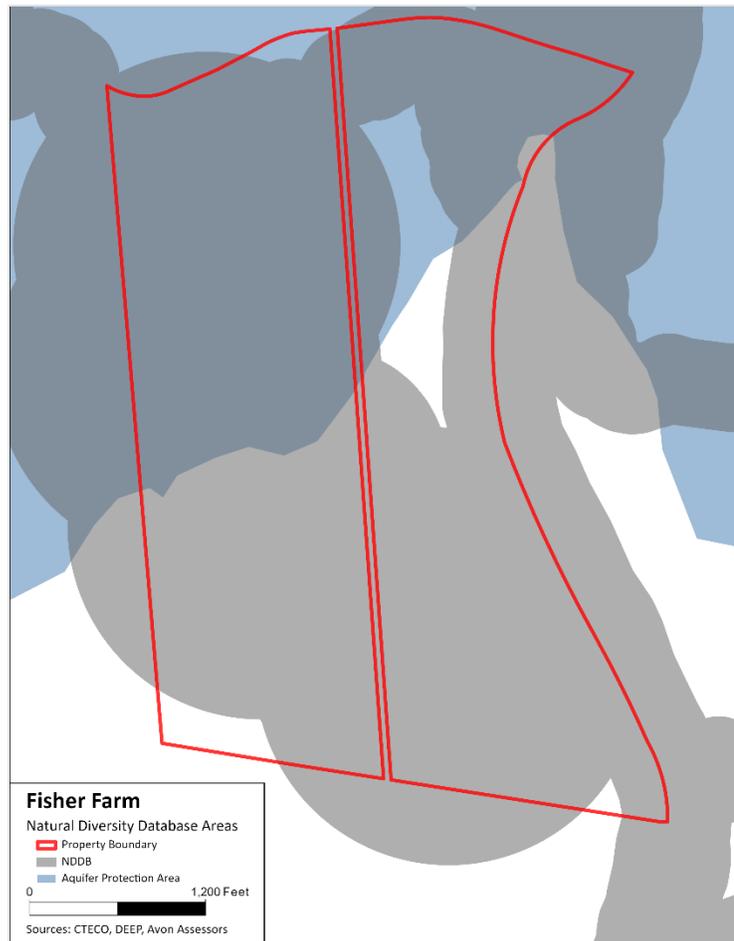
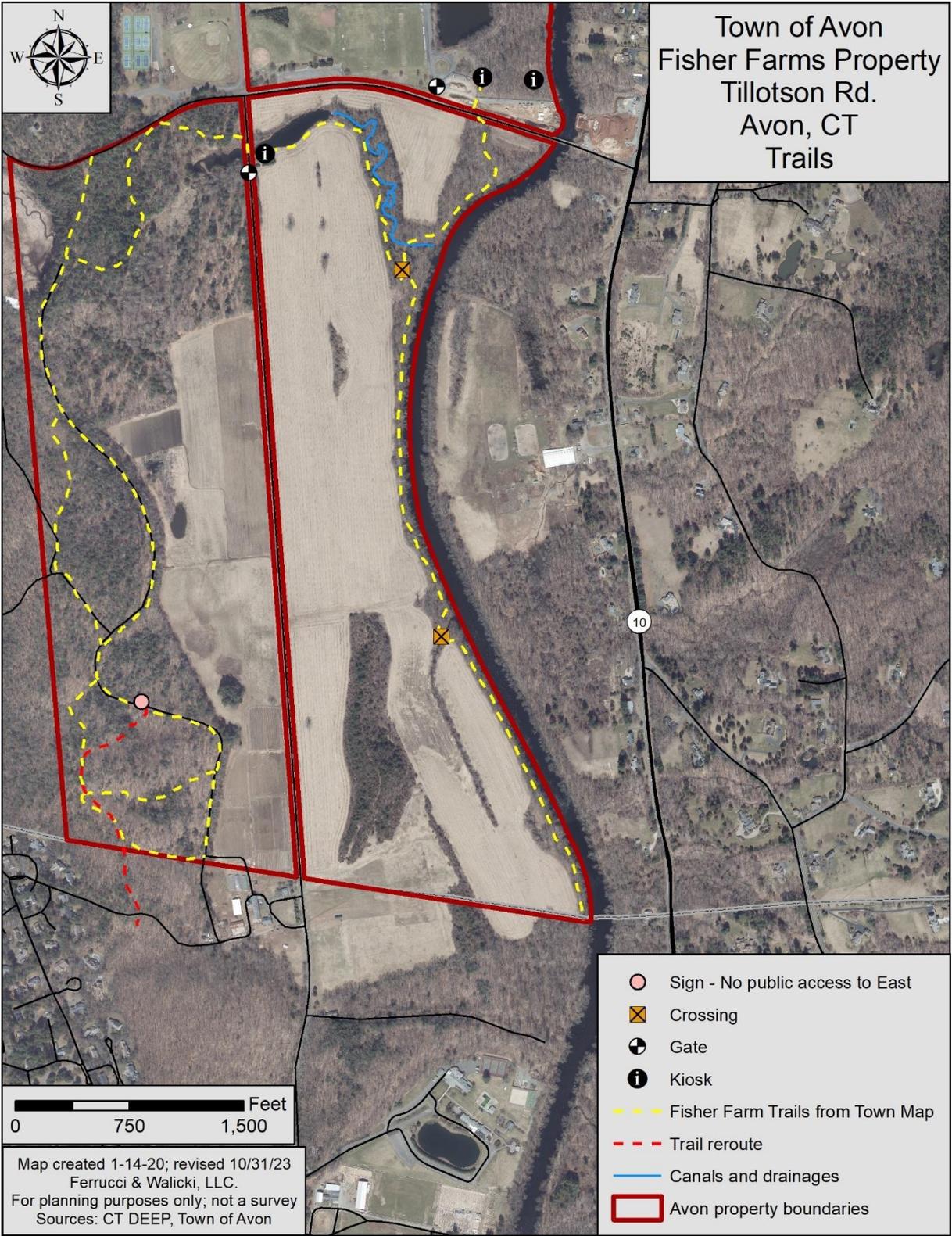


Figure 2.2.4. Fisher Farms NDDB and Aquifer Protection Map

2.2.7 Recreation

Fisher Farms is used for hiking, biking, and dog walking. The trail system is extensive and, in some places, connects to other properties, though it is unclear if this is intentional or acceptable to the Town or the adjacent owners. Some of the trails in the western portion of the western block connect to Avon Old Farms trails, but none of the official trail maps indicate this. There is also a trail that heads south off the property onto land owned by the Town of Farmington along the Farmington River. If these connections are legitimate, trail maps should be updated to reflect this. If not, the unauthorized portions of the trails should potentially be closed off.



2.2.8 Forest Management

The current open space and forest management program should be continued to maintain the health, aesthetic appeal, diversity and stability of this valuable forested property.

NOTE: Given the size, orientation, and location of most of the forested stands within Fisher Meadows, limited forest management activities are recommended and those are concentrated in the western block. Those activities recommended (such as invasive species control, FSI, or establishment of new age and size classes of trees) are intended to encourage healthy, diverse conditions that enhance the forest’s resilience to pests, pathogens, and other stressors or disturbances. In this sense, many portions of Fisher Farms can be considered “reserves”. While only limited forest management activities are recommended in most areas of Fisher Farms at this time, the process of regularly collecting forest inventory data can provide valuable insights into changes that are occurring over time on the property in terms of species compositions, tree growth rates, etc.

Stand Descriptions and Management Recommendations

Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it easier to correctly describe the property and to make appropriate recommendations. Once identified, each stand is treated separately based on its unique characteristics. Non-forested areas are also broken out as “stands” for descriptive purposes.

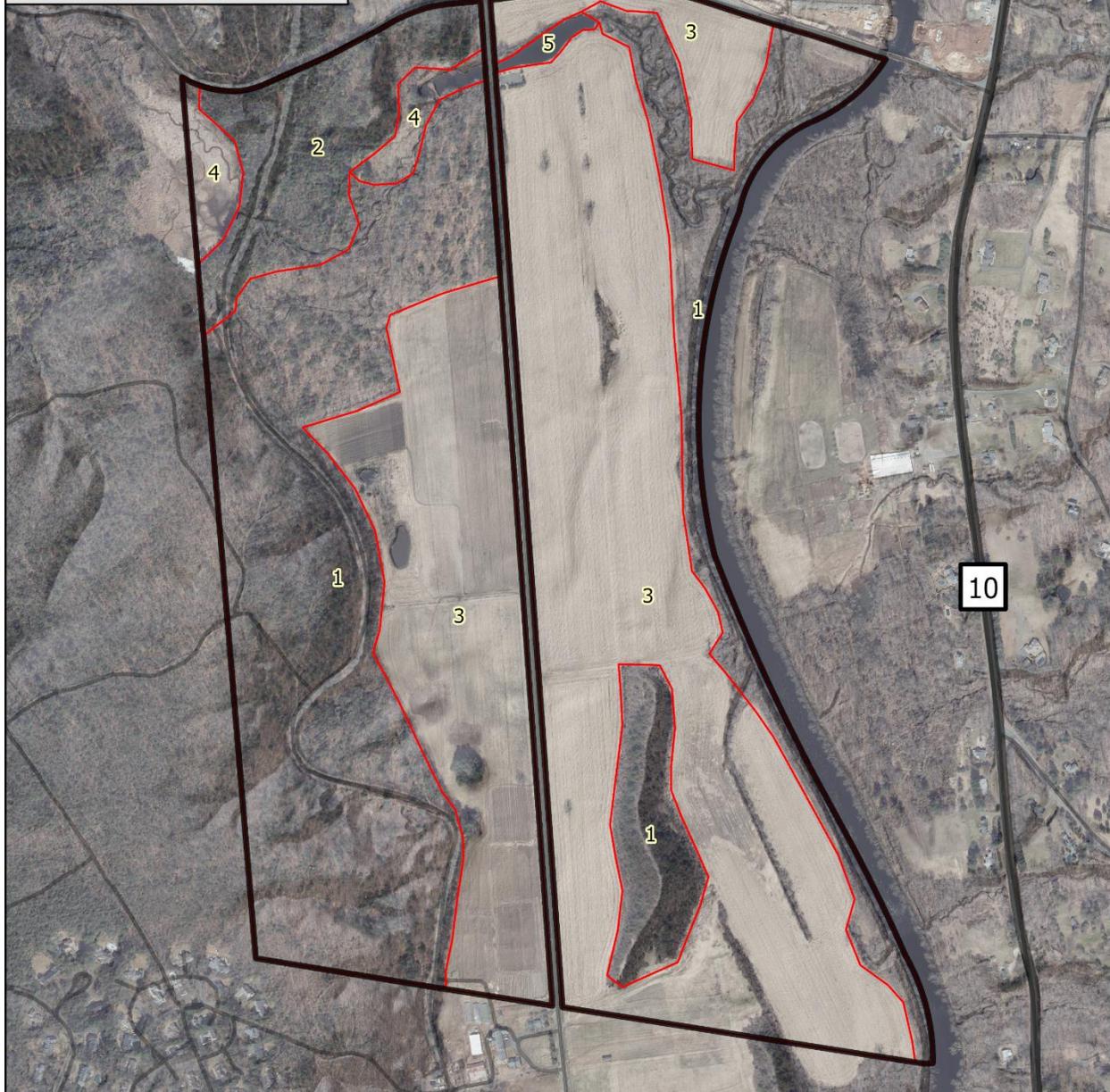
Fisher Meadows Stands

Stand	Acres	Description	Recommendations
1	124.06	Hardwood and Mixedwood Sawtimber	Control invasives, group selection
2	22.37	Mixedwood Sawtimber	Control invasives, group selection
3	168.47	Agricultural Fields	Continue working with farm
4	7.24	Wetlands	Invasive plant control
5	1.24	Pond	Invasive plant control, plantings
Total	323.4 acres		



Structure and condition of a portion of Stand 2 in late fall. The presence of beech leaf disease may soon alter the appearance of this property in places like these where beech are present in the midstory and understory.

Town of Avon
2023 Management Plan Update
323.4 Mapped Acres
Fisher Farm
Stands Map



Legend

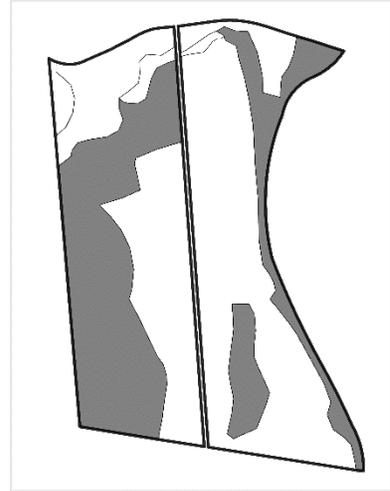
-  Roads
-  Routes
-  Property Boundary
-  Stand Boundary



Map created 9-8-23
Jake Stever - Forestry Technician
Ferrucci & Walicki, LLC
Not a survey; for planning purposes only
Sources: CTDEEP, CTECO, Avon Assessor

Stand 1: Hardwood and Mixedwood Sawtimber (43.2 Acres)

This is the largest forested stand on the property and is found in three main locations. The forested strip along the Farmington River and Thompson Brook comprising the riparian areas, the forest on the esker surrounded by agricultural fields, and the largest block which makes up most of the forestland west of Tillotson Road. Most of the description of this stand will focus on the latter.



The riparian forests on this property are typical of forests in this area. The overstory is mostly closed canopy and is dominated by red maple with associates of oaks, silver maple, elm, cottonwoods, and other species that grow well in rich, moist soils. Many of the ash that were present in this stand have died from emerald ash borer or are in severe decline. Invasive plants including barberry, rose, bitter-sweet, and garlic mustard are common in these areas and grow very densely in places.

The forest on the esker includes a variety of tree species, including cedars, pines, oaks, maples, birches, and other hardwoods.

The large western block of this stand contains variable topography from flat in the northeast and along the western boundary to moderately steep in the central portions west of the main trails. Most of the soils in the stand are well drained though there are some pockets of wet soils in places. Some of the unique topographical features which today appear almost like amphitheaters, seem to have been excavated perhaps as quarries to create the canal.



The curving hillside in the background of this picture appears to have been excavated perhaps as part of the construction of the canal many years ago.

Trees in this stand are mostly composed of poletimber- and medium sawtimber-sized hardwoods. The eastern facing slopes in the central portion of the property are dominated by a midstory of densely growing hemlock. The scale insect is present, but HWA was not noted. The current basal area in this stand is 97 square feet/acre which is on the high end for hardwood stands and is near optimal for mixedwood stands to maintain individual tree vigor. White pine, red maple, black birch, and hemlock comprise most of the trees in this stand with important associates of white oak and black oak. A wide variety of seedlings are present in the stand including (in relative decreasing order of abundance) white pine, beech, red maple, black birch, musclewood, yellow birch, white oak, black oak, and elm. Saplings in the stand include white oak, red maple, red oak, black oak, beech, sugar maple, black birch, black cherry, hickory, and white pine. Though white pine saplings were not noted quantitatively during the inventory in this stand they are present and grow densely in pockets. Where the white pine seedlings and saplings have access to sunlight, their growth rates are strong indicating that this is a good

site for growing this species. American chestnut saplings are also present in the understory and midstory in places.



The white pine saplings (left) growing below the canopy gap (above) are getting enough sunlight to grow moderately well. White pine can grow 2-3 feet vertically each year so the amount of growth seen here is decent (+/- 1 ft.). As the canopy closes with additional crown expansion from overstory trees, growth rates of the sapling pines will slow.

Understory vegetation noted included partridgeberry, sarsaparilla, skunk cabbage (in wet soils), witch hazel, blueberry, huckleberry, a variety of herbaceous species and densely growing hay-scented fern in places. In addition, there are pockets of invasive plants noted in the stand. Where present they include barberry, rose, and bittersweet primarily.

Stumps of cut trees are present throughout the stand. There was a treatment that was scheduled to be done in 2004 to remove some trees and favor others. The goals were to enhance growth rates of the retained trees and to encourage regeneration. The visible stumps are likely from this treatment and it appears to have been successful based on the amounts of desirable regeneration present in the stand and the overall condition of the retained trees. White pine, white oak, black birch, and beech regenerated heavily where canopy gaps were created though invasive plants (especially barberry and bittersweet) are present as well.



Dense fern growth in parts of the stand are limiting the amount of other vegetation that can successfully germinate. This can simplify the vegetative structure of the area and result in reductions of biodiversity.



The seedling white pine growing out of a stump from the 2005 project is symbolic of trees' ability to regenerate successfully in our part of the world.

Most of the trees in this stand are in good health and appear to be growing vigorously. This observation is based on physical appearance of the trees including a general lack of obvious defect, rot, or other issues, the live crown ratios on most trees, and the outward appearance of the bark. Where present, health issues noted in this stand include beech bark disease (see photo on page 29), beech leaf disease, hemlock scale, ash mortality likely due to emerald ash borer, and occasional oak mortality potentially created by the defoliations and drought combination oaks in parts of Connecticut experienced in 2015-2017. Deer browse was noted but does not appear to be overwhelming the regeneration to the point of failure. Some of the pine saplings in the more open areas appear to have been impacted by white pine weevil insect which kills the main leader of the tree. This was also not uniformly the case during the inventory and was notable as an exception to the otherwise healthy appearance and good growth rates of most of the regeneration.

Soils:

The soils in this area are Windsor loamy sand on the hilltop, Hinckley gravelly sandy loam throughout the

side hill and Merrimac sandy loam, Manchester gravelly sandy loam and Occum fine sandy loam at the bottom of the hill. Soils of this type range from excessively drained (Windsor and Hinckley) to somewhat excessively drained (Merrimac and Manchester) to floodplain soils (Occum). In general, these soils are moderate in productivity for growing trees, though the trees growing here appear to be in good health generally and have successfully regenerated in canopy gaps created during previous management activities.

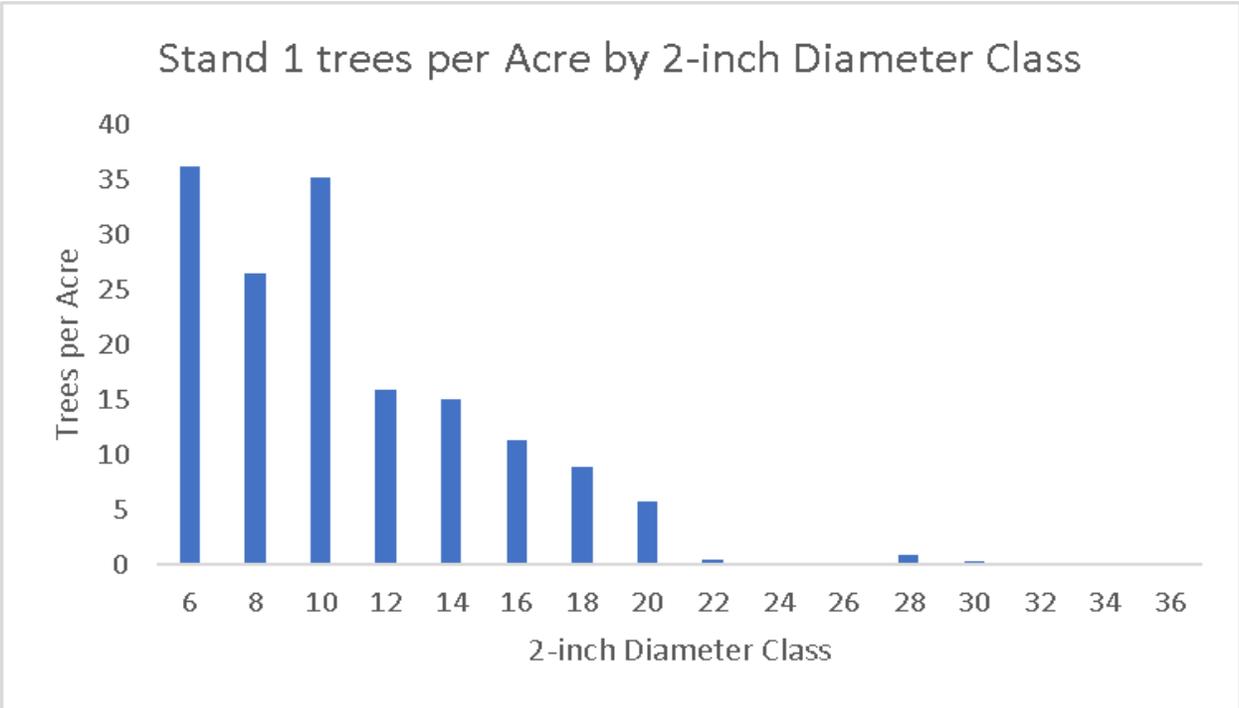
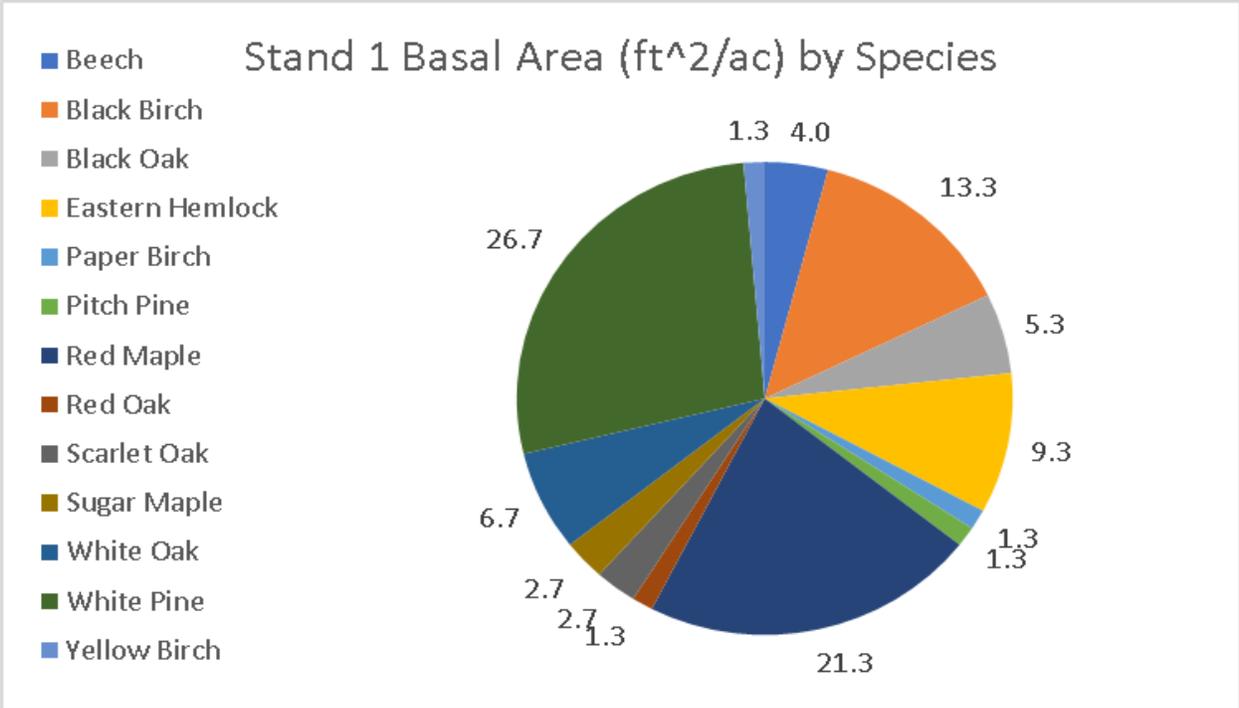
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			1,160			
Saplings			4,130		6.8^ cord	5.3^ cord
Sawtimber trees	65	52	49	39	5.4 MBF	4.9 MBF
Poletimber trees	32	24	98	80	3.1 cord	2.1 cord
Snags	8		9			
Total	97	76	147	119		
MSD*	11.0					

*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet; ^= Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre



Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain and enhance diversity, resilience, and productivity of forest
- Viable softwood component including pine and hemlock
- Continued safe access for variety of property users
- Continued collaboration with farm
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Treat invasive plants to open growing space for more desirable native understory plants and to allow for better regeneration of native tree species. Consult with Sub Edge Farm prior to undertaking any treatment to ensure treatments will not negatively impact their organic status.

Monitor progression of beech leaf disease. If mortality appears imminent and native vegetation is not yet established under the dying beech, potentially augment with native plantings and/or treat invasive plants in nearby areas to discourage their spread into the newly created growing space from dying beech.

Continue managing the area using single tree and group selection methods to maintain diversity, encourage regeneration of desirable species, release regeneration where it is already present, and maintain vigor of overstory trees. Focus group selection in areas where there is a high percentage of poor quality, declining, or damaged trees. Where previous canopy gaps created during the last treatment established desirable regeneration, expand gaps to further release regeneration to help ensure they can become a viable part of the future forest. Retain the hemlock on the moderately steep hillsides to maintain the softwood component and limit operation on steepest slopes. Retain most of the large trees of a variety of species with full crowns and good form. Retain snags and potential cavity trees. Retain trees from all size classes. Diversity of tree species, sizes, and age classes helps increase resilience to disturbance.

Future Management:

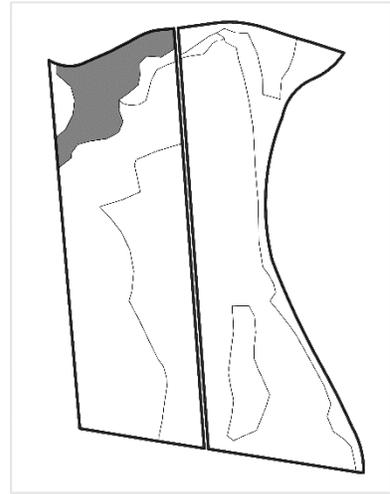
- Monitor invasives and spot treat as necessary.
- Entries into this stand could be approximately every 20 years or so to continue to diversify size and age classes of trees



Retaining trees with rot and cavities helps provide suitable habitat for cavity nesting and gleaning wildlife.

Stand 2: Mixedwood Sawtimber (22.4 Acres)

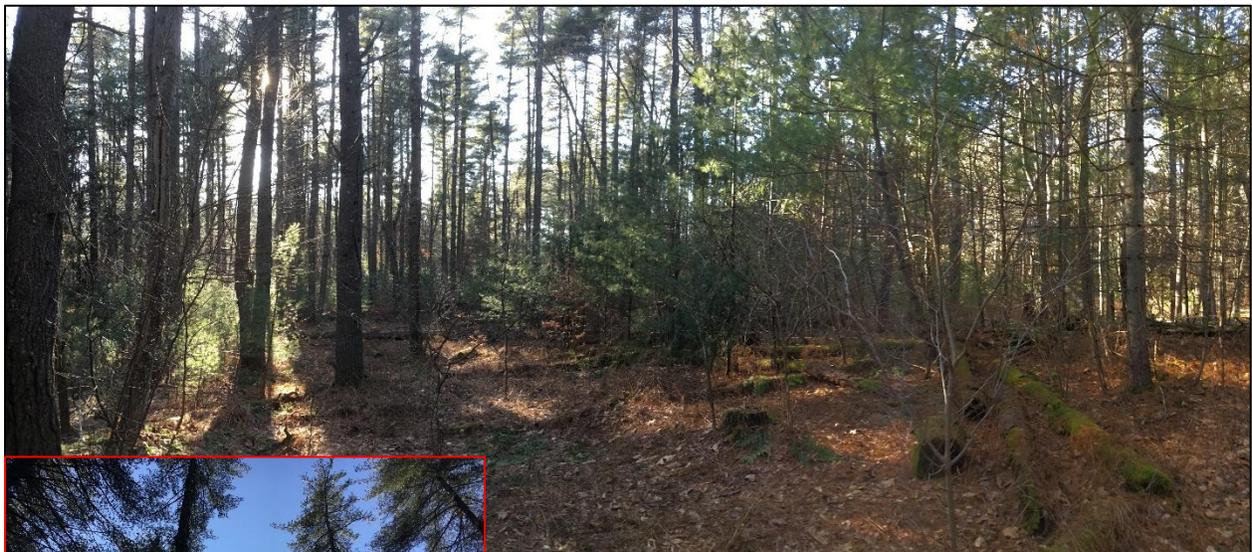
This 22-acre stand is located in a single block in the northwestern corner of the property. There is access to this stand via the existing trail system on foot which has acted as a woods road and was utilized during forest management operations in the past. There is direct access to Old Farms Road at the northern end of this stand but due to the speed of drivers and the curve of the road is not an ideal location for vehicle access. This stand is somewhat isolated from the rest of the property by Thompson Brook which acts as the southern boundary for part of the stand. A crossing of Thompson Brook is required for reasonable equipment access from the south.



Stand Description:

The forest is dominated by white pine with significant associates of black oak and red maple. Smaller amounts of beech, black birch, pitch pine, scarlet oak, hemlock, and a small plantation of red pine are also present.

In 1986 a heavy thinning was done that removed many of the trees in some areas of the stand. The retained trees grew well. A follow up treatment in 2004-2005 removed additional lower quality trees and released well-formed trees of desirable species suited to the site. Pockets of white pine successfully regenerated following both treatments (1986 and 2005).



Quality regeneration of desirable species (a mix of pine and hardwoods) occurred following previous treatments in this stand (above). Over time, in order to ensure the regenerating pine retain vigor additional canopy tree removals will be useful to continue to allow some sunlight to reach near the forest floor. The trees in the overstory above the regeneration (left) have good spacing and live crown ratios and are growing well.

This stand is in the understory reinitiation stage of development. As a result of canopy openings intentionally created through management or naturally through the decline or death of overstory trees, sunlight reaches the forest floor and stimulates the growth of understory vegetation. Most of the existing seedlings in the stand are white pine and beech with some red maple, white oak, black birch, and black oak also present. Invasive plants – mostly barberry and bittersweet – are also present in parts of the understory in the stand. Other understory species noted in this stand include ferns (which grow very densely in places) Virginia creeper, poison ivy, and bindweed. Less frequently occurring species include bedstraws, Canada mayflower, clubmoss, false Solomon's seal, lowbush blueberry, maple-leaf viburnum, nightshade, sedges, shinleaf, Solomon's seal, spicebush, Virginia creeper, and wild strawberry among others.

The current basal area is about 116 square feet per acre, the majority of which is in the sawtimber size class. This indicates adequate and near optimal stocking for this forest type to maintain tree vigor. Most of the trees in the stand are growing well.

White pine weevil, the invasive plants, and some storm damage³⁶ (windthrow and stem breakage) are the primary issues affecting trees in this stand. Beech leaf disease was not noted but is likely to be in the stand in the coming years.

Soils:

The soils in the northern section of this stand are Manchester gravelly sandy loam and Windsor loamy sand. Soils of this type are somewhat excessively drained, but are moderately productive for white pine tree growth as evidenced by how tall many of the mature trees are. The other sections of the stand have Winooski silt loam, Occum fine sandy loam, and Pootatuck fine sandy loam. These soils are all floodplain alluvial soils that are good farmland and grow white pine well.

	BA/acre* *	BA/acre AGS**	Trees/ acre**	Trees/acre AGS**	Volume/ acre	Volume/acre AGS
Seedlings			320			
Saplings			1,600		11.5^ cord	8.1^ cord
Sawtimber trees	100	72	67	50	11.4 MBF	9.3 MBF
Poletimber trees	16	12	30	24	2.5 cord	1.8 cord
Snags	16		10			
Total	116	84	97	74		
MSD*	14.8					

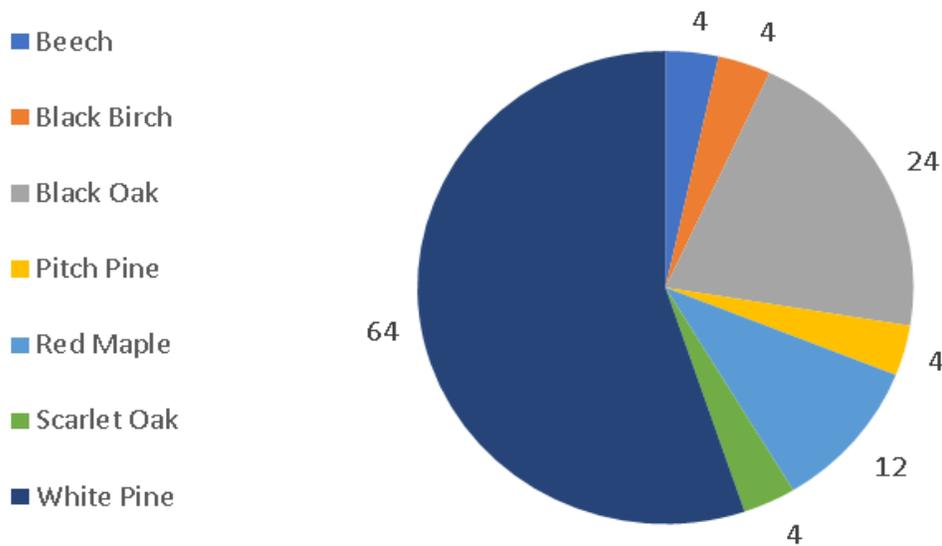
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only; MBF= Thousand board feet

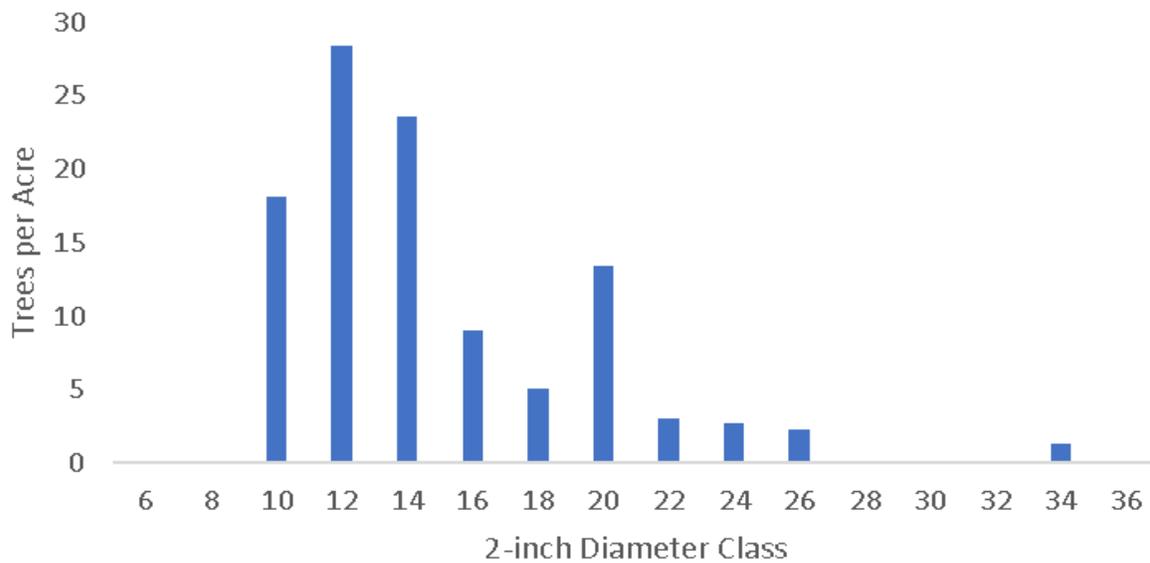
BA= Basal area and is given in square ft./acre; ^= Firewood volume in trees >12" DBH

³⁶ These are natural events and are not necessarily a widespread forest health concern. These events impact the affected trees themselves and have a subsequent impact on growing conditions for remaining adjacent trees and the subordinate size classes which is why they are noted.

Stand 2 Basal Area (ft²/ac) by Species



Stand 2 trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain and enhance diversity, resilience, and productivity of forest
- Viable softwood component including white pine, pitch pine, and hemlock

- Continued safe access for variety of property users
- Continued collaboration with farm
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Treat invasive plants to open growing space for more desirable native understory plants and to allow for better regeneration of native tree species. Consult with Sub Edge Farm prior to undertaking any treatment to ensure treatments will not negatively impact their organic status.

Monitor progression of beech leaf disease. If mortality appears imminent and native vegetation is not yet established under the dying beech, potentially augment with native plantings and/or treat invasive plants in nearby areas to discourage their spread into the newly created growing space from dying beech.

Continue managing the area using group selection and limited single tree selection methods to maintain diversity, encourage regeneration of desirable species, release regeneration where it is already present, and maintain vigor of overstory trees. The overstory density is such that an intermediate treatment like a thinning to release individuals to enhance vigor isn't necessary at this point despite a mostly closed canopy condition in much of the stand. For that reason, group selection should be the primary method of treatment. Focus group selection on expanding existing gaps within which desirable species like pine and oak have successfully become established following the previous two treatments (1986 and 2005). Retain healthy midstory hemlock maintain the presence of that species. Retain trees of a variety of species with full crowns and good form. Retain snags and potential cavity trees. Retain trees from all size classes. Diversity of tree species, sizes, and age classes helps increase resilience to disturbance.

Future Management:

- Monitor invasives and spot treat as necessary.
- Entries into this stand could be approximately every 20 years or so to continue to diversify size and age classes of trees

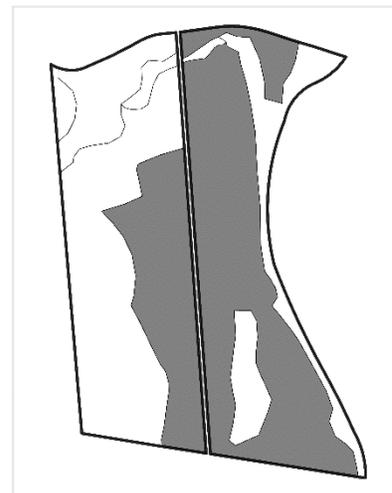
Stand 3: Agricultural Fields (168.5 Acres)

These areas are found on both sides of Tillotson Road and make up most of the land base on this parcel. The fields are used for crops, pasture, hayland, and other parts of the farm operation. There is a small farm pond on the western edge of the western field.

Management Recommendations:

Continue to work with Sub Edge Farm to manage operations in this area. Access for forest management or recreational purposes may be necessary or desirable via the farm roads in portions of this area. Where this is the case, work closely with the farm to ensure safe and suitable uses and time frames are observed.

Where applicable and appropriate remove invasive plants and replace with native alternatives.

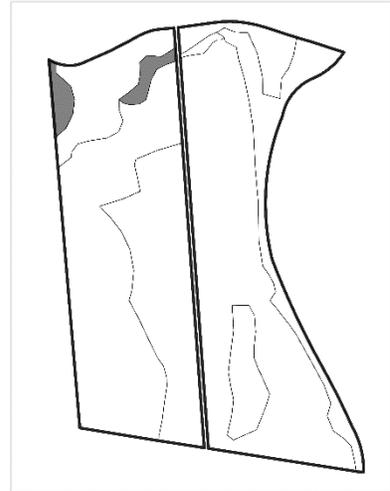


Future Management:

- Continue working with the farm

Stand 4: Wetlands (7.2 Acres)

This stand is composed of two separate areas west of Tillotson Road in the northern portion of the property. They are connected by Thompson Brook. The larger of the two occurrences is a semi-open wetland in the very northwestern corner of the property. Thompson Brook flows easterly out of this area under a constructed rock bridge with new wooden decking and railings over it into the eastern occurrence of the stand.



The western block is a mostly open wetland with some limited amounts of standing water at certain times of year. The wetland is roughly bisected by the property line (which is not indicated on the ground) and the western half is owned by Avon Old Farms. Vegetation in the wetland includes cattail, rushes, sedges, and Phragmites (a.k.a. common reed). Phragmites is an invasive plant and has slowly been taking over the wetland from the northwest spreading south and east. There is another patch of phragmites near where Thompson Brook exists the wetland on its eastern boundary. A small oxbow bend in the brook is also in this area. Skeletons of dead trees in the interior of the wetland indicate a time when the area may have been a bit drier to allow the growth of larger trees. Vegetation along the edges includes the trees of Stand 1 and 2 as well as some shrubs like alder, winterberry, and spicebush among others. There are some areas of shrubs and regenerating forest along edges which provide excellent nesting, cover, and foraging opportunities for a variety of species of birds and other wildlife. Evidence of beaver activity was noted along the southern portion of the wetland during field visits in 2020 though none was noted more recently.



The open wetland as seen during the growing season in 2023. Note the cattail in the foreground and shrubby growth on the left side of the photo. Maintaining native species and structure on the edge of the wetland is important for future ecological function and productivity.

The eastern occurrence of this stand contains a semi-open wetland and a small pond along the eastern side of Tillotson Road. The vegetation in this area is similar to that found in the western wetland without as much phragmites.

Wetlands such as these are critical sources for filtering pollutants, storm water storage and discharge, and wildlife habitat for many species birds, insects, amphibians, and mammals.

Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics



The eastern occurrence of Stand 4. Though much of this area is open, soil moisture is low enough in places to still allow trees to grow.

Management Recommendations:

Allow this area to continue to develop. Though it would be useful in the long run to be able to reduce Phragmites populations for the health and function of the ecosystem it would likely be difficult and would require the cooperation of Avon Old Farms since the bulk of the population is in the northwestern portion of the wetland on their property.

If work is occurring in portions of Stand 1 or 2 adjacent to the east side of the western block of this stand, create some small (1/10 acre) canopy openings along the edges to soften the edges somewhat. This should only be done if invasive plants are not already established in these areas. One or two of the felled trees could be felled into the wetland and kept on the stump to provide perching and basking sites for birds and reptiles.



Thompson Brook flows under Tillotson Road below beautifully laid stone. During high water events these may be overwhelmed.

Install wood duck boxes at each site to provide additional nesting opportunities.

Inspect the bridge over Tillotson Road at the eastern edge of the eastern block of this stand for proper function. During periods of high water there is very little clearance as Thompson Brook flows under the bridge and flooding may occur.

Future Management:

- It may be possible to create a short spur trail to the eastern shoreline of the western wetland to establish a wildlife viewing area
- Monitor for beaver activity and address if necessary
- Monitor for invasive plants and treat as feasible

Stand 5: Pond (1.24 Acres)

This stand consists of 1.2 acres of a pond and the area that immediately surrounds it. It is located in the northwestern corner of the eastern block of the property adjacent to Tillotson Road and the parking area for accessing the trails. Thompson Brook flows through the pond then exits on its northeastern shore.

The pond itself is open water. Farm activities including mowing occur very close to the southern edge of the pond though there is a narrow buffer of unmowed grasses along the edge. Vegetation along the edge appears to be mostly native.

Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Continued safe access for variety of property users
- Continued collaboration with farm
- Maintain water quality and soil stability
- Maintain aesthetics

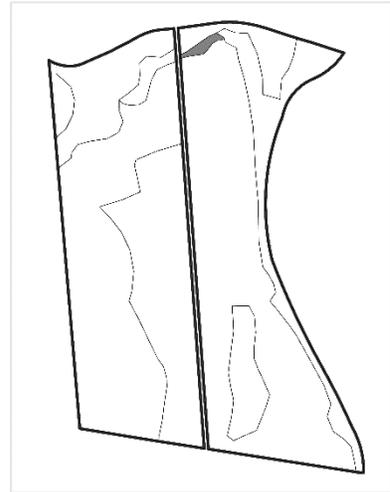
Management Recommendations:

Continue to retain a narrow buffer along the edge of the pond where grasses are not mowed. Where and if feasible find some locations along the edges to plant suitable native shrubs to enhance nectar, pollen, and mast production. If mowing does occur at some point all the way to the edge and ground conditions are acceptable, establish native wildflower mixes in places as well. Work with the farm to ensure any plantings are in an area where it will not interfere with farm operations.

Otherwise, monitor this area for invasive plants and remove them before they can become established.

Future Management:

- Monitor for invasive plants and treat as feasible
- Continue to work with the farm to ensure management around this area works with their needs and plans



Maintaining an unmowed buffer (even a narrow one) along the edge of the pond can help provide some habitat for reptiles, amphibians, and a variety of insect life such as dragonflies.

2.2.9 Recommendations

Previous management plans have called for boundary marking, trail construction and maintenance activities, and active forest management where feasible and advantageous within Fisher Farms. A continuation of these activities is generally recommended for this plan, along with some additions.

1. Invasive species are a problem on this property. Efforts should be made to control these species where they exist and prevent further spread.
2. Recreational activities should continue to be encouraged on this property and expanded where possible.
3. A portion of the boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place.
4. Ten-year management plans should be used to guide future forest management activities on this parcel.

Recreation Improvement Recommendations

Fisher Farms is an active recreational area and farm. This mix of activities should be continued and enhanced through the following recommendations.

1. Re-paint or blaze trails to ensure all official trails are visible and obvious. This should include the relatively recent reroute in the southern portion of the western block.
2. Determine if the trails that run off the property in the southern and western portions of the property are part of the official trail system and are acceptable to the adjacent owners. If so, put the trails on updated maps.
 - a. If trails are to end at property boundaries, install signage indicating that that is the end of the trail and trail users should turn around.
3. Update the trail maps to show the trail re-route in the southern portion of the western block of the property.
4. All trail blazes along abandoned trails should be removed. These could be confusing to walkers/hikers, especially those not familiar with the property.
5. Continue to regularly maintain all trails to remove trash and wood from fallen branches/trees and check for erosion. This is especially applicable along the Farmington River and in the moderately steep sections in the central and southern portions of the trail system in the western block.
6. The property should continue to be made available to schools and other groups for research or education programs. With good access, easy terrain and a mixture of land uses, Fisher Farms is an excellent spot to bring groups for field trips dealing with a variety of natural resource issues.
7. Attempt to limit ATV traffic. Determine where they are coming from and install gates or other deterrents if feasible.

Fisher Farms		
Summary of Management Activity by Stand		
2024-2033		
Year	Stand/Area	Treatment
2024-2033	All	Monitor and Treat Invasive Plants
2024-2033	All	Maintain Trails/Recreation Infrastructure
2024-2033	All	Maintain Boundaries
2024-2033	All	Continue to work with Sub Edge Farm
2024-2033	3	Remove and replace invasive plants with native alternatives
2024-2034	5	Maintain buffer along shoreline
2024	4	Inspect bridge over Tillotson Road to ensure proper function in preparation for high water events
2025	4	Install wood duck boxes
2029	1-2	Single tree, group selection
2029	4	Soften edge



Thompson Brook heading toward Tillotson Road

2.2 FISHER MEADOWS NATURAL AREA

2.2.1 Property Description

Fisher Meadows consists of two parcels totaling 245.4 acres in the eastern portion of Avon adjacent to the Farmington River. The property is bounded to the south by Old Farms Road, to the west by Avon Old Farms School and properties along Old Farms Road, and to the east by the Farmington River. A small portion of the property is located on the eastern side of the Farmington River, accessed from Pine Hill Road, though this portion of the property has no legal access and is for all intents and purposes landlocked.

The Fisher Meadows property contains a complex mix of forest and meadow areas with some developed fields that are used for recreational and public water supply purposes. Spring Lake (41 acres) dominates much of the southern half of the property. Almost all the forested portions of the property are dominated by riparian/floodplain forest species and have very dense understories of invasive plants.

The most distinctive elements of this property include the very long frontage along the Farmington River, an intricate mix of water, meadows, and forests, very flat topography, and a wide range of community uses. The understories of the forested portions of this property are overwhelmingly occupied by invasive plants. Veery and red-eyed vireos, two species of migratory songbirds listed as part of Audubon Connecticut's [Birder's Dozen](#) are common in the forested portions of the property.



Red maple in brilliant fall colors near Spring Lake

2.2.2 Property History

The majority of what is now the Fisher Farms Natural Area was gifted to the Town by the Stanley D. Fisher Family in 1976, and the park was established in 1977.

1934 aerial photos show that much more of the property was open at that time (and presumably used for agriculture) compared to present conditions. This suggests that portions of the property have reforested following agricultural abandonment sometime in the early to middle part of the 20th Century.

No significant foundations are found on the property, but many areas contain dug channels and other drainage-related earthwork. No stonewalls and only scattered wire fence remains are found on the property. In 2019 a major relocation of the bridge over the Farmington River was begun to access Route 10 in a different way. A portion of the southeastern part of the property has been converted from floodplain forest to road and buffer.

An Environmental Review Team report was prepared for this property in 1986 within which the vegetation at the time was divided in two main types: softwood plantation and mixed hardwood.

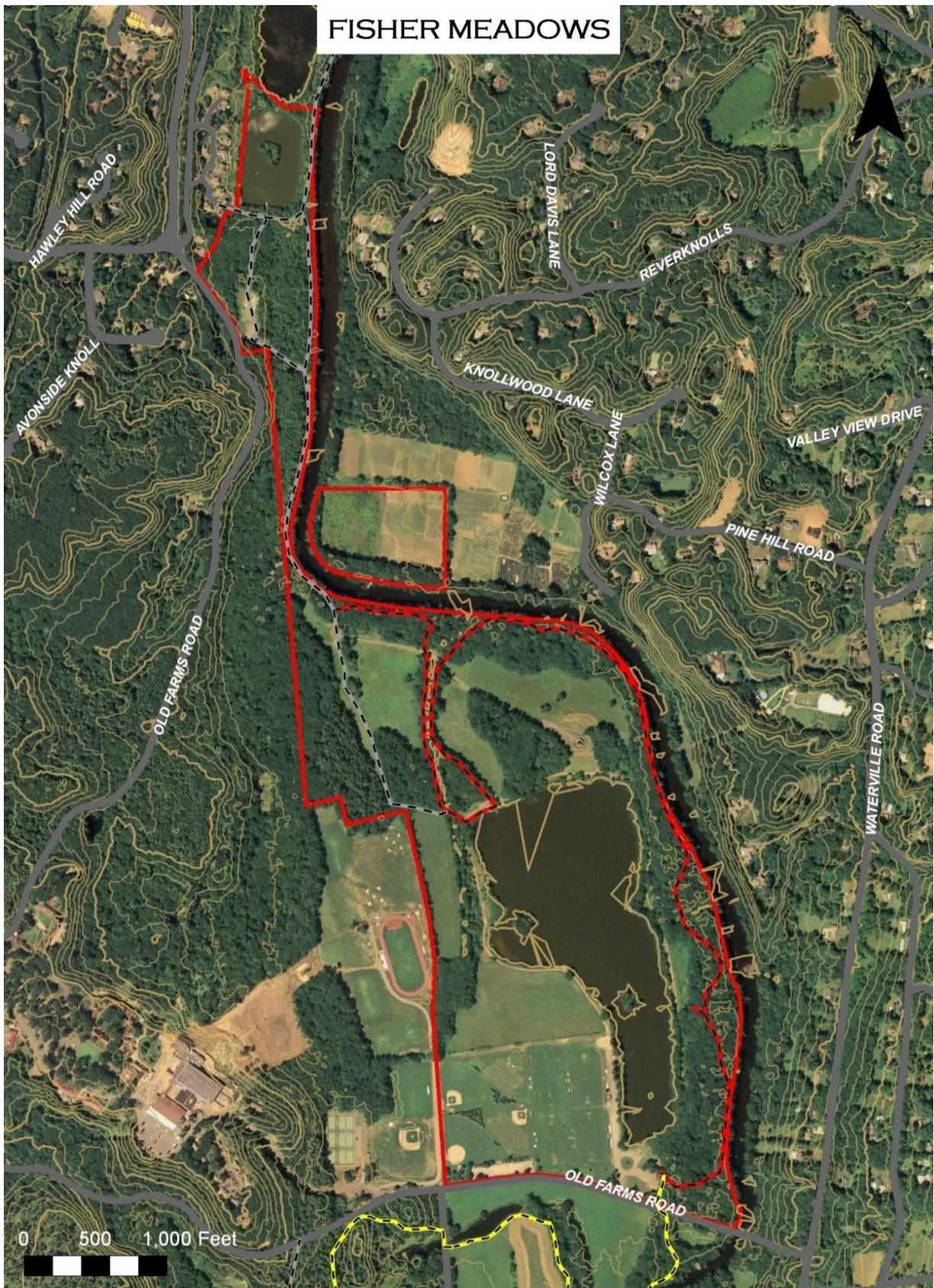


Figure 2.2.2. Fisher Meadows Recreation Area.

2.2.3 Access

Good access is present throughout Fisher Meadows. Parking areas are found at the main entrance (at the south end of the property) and at a “Trailhead” parking lot along Old Farms Road. Drivable dirt and gravel roads ring Spring Lake and run from the wellhouse north to the Trailhead entrance. These roads are flat and in very good condition. Additional farm roads run through several of the property’s fields. Many of the property’s roads also serve as hiking/walking trails. Due to the adjacency of some of the roads and fields to the river, they do occasionally flood.

2.2.4 Water Resources

Fisher Meadows contains several significant water resources:

The **Farmington River** runs along the eastern boundary of the property; Fisher Meadows contains approximately 1.9 miles of river frontage. Most of the Fisher Meadows property lies within the river’s floodplain. Since the writing of the last plan, the Farmington River has been designated as Wild and Scenic by the National Park Service, potentially making funding for projects along the river more available. The river routinely floods into the floodplain forests and meadows, and occasionally covers the recreation fields.



These areas do flood occasionally as seen from this photo of Stand 5 northwest of the athletic fields (photo is from 2013). The alder in the background has since expanded somewhat since this photo was taken.

Spring Lake, located in the southern portion of the property, is a human-made lake resulting from a former sand and gravel quarry. The lake is now used for fishing.

No watercourses of note run through the property, but a **former drainage canal** runs from the northwestern corner of Spring Lake to the river, and several drainage channels also run towards the river throughout the property.

DEEP GIS data (current as of September 2023) shows that nearly all of Fisher Meadows lies within a **Level A Aquifer Protection Area**. Approximately 12 acres in the far north end of the property lie outside this aquifer. In 2003, a well/pumping station facility was completed in Fisher Meadows by the Avon Water Company to further utilize this resource by pumping up to 3 million gallons per day.

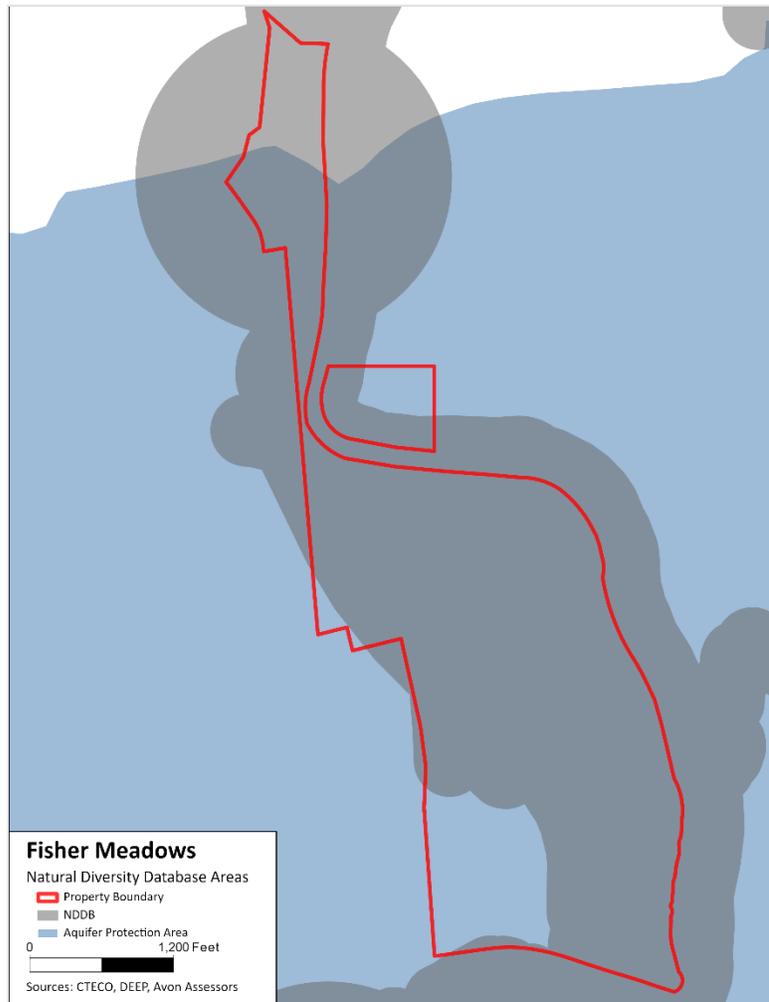
2.2.5 Rare, Endangered or Species of Special Concern

According to the State’s Natural Diversity Database (June 2023 update), there is a possibility that rare or endangered species are present on nearly all of Fisher Meadows (see map on following page). (A small area in the southwest portion of the property where the athletic fields are located is excluded from NDDB’s potential occurrences.) At the writing of this plan, the results of the NDDB report had not yet been received. When the results are received, they should be appended to this document.

The presence of rare species within Fisher Meadows has been documented in, at least, a 1986 Environmental Review Team Report, and a 2006 Metropolitan Conservation Alliance Report: “The Farmington Valley Biodiversity Project: A Model for Intermunicipal Biodiversity Planning in Connecticut.” This second report lists Fisher Meadows as a Primary Conservation Area within the Farmington River’s alluvial floodplain region.

The 1986 ERT report for Fisher Meadows noted the presence of Virginia Waterleaf (*Hydrophyllum virginianum*). At that time, this plant was found in 2 other locations along the Farmington River and only had a total of 12 extant populations in Connecticut.

The 2006 MCA report notes the presence of the purple giant hysop, which is “on the brink of extirpation”, and the rare Davis’ sedge. The Fisher Meadows sighting is cited as being part of “the largest New England occurrence” of this sedge.



2.2.6 Invasive Species

Many invasive species were noted at Fisher Meadows. Japanese barberry, burning bush, multiflora rose, Asiatic bittersweet, mugwort, Japanese knotweed, wintercreeper, Japanese stiltgrass, Russian olive, and honeysuckle were all noted here. They are present along all field edges, in the woods, in riparian areas and within the meadows. In some areas, in the narrow area south of the trailhead and north of the meadows and in the southeast portion of the property, invasive plants are very densely established. Where invasives are dense multiflora rose and Japanese barberry are the most common. Although the structure provided by dense invasives is useful to some wildlife, they do not provide the same food source that native plants do, which native wildlife have evolved to use over millennia. Because of their invasive tendencies they also reduce biodiversity and in turn resilience. Treating invasive plants and either intentionally replacing them with natives or creating the conditions required for comparable native vegetation to become established would improve the overall habitat quality of this property. This may be especially feasible or desirable along portions of the recreational trail system where removal and replacement can act as a demonstration site.

2.2.7 Recreation

Fisher Meadows is currently used for a wide variety of recreational uses and appears to be heavily used by the public. Oftentimes, athletic fields receive much more attention than walking/hiking trails with a property. This does not appear to be the case within Fisher Meadows, where a good balance of active and passive recreational opportunities seems to have been struck.

Playing Fields

Approximately 46.8 acres of the property is currently dedicated to athletic fields, parking areas, and mowed/maintained areas. At the writing of the last plan there were only 35.5 acres of athletic fields and associated areas on this property, but the southernmost block of what was Stand 5 has since been converted into an athletic field. These active recreational areas are mentioned but generally not discussed in detail in this plan.

Trails

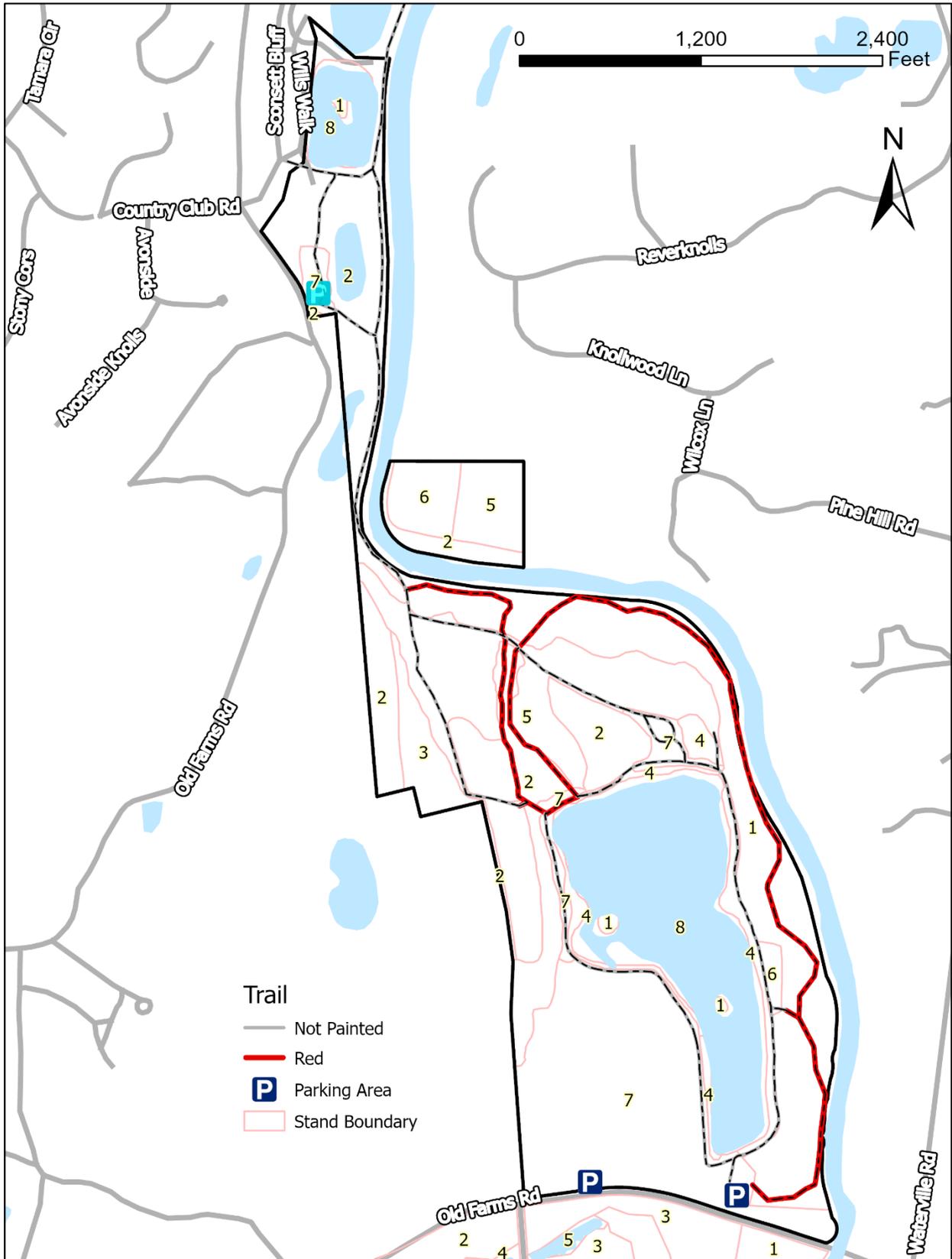
Many miles of walking and hiking trails have been developed within the property (see map below), some of which appear to get very heavy use and others only light to moderate use. Some portions appear to have been partially or totally abandoned, as was recommended in the second to last management plan for the property. The trail system winds its way through different forest types, and along meadows, as well as along the Farmington River and around Spring Lake.

Work associated with the Fisher Meadows wellhouse has added to the property's recreational opportunities. An additional "trailhead" parking area has been added along Old Farms Road, the trailhead-wellhouse road serves as a walking trail, and a series of informational signs provide historical and environmental information about the property and the region. Boy Scout projects have also added a small sitting pavilion and riverside bench near the trailhead parking area. A review of the trails in 2020 showed that there were portions of the trail blocked by trees and vegetation growing over the trails throughout though overgrowth was particularly bad on some of the spur trail in the northern portion of the property. Beaver damage was noted at that time along the Red Trail in Stand 1. Many of the ash that were healthy and vigorous at the writing of the last plan had died due to emerald ash borer (EAB) and are now potential hazards along the trails. Some erosion was noted in 2020 along the central portion of the Red Trail along the river north of Spring Lake.



There are educational signs placed along portions of the trail near the river, around Spring Lake, and near both main parking areas. Culverts and bridges should be examined to determine if their sizing and locations are appropriate for the increased volumes of water the area is seeing with a changing climate.

Left: One of several high-quality signs helping people understand the history of the area. The signs are placed throughout and each has a map orienting the viewer to their location on the property.



Taken together, the property's trail system can be considered multi-modal, as hiking, jogging, mountain biking, and dog walking are all possible. The Spring Lake trail and trailhead-wellhouse trail provide very flat and easy walking/biking opportunities; the wooded trails are also rather easy but do have some small areas that some users may find moderately difficult.

Canoe Launches

Several access points exist for launching canoes into Spring Lake, including a launch established at the southern end of the lake near the parking lot. Since the writing of the last plan, a formal canoe launch into the Farmington River has been established at the northeast corner of the Fisher Farms property, just across Old Farms Road from the Fisher Meadows parking lot. This was done simultaneously with the relocation of the bridge over the river.

Fishing

A number of fishing spots exist both around Spring Lake and along the Farmington River. A small dock also exists on the south side of a small pond at the far north end of the property. These fishing areas appear to be somewhat informal, and generally do not have any significant erosion problems.

Picnic Areas

Small picnic areas are located in several areas throughout Fisher Meadows, including on the south side of Spring Lake (near the parking area), on the east side of Spring Lake, and at the trailhead parking area. Benches around the wellhouse could also serve as defacto sitting/lunch spots. All of these areas appear to be well maintained.

Environmental Education

The informational signs that have been installed around the property provide environmental educational opportunities for the public and help encourage walkers/hikers to explore all areas of Fisher Meadows.

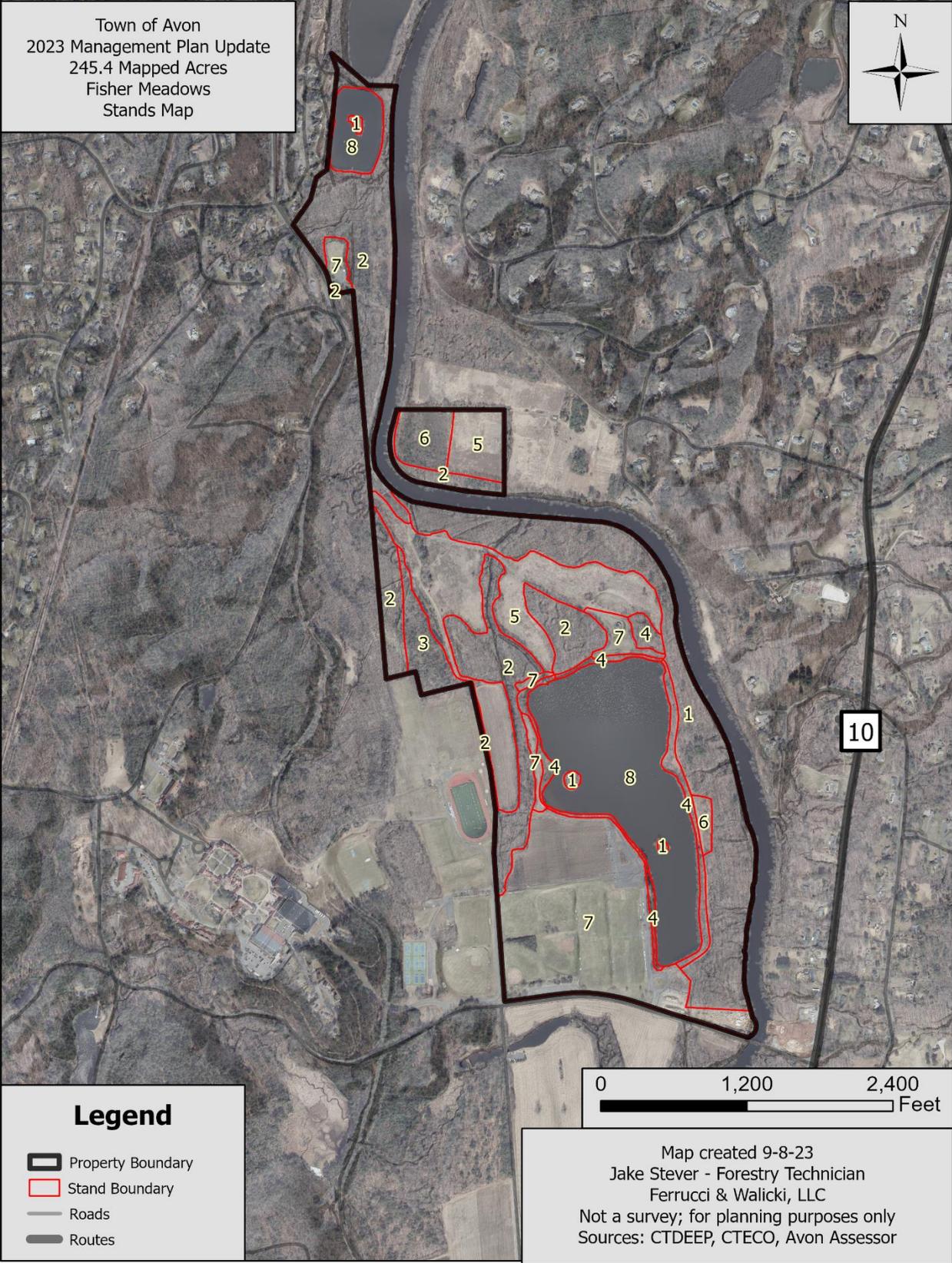


There are a handful of informal access points along the shoreline of the lake where people can get to the water for fishing or putting in a small boat. This area along the western shore is showing some erosion and compaction.

2.2.8 Forest Management

The current open space and forest management program should be continued to maintain the health, aesthetic appeal, diversity and stability of this valuable forested property.

NOTE: Given the size, orientation, and location of most of the forested stands within Fisher Meadows, only minor forest management activities are recommended. Those activities recommended (such as invasive species control or FSI) are generally not for timber production purposes, but rather to encourage healthy, diverse forest conditions. In this sense, many portions of Fisher Meadows can be considered “reserves”. While only limited forest management activities are recommended in most areas of Fisher Meadows at this time, the process of regularly collecting forest inventory data can provide valuable insights into changes that are occurring over time on the property in terms of species compositions, tree growth rates, etc.



Stand Descriptions and Management Recommendations

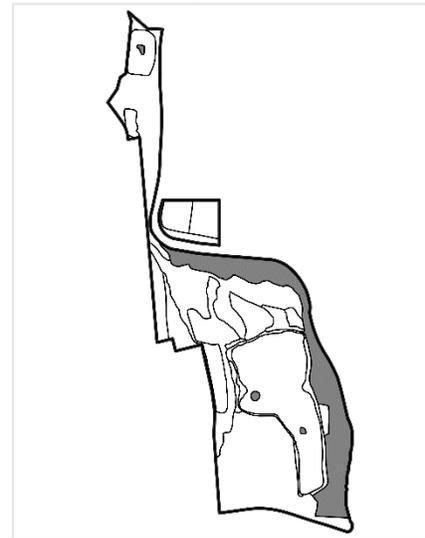
Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it easier to correctly describe the property and to make appropriate recommendations. Once identified, each stand is treated separately based on its unique characteristics. Non-forested areas are also broken out as “stands” for descriptive purposes.

Fisher Meadows Stands

Stand	Acres	Description	Recommendations
1	41.16	Mixed Hardwood Sawtimber	Control invasives, cut vines
2	51.9	Mixed Hardwood Sawtimber (Red Maple)	Control invasives, soften edges
3	5.3	Softwood Plantation	Control invasives, light thin
4	8.4	Mixed Hardwoods Saplings & Poles	Crop tree release, plant softwoods
5	36.7	Meadows	Mowing, replace invasives
6	6.2	Old Fields (unmaintained)	Replace invasives (small block)
7	48.7	Recreational Fields, Parking & Mowed Areas	Plantings as needed
8	47.0	Water	n/a
Total	245.4 acres		

Stand 1: Mixed Hardwood Sawtimber (41.2 Acres)

This 41-acre is composed of one major block and three much smaller blocks scattered throughout the property. For the purposes of this plan, the stand description will focus on the large block which makes up about 98% of the stand’s area. This stand runs from just north of the intersection of Old Farms Road and the Farmington River to the junction of the canal connecting Spring Lake to the river. (Three small islands within the property’s two waterbodies are also included in this stand.) Old Farms Road, the gravel road around the lake, and many hiking trails provide excellent access to this stand. The terrain is extremely flat with very few rocks. The bridge relocation project changed the landscape in the southern portion of the stand which is now mowed and planted with a few scattered trees and has been remapped to be a part of the parking area in Stand 7.



This stand is comprised of mostly mixed hardwood trees. The most common trees are hickory, red oak, and red maple, but American elm, basswood, black cherry, black oak, sugar maple, and white ash are also present. Many of the trees are classified as having good to excellent health; some are in very poor health, mostly because they are covered with bittersweet and/or grape vines. Poison ivy vines are very dense in many portions of the stand but typically have less of an impact on tree health than do bittersweet and grapevines. Many of the ash trees have died since the last plan was written. Trees in this stand range in diameter from 4 to 32+ inches, with most of the overstory trees being between 12 and 20 inches in diameter. Many of the stand’s older, larger diameter trees are found along the river, while the smaller diameter trees are concentrated along fields edges. Additionally, there is a fair number of poletimber-size trees in the midstory throughout the stand. In addition, there

are occasional wolf oak trees and some large weevil-impacted white pine indicating a previous open condition of the stand.



Understory vegetation is highly variable in Stand 1. Much of the stand is very dense with invasive plants such as the rose, olive, and bittersweet seen in the photo at right. Some parts of the stand have fewer understory plants like the area above in the northern portion of the stand east of Spring Lake.

The density of understory vegetation varies from very dense to almost absent. In places where the understory is dense, it is primarily invasives, particularly in the southern end of this stand where the invasives are so dense that accessing parts of the stand on foot off the trails is nearly impossible. In parts of the stand where invasives are not dense the understory is not particularly diverse and does not include many soft mast-producing species such as blueberry, huckleberry, and *Rubus spp.* Poison ivy and sedges were observed in moderate density and a lesser component of Virginia creeper, bedstraws, grapevine, and fern species.



The small canopy gaps that have been created by the death of ash trees are generally not large enough to encourage regeneration. This is especially true given the dense growth of invasive plants in the southern part of this stand where ash mortality is high.

Soils:

Soils within Stand 1 include Suncook loamy sand, with 0 to 3 percent slopes (StA), Occum fine sandy loam, Saco silt loam, and a Fluvaquents-Udifulvents complex.

Suncook loamy sand, with 0 to 3 percent slopes (StA) makes up the majority of this stand. This soil generally occurs on flood plains and is excessively drained and coarse textured. The site index for mixed oaks

averages 54 and for white pine it averages 59. Plant competition is moderate for oaks and white pine. Windthrow is only a slight hazard.

The Occum fine sandy loam is a very deep, well-drained loamy soil formed in alluvial sediments, and subject to common flooding. It is commonly found within flood plains and along rivers. It is found in the northern portion of the stand.

Saco silt loam consists of very deep, very poorly drained soils in silty alluvial deposits. Within this stand, this soil type is associated with the former canal between Spring Lake and the Farmington River.

The Fluvaquents-Udifluvents complex contains a combination of frequently flooded hydric (wet) and non-hydric soils.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			375			
Saplings			200		4.2^ cord	2.8^ cord
Sawtimber trees	68	50	38	32	6.6 MBF	5.3 MBF
Poletimber trees	18	15	65	62	1.6 cord	1.1 cord
Snags	13		18			
Total	85	65	103	93		
MSD*	12.3					

*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

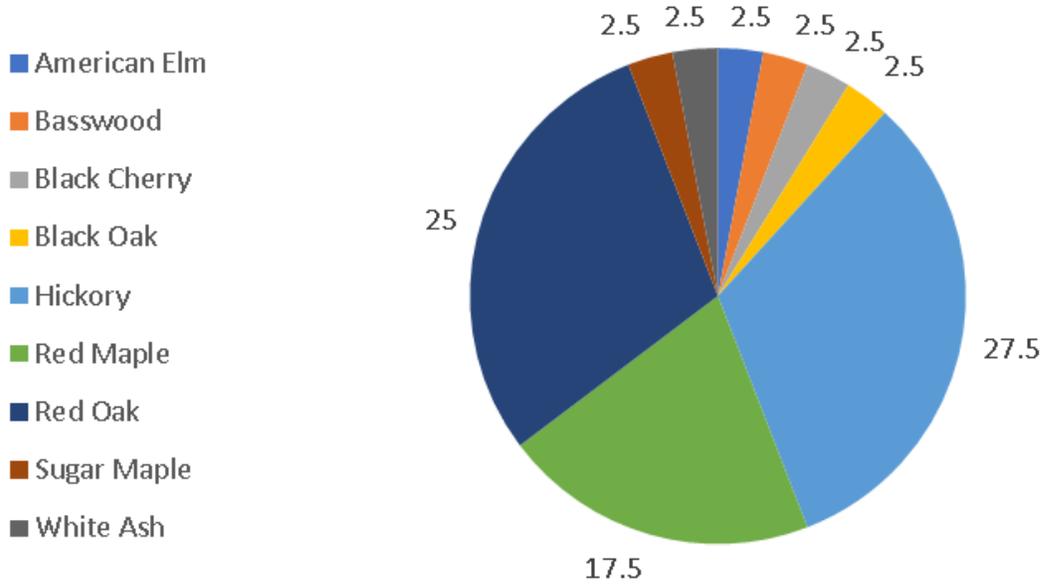
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

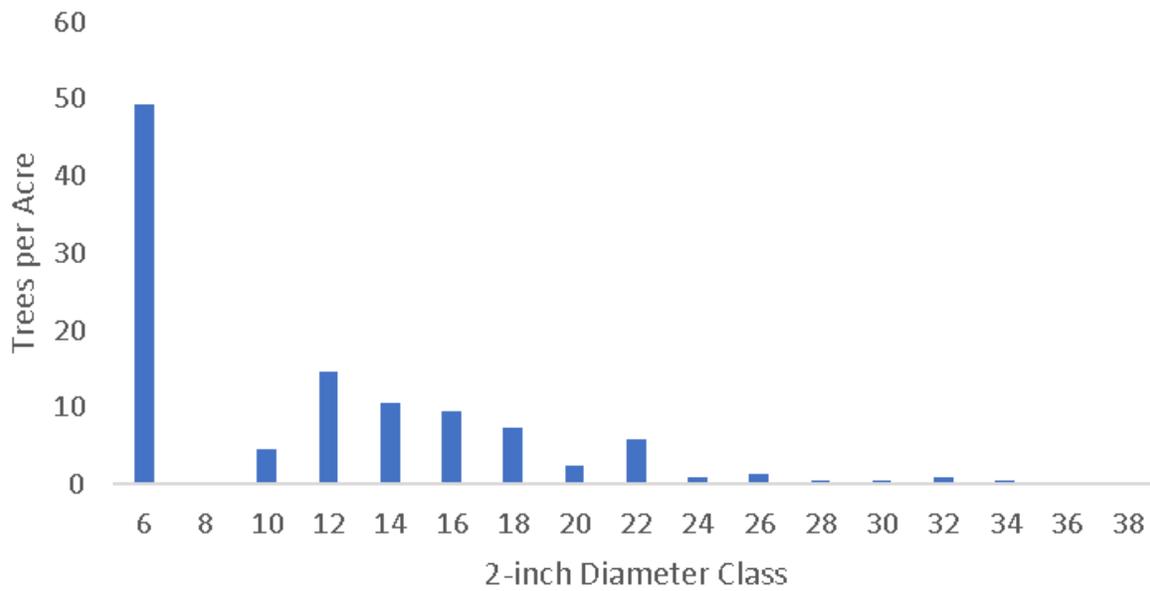


Invasive plants like rose and barberry grow very densely in the southwestern portion of the stand.

Stand 1 Basal Area (ft²/ac) by Species



Stand 1 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Limit invasive plant populations
- Viable softwood component on edges or in interior where present
- Functional and diverse wildlife habitat
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics
- Continued function as “sponge” for absorbing water during flood events

Management Recommendations:

This stand is well suited to be managed for wildlife habitat, recreation, and educational opportunities. Due to its size, orientation, and location, active forest management that manipulates the structure of this stand is likely neither practical nor desirable. Instead, forest health and understory diversity within this stand could be improved by cutting and removing some of the vines, invasive or not, that are impacting overstory trees and by treating invasives throughout the stand. In some parts of the stand that are accessible, removing invasive plants and – where sunlight and soil conditions permit – replacing them with native alternatives can enhance habitat value and also provide a demonstration opportunity.

Some areas of the stand contain dense grape and bittersweet vines. The grapevines in particular provide wildlife habitat values including soft mast production and use of the bark for nest building material. The grapevine could be maintained in portions of the stand but should be removed when/if damage to trees becomes apparent. Trees within 50 to 60 feet of the hiking trail should be released from the vines, but in other areas grape vines should be encouraged for wildlife. Bittersweet vines should generally be removed where possible.

Invasive plants should be treated throughout this stand to open up growing space for more desirable native understory plants and to allow for better regeneration of native tree species. Additionally, treating invasives will make this stand a more pleasant place to hike through by killing many of the thorniest plants within the stand. The positive association that black-legged ticks (a.k.a. deer ticks – the species that is the primary host for Lyme disease) and white-footed mice (frequently the first host for ticks and the primary carrier of the bacteria that causes Lyme) have with the microclimates created by Japanese barberry make removing some of the trailside barberry a benefit to public health as well.

Future Management:

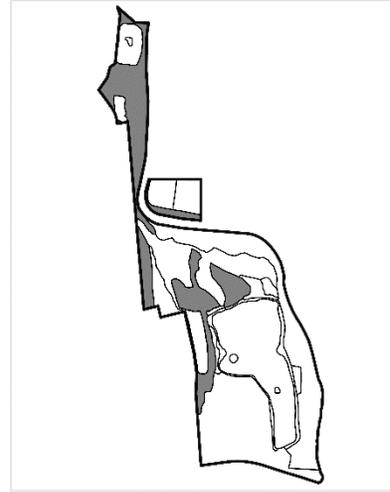
- Monitor invasives and spot treat as necessary. Continue to maintain trees near trails free of vines.
- Maintain a mostly closed canopy forest to limit prolific seed production of invasive plants
- Monitor flood prone portions of the river along the boundary of this and other stands. If erosion or bank incision is noted or becomes an issue, develop a plan to address it, move trails that may be impacted, etc.

Stand 2: Mixed Hardwood Sawtimber (Red Maple) (51.9 Acres)

This 52-acre stand is located in several areas throughout the property mostly in the central, eastern, and northern sections. Access to this stand is via the gravel road surrounding the lake, the gravel road leading from the trailhead parking lot to the wellhead pumping station, and several hiking trails. The terrain is extremely flat with some rocks throughout.

Stand Description:

This stand is comprised of mostly mixed hardwood trees. The most common tree species is red maple, but red, black and white oak, white ash, hickory, apple, elm, black birch, silver maple, cottonwood, black gum, catalpa, hophornbeam, sycamore, basswood, eastern red cedar, aspen and white pine are also present. As mentioned in previous management plans for this property, this diversity of species is about as rich any found in southern New England. Such an area of species diversity is often found adjacent to active or recent farmland or riparian areas. Trees within the stand vary in their health and quality. Trees within the stand range in diameter from 4 to 32 inches, with a large majority having a dbh of 12 to 24 inches. The majority of the stand's older, larger diameter trees can be found along the Farmington River (in the northern portion of the stand) and near the centers of the "islands" of this stand, while the smaller diameter trees are concentrated along field edges. Dense patches of ferns are present where light reaches the forest floor. Other herbaceous cover noted includes Canada mayflower, goldenrod, Jack-in-the-pulpit, maple-leaf viburnum, meadow rue, poison ivy, sedges, sweet pepperbush, and Virginia creeper.



Invasive plants are well-established in most parts of this stand. The northern block in particular has extremely dense invasives with multiflora rose and barberry being the most notable. Access to the narrow part of the northern block of this stand has become impractical due to the prevalence of invasives there. Invasive plants should be treated to provide growing space for native understory vegetation in an attempt to regain the diversity the stand once possessed in the understory. Over time without a reduction in invasive plants that could allow a variety of species of native plants to re-establish the diversity of trees and other vegetation that exists in this stand will slowly decrease.

Soils:

There are several types of alluvial/floodplain soil found in this stand. Most of the stand contains Saco silt loam with 0 to 3 percent slopes (SbA), and a Fluvaquents-Udi-fluvents complex. Other soils present include Hadley silt loam with 0 to 3 percent slopes (HaA), Rippowam fine sandy loam, Winooski silt loam, Occum fine sandy loam, and a Udorthents-Pits complex.

The former canal in the southern portion of the stand.

The Saco silt loam is a very poorly drained soil that is subject to frequent flooding. White pine and oaks are not abundant on these soils, but where they do occur they grow slowly. Red maple and other moisture tolerant species colonize rapidly so plant competition is severe for



white pine and oak. The windthrow hazard is also severe because of the shallow root systems and saturated soil. Within this stand, this soil type is associated with the former canal between Spring Lake and the Farmington River.

The Fluvaquents-Udifulvents complex contains a combination of frequently flooded hydric (wet) and non-hydric soils. In Stand 2, this complex is found along the Farmington River.

The other, lesser soils within the stand, are alluvial soils, are generally highly variable, and have a wide range of textures and drainage. They tend to occur along rivers and other streams and are subject to flooding. Windthrow can be a substantial hazard because of the saturated soils and shallow root systems.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Vol- ume/acre	Volume/acre AGS
Seedlings			750			
Saplings			250		11.6^ cord	6.3 ^cord
Sawtimber trees	105	70	72	51	8.5 MBF	6.3 MBF
Poletimber trees	10	10	20	20	1.7 cord	1.7 cord
Snags	0		0			
Total	115	80	92	71		
MSD*	15.1					

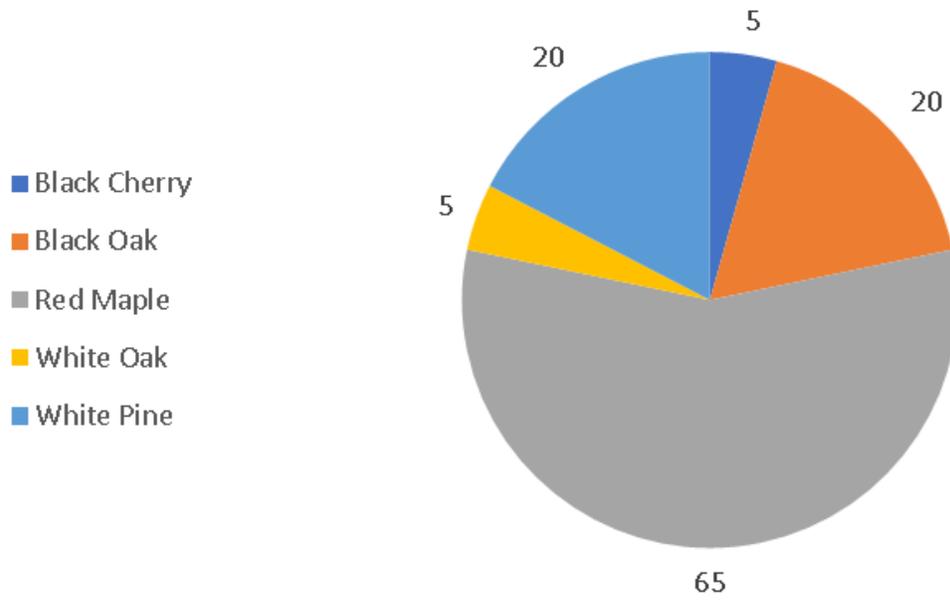
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

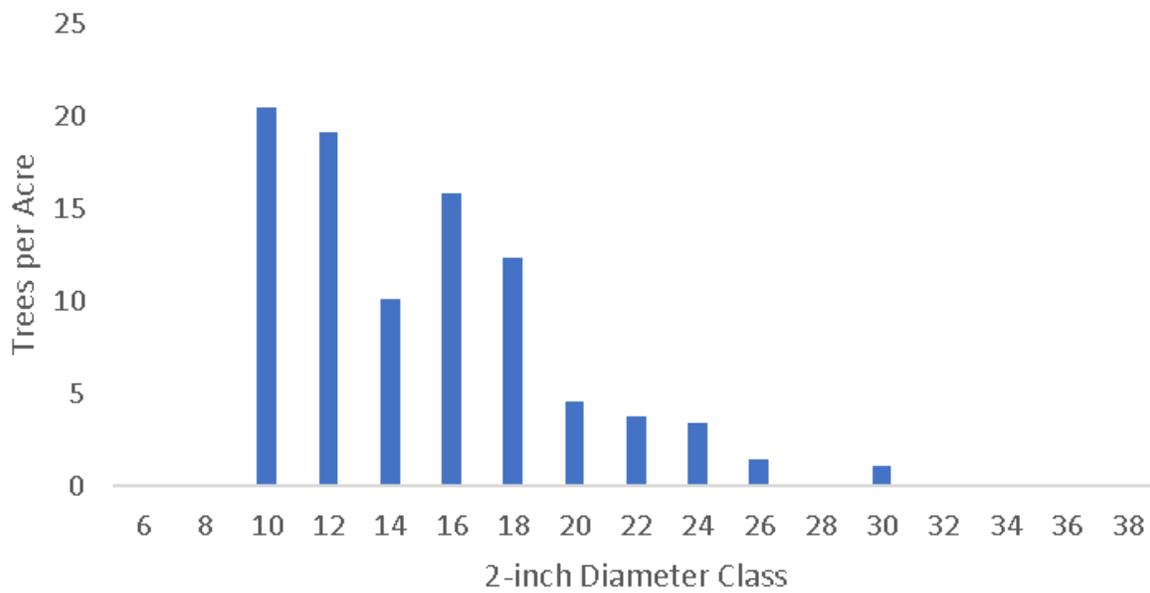
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

Stand 2 Basal Area (ft²/ac) by Species



Stand 2 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Limit invasive plant populations
- Viable softwood component on edges or in interior where present
- Functional and diverse wildlife habitat
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics
- Continued function as “sponge” for absorbing water during flood events

Management Recommendations:

Like Stand 1, large scale active management of the forest structure here is neither practical nor desirable. Invasive species control is by far the most important treatment needed in this stand. Although invasive species can and do provide useful habitat structure, they do not provide the same food source that native wildlife have evolved to use over millennia and are less valuable, overall, than comparable native species. In addition, their presence and spread reduces biodiversity and resilience especially when they grow densely as they’ve begun to do here. This stand should be maintained as a wildlife management, demonstration and viewing area, and as an environmental education area.

Cutting small groups of trees in portions of this stand along the boundaries with the fields and meadows can provide some useful young forest/shrubby habitat as the areas regenerate. If this is to be done, invasive plant treatments should be undertaken prior to any tree cutting. Large diameter, vigorous trees should be targeted for retention. Poor quality, diseased, damaged, or declining trees should be targeted for removal.

Future Management:

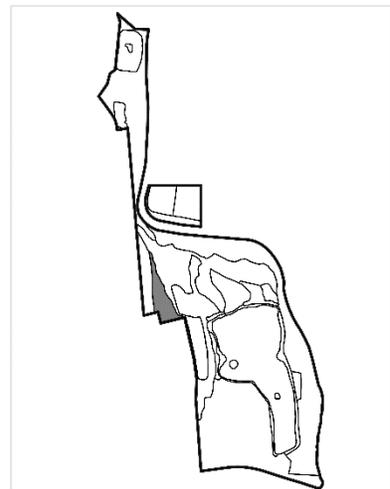
Monitor invasive species in this stand and spot treat as necessary.

If any trees are cut to soften edges, monitor the area and spot treat invasive plants to ensure native plants can successfully regenerate. Augment with targeted plantings of a mix of native shrubs and small trees that can provide sources of nectar, pollen, and mast as well as cover. Examples include blueberries, cranberries, viburnums, dogwoods, hazelnuts, shadbush, etc. Use existing examples of native understory in other parts of the stand as a guide for what will do well here.

Stand 3: Mixed Species Softwood Plantation (5.3 Acres)

This 5-acre stand is located along the western edge of the property just to the north of the Avon Old Farms athletic fields. Access is from the gravel road surrounding the lake. The terrain is very flat with some rocks scattered throughout. A hiking trail that once ran through this stand is overgrown and is largely abandoned. This stand consists of a mixture of planted white pine, larch and white spruce.

Pitch pine, red cedar, black birch, white ash, hickory and red maple have naturally seeded into the stand. The planted conifers are approximately 60 years old and are losing vigor due to intense competition between individual trees for light and growing space. Several



hardwood trees that have naturally seeded in are younger but are overtopping and outcompeting some of the planted conifers. The understory vegetation is not very dense in most places due to a mostly closed canopy. Scattered hardwood seedling and saplings and various shrub and fern species are present. Japanese stiltgrass is becoming dense in many parts of the central portions of the stand. In some areas larger trees have fallen over or died and the understory vegetation is much denser. A small opening within this stand that was once planted with flowering trees and shrubs seems to have been abandoned and is now overgrown. In addition to stiltgrass, other invasive plants noted include bittersweet, privet, and some very dense barberry. Native species present throughout the stand include spicebush, fern, sedge, *rubus spp.*, winterberry, and occasional oak, ash, and holly saplings. A forested wetland is of this stand.



Trees in this stand are growing relatively close to each other and the understory is dominated by invasive plants. The live crown ratios of many of the softwood trees are fair. Releasing some trees from competition could help more vigorous trees retain crown.

Soils:

Stand 3 is underlain by Hadley silt loam, a moderately permeable soil with a high moisture holding capacity. In early spring and late fall there is a hazard associated with flooding.

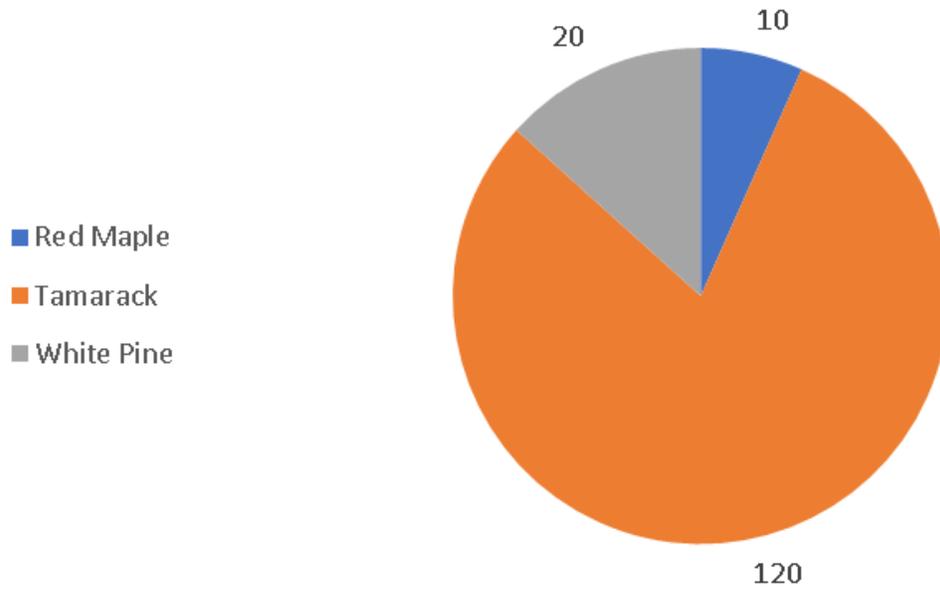
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Vol- ume/acre	Volume/acre AGS
Seedlings			0			
Saplings			150		8.7^ cord	6.9^ cord
Sawtimber trees	110	90	90	73	13.8 MBF	11.4 MBF
Poletimber trees	40	20	104	66	4.8 cord	0.8 cord
Snags	0		0			
Total	150	110	194	139		
MSD*	11.9					

*Quadratic Mean Stand Diameter

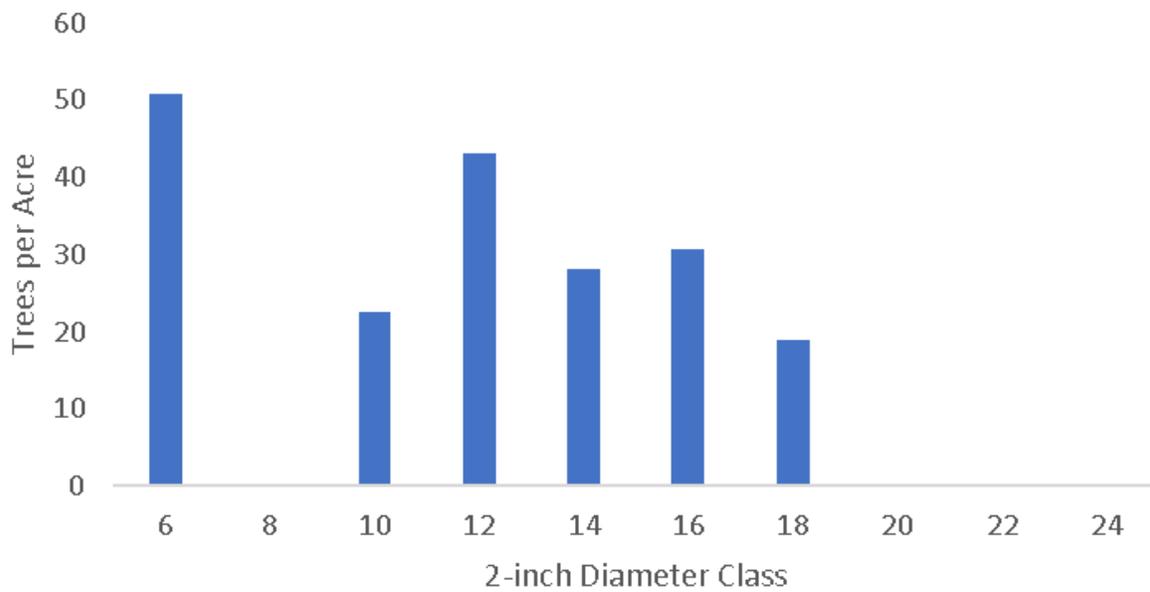
** Total trees includes sawtimber and poletimber-sized trees only: MBF= Thousand board feet

BA= Basal area and is given in square ft./acre; ^=Firewood volume from trees >12" DBH

Stand 3 Basal Area (ft²/ac) by Species



Stand 3 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Limit invasive plant populations
- Functional and diverse wildlife habitat
- Maintain viable softwood component
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

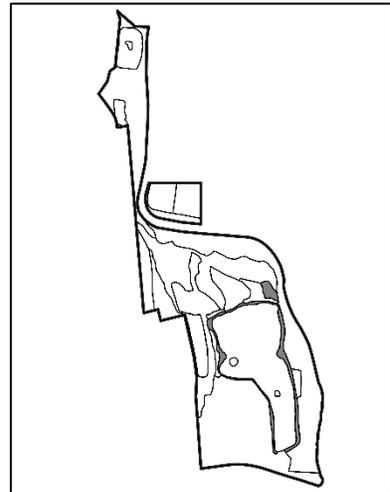
Attempt to maintain this area as a mixed softwood stand. Because the younger hardwoods are beginning to outcompete the softwoods conduct a light thinning to remove hardwood trees. Simultaneously remove softwoods with less than 10% live crown that are competing with more vigorous softwoods to help maintain overall stand vigor. Invasive plants should be treated throughout this stand to free up growing space for more desirable native species in the understory. If areas of mortality are noted where sunlight is reaching the forest floor replant with softwood species to help ensure this cover type is perpetuated here. Species that can survive in low light conditions include spruces and firs. Pine, more larch or cedars could work along edges if opportunities exist to plant there. Having softwood pockets within a larger hardwood forest matrix can allow more diverse species of wildlife to use an area including bird species like pine warbler and Blackburnian warbler.

Future Management:

Monitor and spot treat invasives in this stand as necessary. Where opportunities exist for plantings to maintain softwood cover determine appropriate species and plant in fall.

Stand 4: Mixed Hardwood Saplings and Poles (8.4 Acres)

This stand is in five small blocks that grow in a narrow strip that surrounds Spring Lake, and a finger that extends northward from the northeastern tip of the lake. The ribbons of forest along Spring Lake contain saplings, poletimber, and a variety of shrubs forming a dense low-growing buffer around the lake. All portions of this stand are easily accessed via the road that loops around Spring Lake, and via the trailhead-wellhouse gravel road. The stand is free of rocks and is flat, other than the short drop along the shoreline of Spring Lake.



The vegetation in this stand grows very densely and is diverse. Tree species noted includes red maple, black birch, sycamore, quaking aspen, willow, apple, boxelder, hickory, elm, cottonwood, dogwood, silver maple, pin oak, black oak, white pine, red cedar, locust, and some Chinese chestnut are some of the species observed. The trees are crowded but generally in good health. Invasive plants noted here include bittersweet, mugwort, rose, barberry, olive, privet, Norway maple, burning bush, and garlic mustard among others.

Some woody material from fallen trees in this stand are present along the edges of Stand 8 (primarily Spring Lake). The partially submerged branches serve as excellent basking habitat for turtles, frogs, snakes, and perches for songbirds and waterfowl.

Soils:

This stand is mostly underlain by Rip-powam fine sandy loam and Winooski silt loam. These are both alluvial/floodplain soils. These tend to occur along rivers and other streams and are subject to flooding. Windthrow can be a severe hazard because of the saturated soils and shallow root systems.

Desired Future Conditions:

- Limit invasive plant populations
- Viable softwood component where appropriate
- Functional and diverse wildlife habitat
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics
- Enhance structure for wildlife where feasible and appropriate



Creating some additional partially submerged trees can help provide additional habitat features for birds, reptiles, amphibians and others.

Management Recommendations:

Based on its size, orientation, location, and condition, this stand is not recommended for active management at this time. The trees are competing with each other, and the dominant individuals are beginning to capture the most growing space. Allow the majority of this area to continue to develop. Release several cedar and apple trees in the northeastern portion of the stand. Invasive plants should be treated throughout this stand to improve habitat value and reduce the amount of invasive seed present on the property. Where invasive plants are removed, once control is gained from sprouts etc. replant with native alternatives if feasible. Examples of appropriate shrubs include dogwoods, arrowwood, willows, and alder among others.

Where gaps exist, plant additional softwood species in groups or strips. Planting softwoods in groups as opposed to singly makes it more likely that they'll be able to serve a useful purpose for habitat for species that require softwood.

Where feasible, intentionally fell two additional trees along the shoreline into Spring Lake to provide additional basking sites. Attempt to retain a connection to the stump so the tree stays in place.

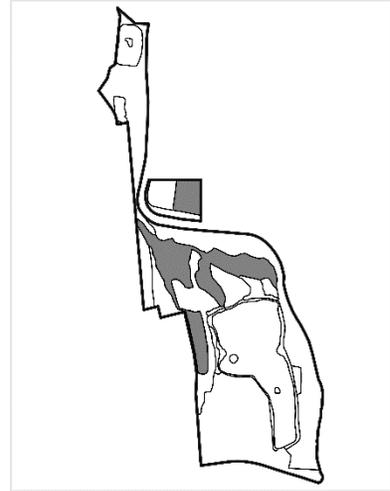
Future Management:

- This stand should be allowed to develop naturally, except for the release of several cedar and apple trees.
- Monitor and spot treat invasives as necessary.
- Monitor areas where fishing access has resulted in erosion. Address as needed with stone, fill, fabric or other materials to ensure water quality and user safety is maintained.

Stand 5: Meadows (36.7 Acres)

This stand contains 36.7 acres of meadows located in several areas throughout the property. Most of the meadows are easily accessed via the gravel road around Spring Lake. One meadow lies on the eastern side of the Farmington River and must be accessed via Pine Hill Road. All the meadows are extremely flat with no rocks.

The areas north of Spring Lake contain some species useful to wildlife. Willow produces flowers in early spring which can benefit the early season pollinators. Alder is growing densely in the northwestern block of this stand which provides excellent cover and potential nesting area for species like ruffed grouse or American woodcock. The area east of the river is composed of shrubby conditions with regenerating forest. White pine, eastern redcedar, cherry, ash, hawthorn, and many herbaceous species (e.g., mullein, milkweed, aster, yarrow, goldenrod, etc.) are mixed with bittersweet, olive, and mugwort here.



The alder in this meadow provides excellent cover for species like American woodcock or ruffed grouse both of which will use thickets of alder for nesting or breeding.

At one time this area had been planted to corn on a rotating basis but are now meadows. These agricultural fields provide a very different habitat type than that of the closed canopy forest that dominates the rest of the property. These areas are maintained by Town brush hogging crews when time allows and there are some trails that are mowed in the meadows that are maintained somewhat more regularly to allow trail users to access the interior of the meadows.

The field-forest edge contains a wide variety of vegetation that many species of wildlife utilize. The edge condition has continued to increase in size as the maintenance of the meadows is decreased. Invasive plants are established along much of this edge and in islands of vegetation in the interiors of the meadows, decreasing its wildlife value and diversity. Invasives noted here include barberry, bittersweet, rose, and autumn olive. Treating these invasives and encouraging native vegetation to become re-established, by

planting if necessary, would improve the habitat value of this stand. Bird species noted in this stand include song sparrows, yellow warblers, common yellowthroat, grey catbirds, red-winged blackbird, orioles, chestnut sided warblers, and rose-breasted grosbeak. Turtles, frogs, and other amphibians use the meadows when they are flooded and perhaps at other times. Though invasive plants are increasingly becoming a larger part of the makeup of the edges and interiors of this area are still primarily grasses and herbaceous species including goldenrod, milkweed, and other native wildflowers. Alder and sensitive fern in the northwestern meadow indicate a relatively high water table.

Since the writing of the last plan, the southernmost occurrence of this stand has been converted to an athletic field and is now included in Stand 7.

Desired Future Conditions:

- Limit invasive plant populations
- Continue to keep as open areas with regular mowing
- Functional and diverse wildlife habitat
- Enhanced diversity of native species of shrubs, herbs, and small trees
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

These areas are important for wildlife habitat, wildlife viewing, and hiking. Regular mowing of these meadows should continue, ideally on a rotating schedule that allows for the meadows to be mowed at different times to further enhance diversity. Mowings should occur in fall after the wildflowers are done blooming so late season pollinator activity is prolonged. Soil moisture in these areas is high so mowing will need to be done at times when things are frozen, but not snowy or dry.

Attempt to control the invasive plants in the interior and along the edges of the meadows. Remove olive and replace with native alternatives including dogwoods, willow, alder, winterberry, nannyberry, inkberry, northern arrowwood, or others.

Periodically cut the regenerating trees in the northwestern block of this stand (every 5-10 years) to maintain densely growing young forest conditions along the edges. Prune branches of trees on edges that are beginning to encroach on the meadows so they don't shrink over time.

Future Management:

- Regularly monitor for invasive plants and develop a plan for treatment.
- Develop a long-term plan for mowing schedules to diversify habitat conditions from meadow to maintained shrubland and even some young forest conditions
- Soften field edges as feasible
- If legal and reasonable access can be gained to the eastern block of this stand periodically reset succession by using a forestry mower to clear all or portions of the field at a time.

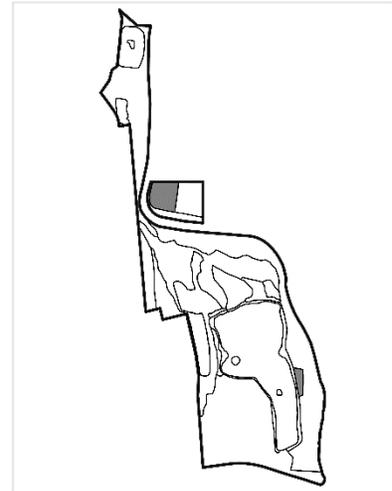


Above: The combination of shrubs, herbaceous species, and young trees provides unique but ephemeral shrubland habitat east of the river in Stand 5. If legal access can be gained to the parcel, attempting to manage it on a rotation to maintain shrubby and diverse conditions would benefit the species that utilize this condition.

Stand 6: Old Fields - Unmaintained (6.2 Acres)

There are two blocks of this stand. The smaller of these areas is along a portion of the trail system east of Spring Lake. This area contains a mix of herbaceous growth and shrubs. The majority of the shrubs are invasive autumn or Russian olive. Currently the area provides a soft edge between the pond, mowed area along the trail and mature forest beyond.

The larger of these blocks is on the eastern side of the Farmington River. The Town has no legal access to this area. This area is a mix of scattered +/- 30 ft. tall trees with an impenetrable shrub layer of invasive plants underneath. Tree species noted include catalpa, white pine, mixed oaks, cottonwood, black cherry, and eastern red-cedar among others. Autumn olive is the primary plant noted in the understory.



A narrow strip of high-quality riparian forest grows between this stand and the Farmington River. The strip contains very large diameter red and black oak trees along with poletimber-sized red maple and smaller musclewood. Hemlock is present in the midstory and appears to be free of HWA. Tree regeneration in this strip includes cherry, red oak, black oak, sugar maple, ash, and occasional hemlock. In addition there is some white pine several of which show signs of browse damage. Maple-leaf viburnum and witch hazel are the primary understory species noted with a variety of other herbs including false Solomons seal. Barberry, bittersweet, and burning bush are all present in the riparian forest.

This young forest plays an important role in the ecology of the area. There is a limited amount of contiguous young forest in the region. This stand's landscape position in close proximity to the river, mature forest, open fields, and shrubby area (Stand 5) adds a lot to the matrix of habitat opportunities in a relatively small geographic area.

Desired Future Conditions:

- Maintenance as young forest/shrubby area
- Diverse populations of native shrubs, herbs, and small trees

- Functional and diverse wildlife habitat
- Limit invasive plant populations
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics



The gradual transition from open, maintained area to mature forest that this shrubby strip creates, provides useful cover and nesting features for wildlife. Periodically clearing the area and allowing it to regenerate can help maintain its utility. If feasible, replacing invasive olive shrubs with native alternatives over time can enhance the ecological function of the area.

Management Recommendations:

Remove and replace the olive in the smaller block of this stand east of Spring Lake with desirable native alternatives. Periodically continue to brush hog this area to keep it in herbaceous and shrubby growth to maintain the soft edge.

If legal and reasonable access can be gained to the eastern block, **and** if clearing work is to be done in the adjacent portion of Stand 5, regenerate all or a portion of the young forest in Stand 6 simultaneously. Similar to the intent in Stand 5, this would allow for the perpetuation of the benefits that young forests offer for wildlife, which are inherently ephemeral (generally 15 years or less). Prior to cutting, treat any invasive plants present.



Narrow strip of young forest along the edge of this stand east of the river.

Future Management:

- Continue to keep the western occurrence of this stand in shrubby condition with periodic mowing/cutting.
- If legal and reasonable access can be gained to the eastern block of this stand periodically reset succession by cutting all or portions of the area and allowing them to regenerate.

Stand 7: Recreational Fields, Parking & Mowed Areas (46.8 acres)

This stand contains 48.7 acres, consisting of recreational/athletic fields, parking areas, and mowed/maintained areas.

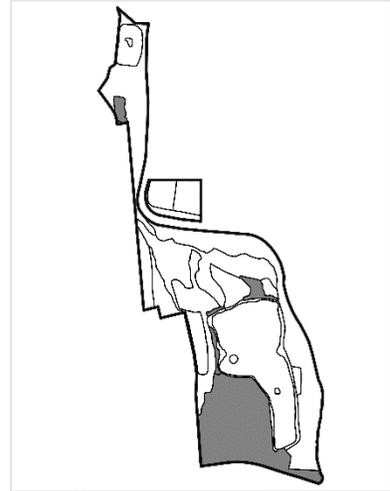
Desired Future Conditions:

- Limit invasive plant populations
- Viable softwood component where appropriate
- Functional and diverse wildlife habitat
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Continue to manage these areas as needed to ensure their appropriate function. Install some paired nest boxes in places to allow for bluebird nesting. Ensure that these are at least 50 ft. from densely growing vegetation to limit the likelihood that the boxes will be inhabited by house wren. The paired boxes should be approximately 10-15 ft. apart from each other and can allow the use of one box by species like tree swallow and bluebirds in the other. If this is done, regular maintenance is required to ensure proper function.

If plantings are needed along parking areas or in other places choose native species that can provide sources of nectar, pollen, and mast.



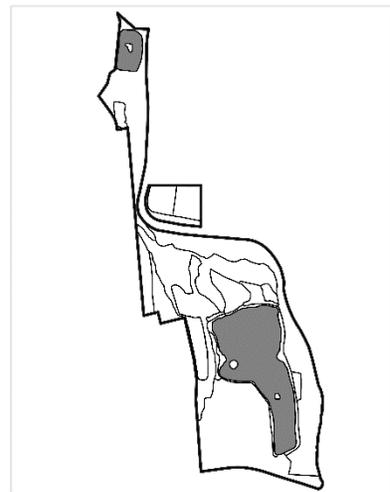
Stand 8: Water (47.0 Acres)

This stand contains 47 acres of open water, consisting of Spring Lake and a pond in the northern end of the property, to the east of Wills Walk.

2.2.9 Recommendations

Previous management plans have called for boundary marking and trail construction activities, and only very limited forest management within Fisher Meadows. A continuation of these activities is generally recommended for this plan, along with some additions.

1. Due to the location, size, and orientation of the forested areas within Fisher Meadows, thinning and other forest management activities that actively manipulate forest structure are generally not recommended at this time, except in specific areas detailed below.



2. Invasive species are a major problem on this property. Continued efforts should be made to control these species where they exist and prevent further spread.
3. A wide variety of recreational activities should continue to be encouraged on this property and expanded where possible.
4. A portion of the boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place.
5. Only minor erosion and sedimentation was noted at the fishing access points around Spring Lake and along the Farmington River, but given the property’s extensive water frontage, this should be regularly monitored to ensure continued bank stability.
6. Ten-year management plans should be used to guide future forest management activities on this parcel.



Dock at the northern end of Spring Lake

Recreation Improvement Recommendations

Fisher Meadows is a very active recreational area with an array of activities available. It is generally recommended that this combination of activities be continued and enhanced through the following recommendations. Many of the recommendations from the last management plan have been implemented so fewer recommendations are made in this plan.

1. Minor erosion control measures are recommended at the property’s canoe launch and fishing areas around Spring Lake and along the Farmington River. While currently minor, erosion issues can quickly grow, and should be regularly monitored.
2. Better signage is highly recommended at the far northern end of the property. Under current conditions, it is very easy for trail users to wander off of Town property.
3. Many of the existing trail blazes are becoming faded and should be refreshed.
4. All trail blazes along abandoned trails should be removed. These could be confusing to walkers/hikers, especially those not familiar with the property.
5. Regular maintenance of all trails is recommended to remove trash and debris such as fallen branches/trees and check for erosion.
6. The property should continue to be made available to schools and other groups for research or education programs. With good access, easy terrain and a mixture of land uses, Fisher Meadows is an excellent spot to bring groups for field trips dealing with a variety of natural resource issues.
7. Examine culverts and bridges to determine if any upgrades are needed to ensure proper function with higher volumes of precipitation

Fisher Meadows		
Summary of Management Activity by Stand		
2024-2033		
Year	Stand/Area	Treatment
2024-2033	All	Monitor and Treat Invasive Plants
2024-2033	All	Maintain Trails/Recreation Infrastructure
2024-2033	All	Maintain Boundaries
2024-2026	1	Treat Vines (All within 50-60 ft of Trail; Invasives Throughout)
2027	3	Thinning of Hardwoods
2027	4	Release Cedars and Apples in Northeastern Portion of Stand
2024-2033	5	Maintain Mowing or Initiate Haying

2.3 FOUND LAND CONSERVATION AREA

2.3.1 Property Description

Found Land Conservation Area consists of 122 acres in the northwestern portion of Avon, just south of Windsor Court, Scarborough Drive, and Queens Peak. The eastern portion of the property abuts the Canton town line to the north. The property is surrounded by residential development except for the southwest, where it abuts Huckleberry Hill (on the other side of Northington Drive), and the southeast, which is privately owned but undeveloped.

Found Land is fully forested, consisting primarily of an oak/hickory forest type. It is mostly dry, with one area of wetter soils in the eastern portion of the property. The main entrance is at the end of St. Michael's Court where there is a small parking area and information kiosk. A trail loops within the property and has several spur trails that provide good pedestrian access to the property for residents. Since the writing of the last plan, use of this property by mountain bikers has increased and there are many unauthorized trails cutting across much of the property making many more trail connections than are shown on official trail maps.

A forest management project occurred on much of this property in 2005-2007. Scarlet oak, red oak, and black oak were the primary species removed. The treatment has resulted in the establishment of a new age class and size class of trees. Understory in this property is almost completely native and ranges from densely growing mountain laurel to huckleberry/blueberry to hemlock with diverse tree seedlings established throughout. There is a very high population of American chestnut saplings scattered throughout the property.



The densely growing mountain laurel shown here in Stand 2 frames the trail along the southern property boundary. Regular maintenance of the vegetation along the trail is needed otherwise the laurel would cover it quickly.

2.3.2 Property History

The Town of Avon acquired the Found Land property in a rather interesting way. When the Town did the first revaluation with mapping in the 1950s, it was found that this property had no owner. The property was then granted to the Town through a Special Act by the State Legislature.

Prior to that, not much is known about the property. Because of the poor soils, it is unlikely that the land was used for agriculture, though the presence of two stone walls located in the southeastern corner of the property suggests grazing of animals took place, probably in the late nineteenth century.

2.3.3 Access

Good access exists for people interested in hiking on the property. A parking area and trailhead are present at the end of St. Michaels Court (though somewhat dilapidated; see below). Additional trails extend from the end of Foundland Way and from along Windsor Court. The existing trail system connects to Northington Drive on the property's southwest boundary, though there is no signage indicating this entrance. Much of the use of Found Land by the public appears to be in the form of hiking, and dog walking, though mountain biking and unmarked trails are abundant.



The milkweed and goldenrod at the old log landing in the northcentral portion of Stand 1 provide excellent sources of native nectar and pollen.

No trails facilitating unauthorized access by motorized vehicles were identified.

Access for forest management activities was previously available from the end of Lofgren Road and along Windsor Court. Significant development around the perimeter of Found Land may complicate future access for management activities. Paved roads with curbs now fully encircle Found Land, except for the end of St Michael's Court, which does not have a curb and may provide reasonable access. The last log landing was in the northcentral portion of the property and now contains milkweed, goldenrod, grapevine, and a mix of other native herbs.

2.3.4 Wetland and Watercourses

Most of the Found Land property consists of dry upland. In the eastern portion of the property, between St Michaels Court and Princeton Drive, there is an area that is somewhat wet, but is not mapped as wetland soils according to statewide data. This area drains to the south, creating an ephemeral stream that connects to a wetland located south of the property. There is also a small pocket of wet soils in the western portion of the property near Northington Drive. This area has some recently blown over trees with relatively shallow, spreading root systems indicating the presence of a high water table.

2.3.5 Rare, Endangered or Species of Special Concern

According to the State's Natural Diversity Database (June 2023 update), no rare or endangered species have been reported on or abutting the Found Land property.

2.3.6 Invasive Species

Invasive plants were noted at Found Land, although at very low densities in most places. Access points, as is usually the case, have relatively dense invasives but they do not extend far into the forest interior. Treating invasives at access points as soon as possible will help keep most of the Found Land Conservation Area invasive-free. Japanese stiltgrass, phragmites, privet, locust, mugwort, purple loosestrife, coltsfoot, and barberry were all noted, but at low densities and just along edges.

2.3.7 Recreation

Parking

Other than street parking along the adjacent town roads or in cul-de-sacs, the only parking area is located at the end of St. Michaels Court. This is the main access point for visitors to Found Land and includes signage and an information kiosk. However, each of these amenities is in a state of disrepair. Furthermore, the Found Land sign itself, located on the St. Michaels Court cul-de-sac is somewhat overgrown. Another kiosk at the end of Found Land Way also has a kiosk but no information is posted on it. The kiosks should be maintained and standardized to provide relevant information to property users.



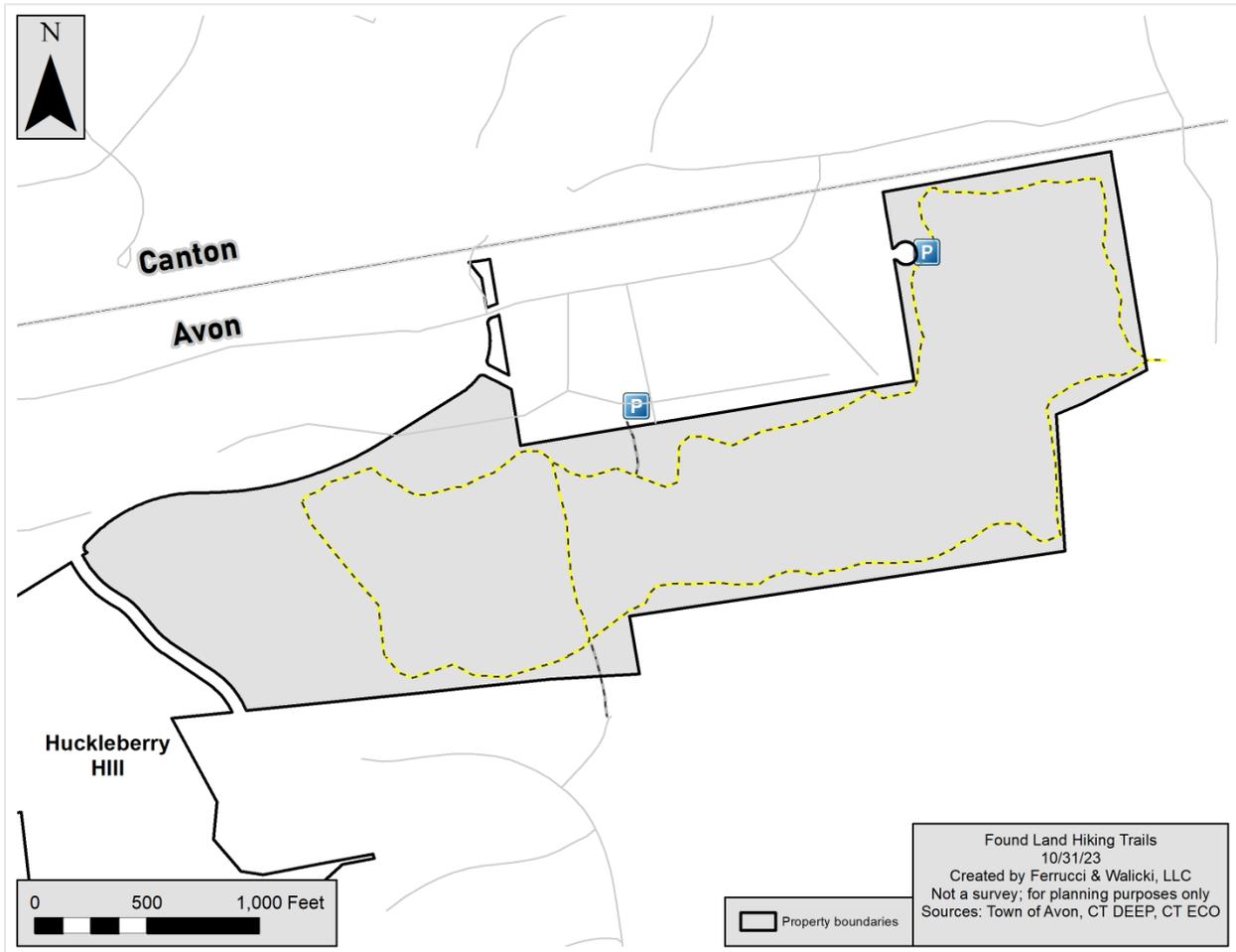
The yellows of the hickory, chestnut, and beech in the western portion of Stand 2.

Trails

A yellow-blazed hiking trail currently loops through the property (see map on following page) and includes several access points from the surrounding neighborhoods. The trails are mostly dry with a little bit of elevation gain in the central and eastern portions of the property and flat in the west. Erosion is occurring on the official trails in the north-central and southcentral portions of the property where the trails are on some steeper ground.

The worst of these areas is located just southeast of the end of Scarborough Drive. Runoff from the residential area there has created some very significant erosion along the trail. This has worsened since the last plan was written. At this point in time, the erosion is significant enough that rehabilitation of the trail would be difficult. Instead the trail in this area should be rerouted, taking into account the current volumes of water to avoid the possibility of new erosion on a rerouted trail occurring in the future.

Many new, unmarked trails have been constructed in recent years. These trails are most abundant in the central portion of the property. Although some of these trails are sited in such a way that they will not cause significant erosion, the number of trails in some places degrades habitat quality. Additionally, the Town may not want to set the precedent that unauthorized trail construction is permitted. The Jeep that was noted in the 2009 plan is still present on the property (southeast corner).



Environmental Education

The trails in Found Land host a series of numbered posts designating stations of an interpretive loop, but the accompanying brochures have not been replenished at the information kiosks located in the parking area off St Michael’s Court or at the end of Found Land Way. If the Town is still interested in hosting the interpretive trail, making sure that the tree signs are still hung in appropriate places and migrating the trail information to an online platform accessible with a QR code or some other method may make more sense than paper. Many of the numbered posts themselves are in disrepair and should be repaired or replaced if the Town decides to continue to offer this experience to property visitors.

Tree signs and markers along portions of the trail indicate the past educational efforts the Town has created. These have not been maintained and are beginning to fall apart.



2.3.8 Forest Management

The current open space and forest management program should be continued to maintain the health, aesthetic appeal, diversity, resilience, and stability of this valuable forested property.

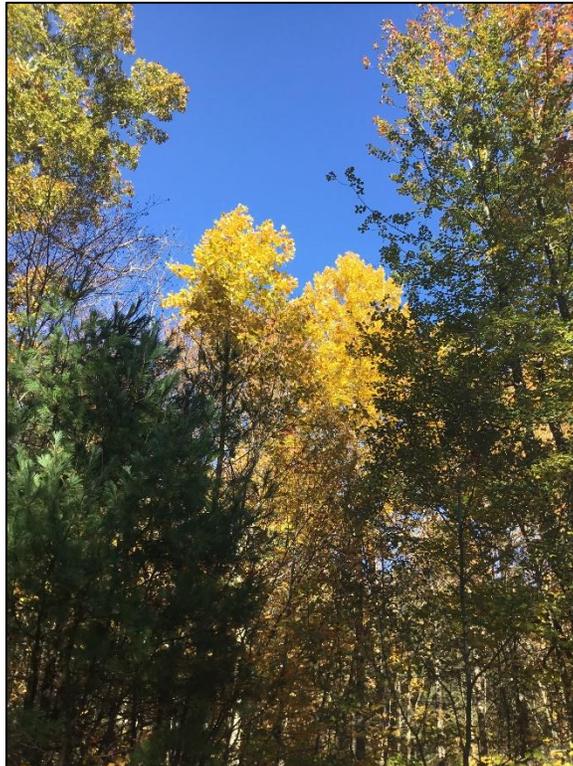
Stand Descriptions and Management Recommendations

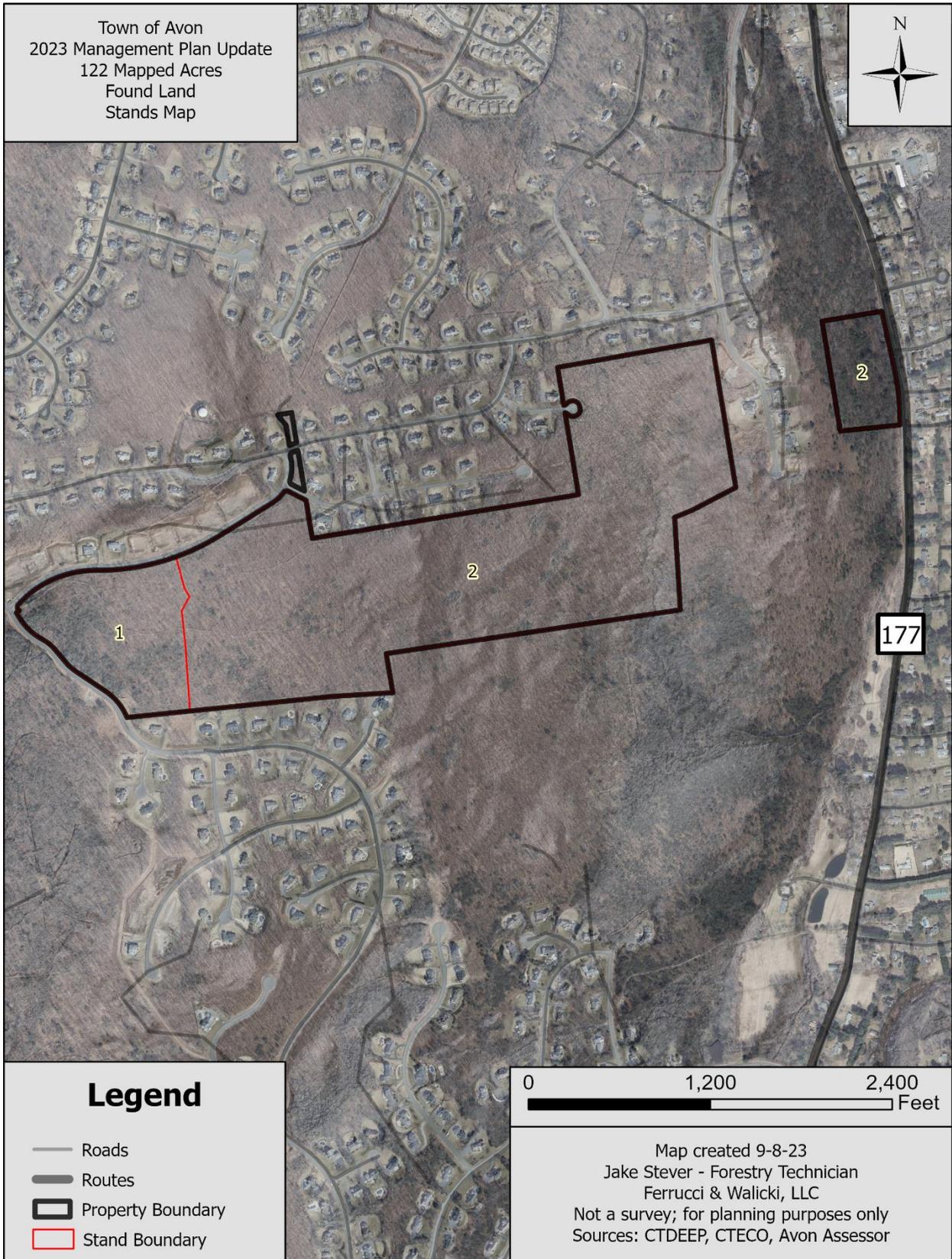
Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it easier to correctly describe the property and to make appropriate recommendations. Once identified, each stand is treated separately based on its unique characteristics. The forest on Found Land consists of two stands.

NOTE: Since the 2009 forest management plan update was done, the Town acquired additional land west of Northington Drive. That parcel now connects the Huckleberry Hill Recreation Area to the small block of forestland west of Northington Drive that was part of this property’s description in the last plan. Because the land west of Northington is now fully contiguous, Found Land is now being described and mapped as the portion of the property east of Northington Drive. All the land west of Northington Drive is now considered a part of Huckleberry Hill Recreation Area.

Found Land Stands

<u>Stand</u>	<u>Acres</u>	<u>Description</u>	<u>Recommendations</u>
1	18.4	Mixed Hardwood Sawtimber and Poletimber	Patch cuts and thinning
2	102.4	Oak-Dominated Sawtimber	Group selection

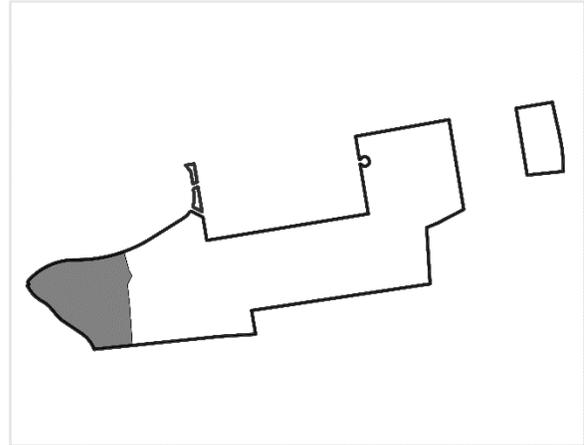




Stand 1: Mixed Hardwood Sawtimber and Poletimber (18.4 acres)

Description:

This 18-acre stand is located south of Windsor Court and abuts Northington Drive to the west. The north-east extremity of Huckleberry Hill used to be a part of this stand but has been considered part of Huckleberry Hill since the purchase of another parcel which connects Huckleberry Hill to Northington Drive. The land is mostly flat with very few rocks, and it is relatively easy to move through the stand. The stand is relatively healthy and productive. It is approximately 100-115 years old and is a red oak-dominated mixed hardwood stand. Most of the sawtimber-sized trees are tall with large crowns. This is especially true for the red oaks. The scarlet and black oaks in the stand have slightly poorer quality crowns and are showing some signs of decline with branch and tip dieback. The stand is well stocked; the current basal area is 133 square feet per acre, with high quality, preferred species. This stocking level is somewhat above the stand's optimum level to retain individual tree vigor but this is not adversely affecting the trees.



The stand was treated approximately 30 years ago and was followed by a light FSI operation to remove some of the unmerchantable stems. Some trees were girdled at that time to release other trees. Remnants of successfully girdled trees can still be seen in the central and northern portions of this stand. This work released many crop trees and created some gaps in the canopy that increased the amount of light reaching the ground, although the gaps have closed at this point. This process stimulated the growth of the existing regeneration and promoted the establishment of some new regeneration. There are many seedlings of a variety of species in the understory, but the midstory and overstory are dense enough currently that the seedling crop will likely not become a viable part of the future forest here without another disturbance to increase sunlight availability reaching the ground. The gaps created by these treatments encouraged the development of a new size and age class of trees that currently occupies the midstory.



The tree on the right (left photo) was girdled to release the other tree from competition for sunlight. The girdle was successful and the retained tree grew tall and has a full, healthy crown (right photo).





The bright yellow, long, serrated leaves of American chestnut seen here along the stand's southern boundary is a typical sight in fall given the amount of chestnut in this stand.

The understory has a large variety of poletimber species present. White, black, and scarlet oak, hickory, red maple, black birch, and hemlock are all present. In addition, there is a remarkable amount of American chestnut in the understory and midstory. A relatively densely growing hemlock midstory is present in the western portion of the stand in wetter soils closer to Northington Drive. The ground layer is a dense mix of blueberry, huckleberry, maple leaf viburnum, mountain laurel, witch hazel, hog peanut, false Solomon's seal, Indian cucumber root, and a variety of ferns, as well as oak, maple, birch, white pine, hemlock, and tulip poplar seedlings and saplings. No invasive plants were noted in the interior of this stand.

Soils:

The soils of this stand are classified almost entirely as Woodbridge fine sandy loam with 2 to 8 percent slopes and very stony. This soil is moderately well drained and formed in subglacial till. It is well suited to grow high quality trees because of a moderate to high moisture holding capacity.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			1000			
Saplings			233		4.3^ cord	4.3^ cord
Sawtimber trees	87	87	57	57	9.9 MBF	9.9 MBF
Poletimber trees	47	20	166	78	3.2 cord	1.8 cord
Snags	7		49			
Total	133	107	223	135		
MSD*	10.5					

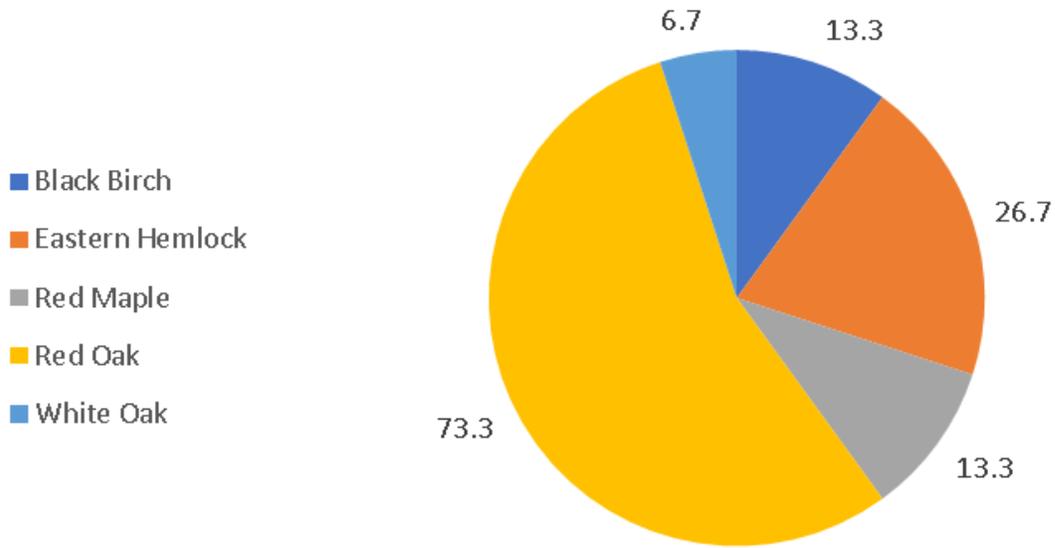
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

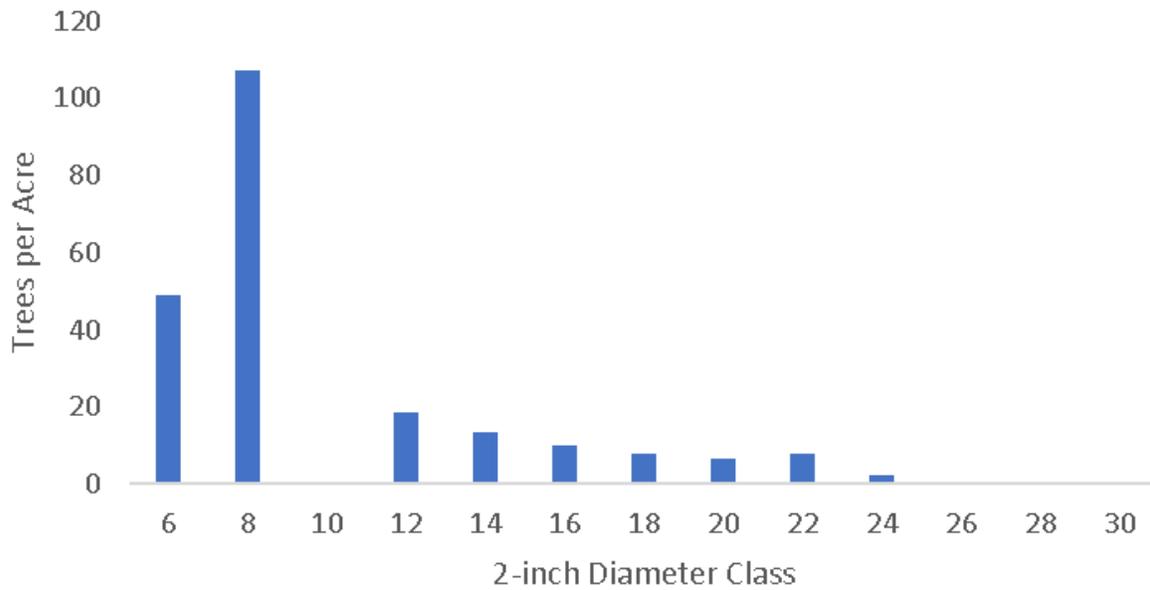
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

Stand 1 Basal Area (ft²/ac) by Species



Stand 1 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Continue to limit invasive plant populations
- Viable softwood component
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Create several small (1-1.5-acre) patch cuts to release desirable regeneration and diversify the stand’s structure. Because desirable regeneration is relatively abundant and the overstory trees are of desirable species and fair to good quality, this operation is likely to be financially feasible, especially if combined with the work in Stand 1. Focus patches on locations where less desirable or declining overstory trees are overtopping vigorous regeneration of desirable species. Between patches conduct a thinning to enhance growing conditions for retained trees. Retain trees of a variety of species, particularly oaks, hickories, tulip poplar, white pine, yellow birch, and healthy hemlock. By creating some gaps within which all trees are removed and releasing some poles, trees of all size classes will be released and able to grow faster, significantly improving the structural complexity, resilience, and habitat value of this stand. Retain trees with potential for wildlife use including any actively use cavity trees and future potential cavity trees. Limit damage to existing chestnut sprouts.

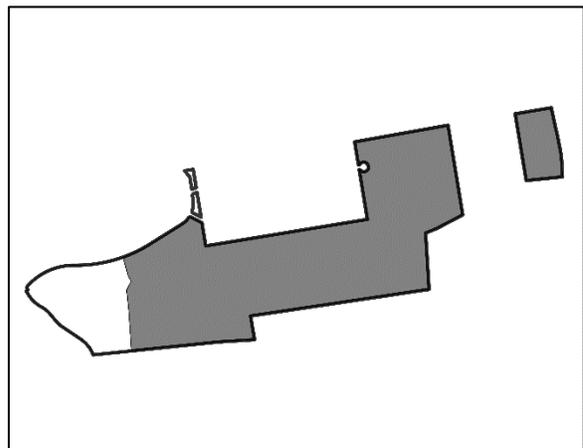
Future Management:

A similar treatment should be performed in 15 to 20 years. By creating small gaps on a rotating schedule, a mosaic of habitat conditions can be maintained on the landscape.

Stand 2: Oak-Dominated Sawtimber (102.4 acres)

Location, Access and Terrain:

This 102-acre stand is located along the relatively flat hilltop and the moderately sloping east-facing hillside in the center of the property, and along the gentler west-facing slope at the extreme east end of the property. It is located just south of Windsor Court and Scarborough Drive and extends north between St. Michaels Court and Princeton Drive. There are a few scattered rock outcrops along the hilltop, but otherwise access through the stand is easy.



Stand Description:

The dry, gravelly soil conditions are more well-drained and are of somewhat lower productivity than many of the other areas described in this plan. The trees in this stand are approximately the same age as the trees in Stand 1, but the tree species is heavier to black and scarlet oak and there are much more signs of

decline than in Stand 1. The current basal area for the stand is 88 square feet per acre, with most of that being sawtimber-sized trees. At the writing of the last plan, only half of this stand's volume was sawtimber-sized trees and now it represents the majority indicating that ingrowth has occurred.

This stand was thinned 17 years ago. The treatment removed much of the low-vigor, poor quality scarlet, black and red oak in favor of the medium to good quality red oak stems. The result was a well-spaced stand with a higher percentage of fair to good quality trees, and a smaller percentage of low quality black and scarlet oak. The black and scarlet oaks currently in the stand are

showing signs of decline. The red oaks appear to have well-balanced crowns and appear to have responded well to the additional growing space created during the last treatment. There are a significant amount of oak and other tree seedlings in the understory throughout the stand. Currently there is not enough sunlight reaching the ground to allow them to grow rapidly.



A mix of oak, pine, maple-leaf viburnum and other native species like blueberry and huckleberry (the latter two of which are note shown in this photo) are prevalent in the understory of this stand.

The understory is composed of a mixture of blueberry, mountain laurel, witch hazel, striped pipsissewa, *rubus spp.*, shinleaf, wild strawberry, partridgeberry, fern, and maple-leaf viburnum, as well as birch, maple, chestnut, sassafras, hickory, and oak seedlings.

The valley bottom at the eastern end of the property has a similar species composition as the rest of the stand, but the site quality is somewhat better because the soil is deeper and more fertile. Red oak is most common here, but white, black and scarlet oaks are also present. This area was treated at the same time as the rest of the stand and should continue to be managed the same in the future.

Soils:

There are basically three areas with different soils in the stand that can be generally characterized as the hilltop, the hillside, and the valley bottom. While these areas blend together, the soils can be classified in the following manner:

The soils of the hilltop in the center of the property are classified as Canton and Charlton soils with 3 to 15 percent slopes (very stony). These are well-drained soils formed in a fine sandy loam mantle underlain by sandy glacial till. The soil ranges from extremely acid to moderately acid.

As the ground slopes down to the east with moderate to very steep slopes, two predominant soil types are present: Hollis-Chatfield-Rock outcrop complex with 15 to 45 percent slopes and the Charlton-Chatfield complex with 3 to 45 percent slopes (very rocky). The Charlton-Chatfield complex is again present on the western-facing hillside on the opposite side of the valley, next to the eastern boundary of the property.

These are shallow, very well drained, and sometimes excessively drained soils ranging from very strongly acid to moderately acid and often possessing rock outcrops.

In the valley, we see Woodbridge fine sandy loam with 2 to 8 percent slopes (very stony) and Sutton fine sandy loam with 2 to 15 percent slopes (extremely stony). These are moderately well drained soils with slow to medium surface runoff.

Based on our measurements the site index in this stand was calculated to be approximately 55, which is at the low end of the possible range that is generally associated with these soil types for this forest type.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Vol- ume/acre	Volume/acre AGS
Seedlings			2933			
Saplings			627		5.4^ cord	4.9^ cord
Sawtimber trees	71	65	60	56	6.0 MBF	5.5 MBF
Poletimber trees	17	13	42	29	2.2 cord	1.9 cord
Snags	4		4			
Total	88	79	101	86		
MSD*	12.6					

*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

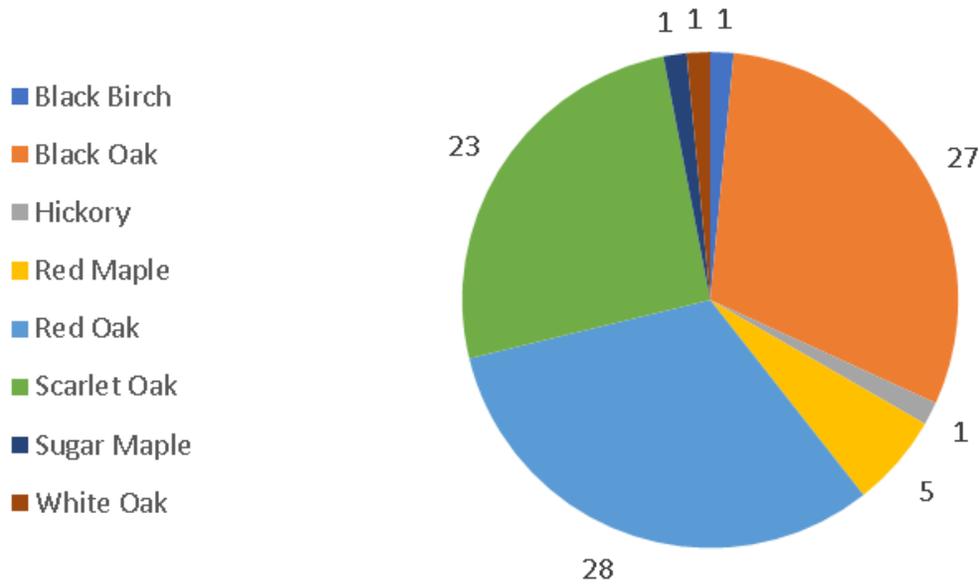
MBF= Thousand board feet ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

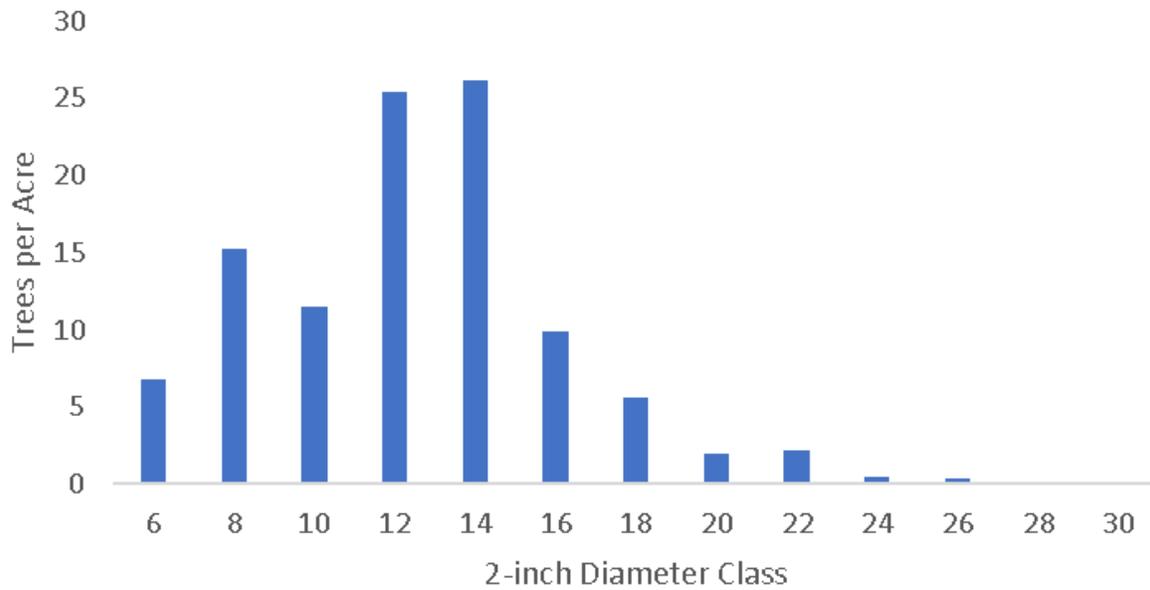


The composition and condition in the central portion of Stand 2. The lack of invasive plant species on most of this property is notable.

Stand 2 Basal Area (ft²/ac) by Species



Stand 2 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Continue to limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

The management within this stand should mirror that within Stand 1, although the results will be slightly different due to the differing soils and landform. Use group selection to create canopy gaps above desirable regeneration where it exists including tree regeneration and blueberry/huckleberry. Increasing sunlight to the low growing shrubby species can increase flowering, fruiting, and density which enhances a variety of conditions for pollinators and wildlife. Focus group selections in areas with higher percentages of poor quality or declining trees as well. Retain large diameter red and white oak that appear to still be growing well in addition to hickory, white pine, sugar maple, and healthy hemlock. Well-formed, vigorously growing poletimber-sized trees of any species should be retained.

Future Management:

Entries to increase age class diversity and release existing regeneration should occur approximately every 15 to 20 years in this stand. Following a strict schedule is not necessary, and the additional structural complexity that can be created by varying the amount of time between treatments will likely have a positive impact on the stand's wildlife habitat value.

2.3.9 Recommendations

- 1 Locate and paint new boundaries; repaint existing boundaries. Boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place. Portions of the boundary have changed due to new residential development. Adjustments to the boundary should be located, posted with boundary signs, and painted.
- 2 Maintain the landscaping around the sign at the main entrance in the cul-de-sac at the end of St. Michael's Court. The sign is currently overgrown with vegetation.
- 3 Reroute the trail near the end of Scarborough Drive where it has been eroded. In planning a new route for the trail, be sure to consider the flow of water to avoid more erosion occurring in the future.
- 4 Continue regular maintenance of all trails to clear fallen trees and remove debris.
- 5 Update both kiosks with a new trail map and information. Post instructions on how to download the interpretive trail brochure from the internet (fwforesters.com would be pleased to host this service on behalf of the town).
- 6 Treat invasive plants around the perimeter of the property and at all access points, as well as wherever they exist in the forest interior.
- 7 Continue to actively manage the forest on the property to maintain vigor and diversity. Ten-year management plans should be used to guide forest management activities on this parcel into the future.

- 8 Formalize a policy on the construction of new trails. Consider decommissioning some of the many trails currently on the property and work with local user groups to find appropriate places for such use and to discourage riding/walking off trail and construction of additional trails.

Found Land		
Summary of Management Activity by Stand		
2024-2033		
2024-2033	All	Monitor and Treat Invasive Plants
2024-2033	All	Maintain Trails/Recreation Infrastructure
2024-2033	All	Maintain Boundaries
2029	1	Patch Creation
2029	2	Group Selection



Mountain bike use has increased significantly over time at this property.

2.4 HAZEN PARK

2.4.1 Property Description

Hazen Park consists of two parcels totaling 53.7 acres in the northeast section of Avon. The park is bounded to the west by Nod Road, to the north by residences on Hazen Drive, Pembroke Drive, and Ridgebury Road, to the south by residences on Woodford Hills Drive and Avon Land Trust property, and to the east by Talcott Mountain State Park. Hazen Drive runs between the two parcels that make up the park.

A small powerline Right-of-way (ROW) runs through the easternmost portion of the property. The easternmost part of Hazen Park lies within a Ridgeline Overlay Zone as shown on the town Zoning Map.

The most distinctive element of this property is its long, narrow shape combined with a nearly 700-foot change in elevation as the property climbs from the Farmington River valley floor to almost the top of Avon Mountain. In addition, the mixture of shrubby meadow/open area (in the western part of the property) and the densely growing, large diameter softwood stands combined with mixed hardwood create a useful matrix of habitats. This property also serves as an important travel corridor for wildlife from the Farmington River to the ridgeline further east. Wolf trees found scattered throughout the property indicate a time when this area was much more open.

2.4.2 Property History

The original portion of Hazen Park was donated to the Town in 1963 by Mrs. Maynard Hazen, who donated the property to the town in memory of her late husband; the park was officially dedicated in June 1964 (Hartford Courant, June 15, 1964). Mrs. Hazen stipulated that the land be used as open space and for recreation purposes. An additional 5.5 acres were added to the park in 1998 as part of the approval process for the Penbrook Crossing subdivision. At that time, a small parking area (deed restricted to 10 vehicles) was graded at the Nod Road end of the property, replacing an informal parking area within a temporary cul-de-sac on Hazen Drive. This cul-de-sac is now removed, with Hazen Drive now effectively cutting Hazen Park into eastern and western portions. The official parking area is not generally used by the public, and the property is most frequently accessed by parking on the side of Hazen Road where the trailhead to Avon Mountain begins.

1934 aerial photos show that a large portion of the property has been forested since at least that time. Cultural features on the property include two springhouses - one, near Nod Road, is active and maintained. A second historic spring structure is in the far eastern portion of the property. No stonewalls were noted but scattered wire fence remains are found on the property. An old drainage ditch is located along the southern boundary of the meadow (Stand 5) further indicating likely former agricultural uses.



A white oak wolf tree in the western portion of Stand 3 is much older than the surrounding trees. This tree has the ability to act as a magnet for insects, birds and other wildlife.



2.4.3 Access

The western portion of the park is accessible via an old woods road that runs from Hazen Road to Nod Road, a large portion of which has been blazed as a yellow hiking trail. Trees have fallen across the trail and the paint on the trailside trees has faded so this trail receives limited use. A short dirt/gravel road from Nod Road provides access to the field in the northwest portion of the property where a parking lot was at one time proposed. Light vehicle access via these roads is possible if necessary, but clearing would need to occur.

The eastern portion of the property is accessed via a yellow-blazed hiking trail and an old woods road, both of which originate on the east side of Hazen Road (in several places, these overlay). The easternmost portion of the property can be accessed via both yellow-blazed and blue/yellow dot-blazed trails on adjacent Avon Land Trust property. Additional trails have been constructed over the last few years to make more connections to properties to the east and south of Hazen Park. Remains of a woods road that lead to the spring structure remains form a portion of the park's hiking trail in this area. Light vehicle access is possible towards Hazen Road but is severely limited in the steeper eastern end of the property. In addition, west of the steep section perpetually wet soils further limit equipment access, however wooden bridging has been installed to facilitate foot traffic.

2.4.4 Water Resources

No perennial watercourses are present within Hazen Park, but several small intermittent watercourses exist. These are largely fed through a combination of runoff from the ridge and from adjacent residential/developed areas. Some of these watercourses, particularly the one that flows west-northwest through the eastern portion of the park, are resulting in erosion. The western portion of the property contains no obvious wetland areas, but the maintained field appears to be performing a stormwater collection and conveyance function, and may, over time, develop some wet meadow characteristics.

Though not officially mapped as wetland, there are two places within the eastern portion of the park which have the character of a wetland and have wetland vegetation. The larger (eastern) of these is currently crossed by a 90-foot-long pedestrian boardwalk that is in good condition. The smaller wet area is a small pocket along the northern boundary line, just downhill (west) of the larger wet area. Additionally, there is a seep in the northeast portion of the eastern parcel which is locally wet and has some wetland vegetation, but does not generally have the character of a wetland. Several laid stone cisterns were found near here, as well as the remains of two pump engines. A small drainage appears to have been channelized recently to direct flow off the property to the north in the central portion of the eastern block of the property.

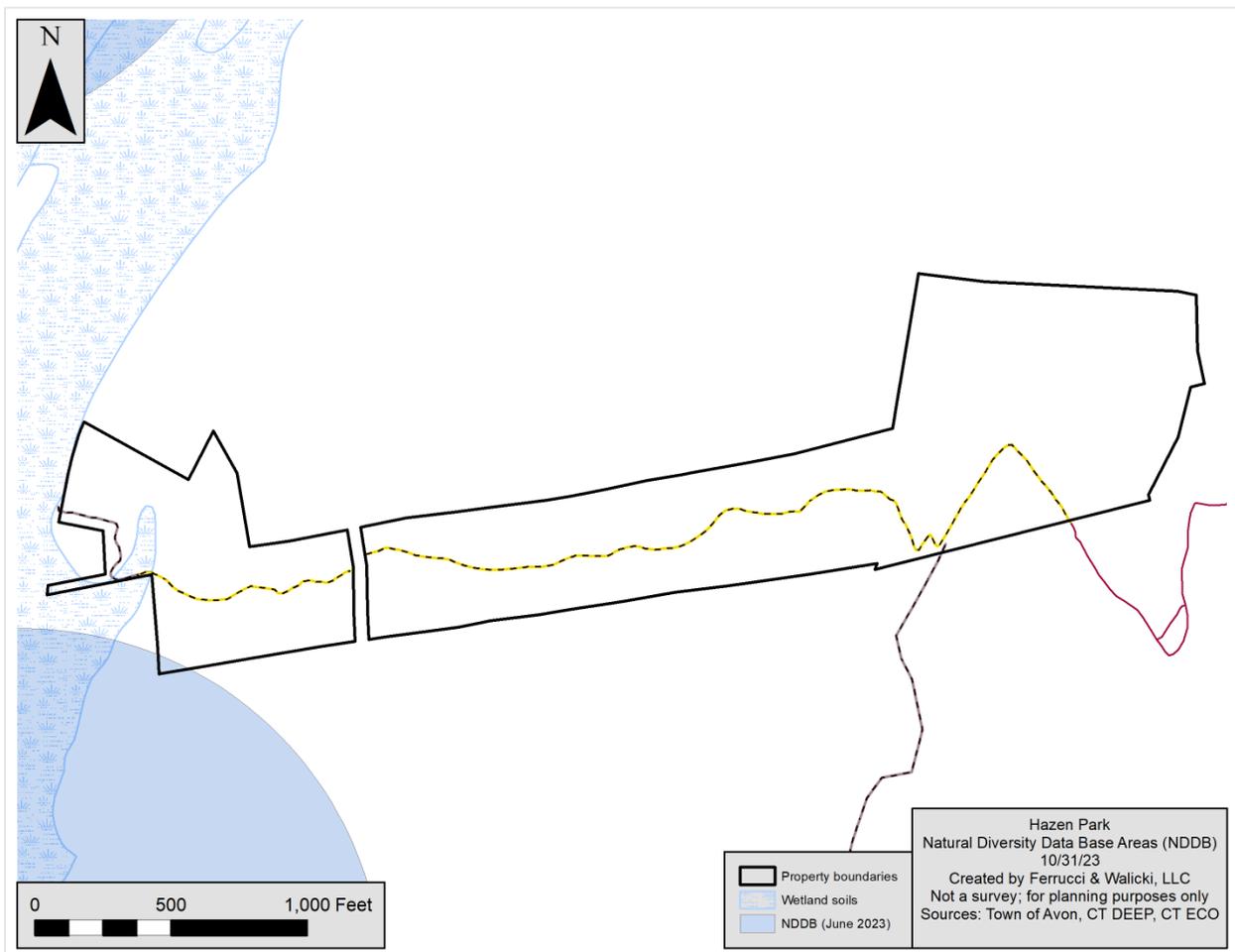


The entrance to the eastern block of this property along Hazen Drive. This is one of the best maintained kiosks on Town-owned properties.

DEEP GIS data (current as of September 2023) shows the eastern half of Hazen Park falling within the Level A Nod Road Aquifer Protection Area.

2.4.5 Rare, Endangered or Species of Special Concern

According to the State’s Natural Diversity Database (June 2023 update), there are not likely to be any rare, threatened, endangered, or special concern species present on the property, though a small portion of a nearby bubble overlaps with the tip of the southwestern corner of the property. As of the writing of this plan the results of a request to NDDB for additional information has not yet been received. When the results are received, they should be appended to this document.



2.4.6 Invasive Species

Invasive species are common within Hazen Park. Japanese barberry, winged euonymus, bittersweet, privet, autumn olive, honeysuckle, buckthorn, multiflora rose, and garlic mustard are all well-established here. Invasives are particularly prevalent in Stand 5 (the old field), in wetlands, around access points, and in the powerline ROW. Additionally, the easternmost block of Stand 1 has a moderate barberry infestation throughout its entire area.

While invasives can provide useful wildlife habitat in the form of cover, especially when they grow densely, the habitat they provide is generally of lower value than comparable native species. Because native wildlife have evolved for millennia to use the fruits, nuts, and pollen of native understory vegetation, native plants that provide similar structure but a higher-quality food source have more positive impacts on wildlife habitat quality than invasives. Also, because invasive plants tend to limit the growth of native vegetation resulting in long-term reductions of biodiversity, treating invasives and, ideally, replacing them with native alternatives can significantly improve the health, resilience, and habitat quality of a forest.



Densely growing barberry in the northcentral portion of Stand 3. Invasive plants are common on this property and are impeding the successful regeneration of native species in places.

4.7 Recreation

Trails

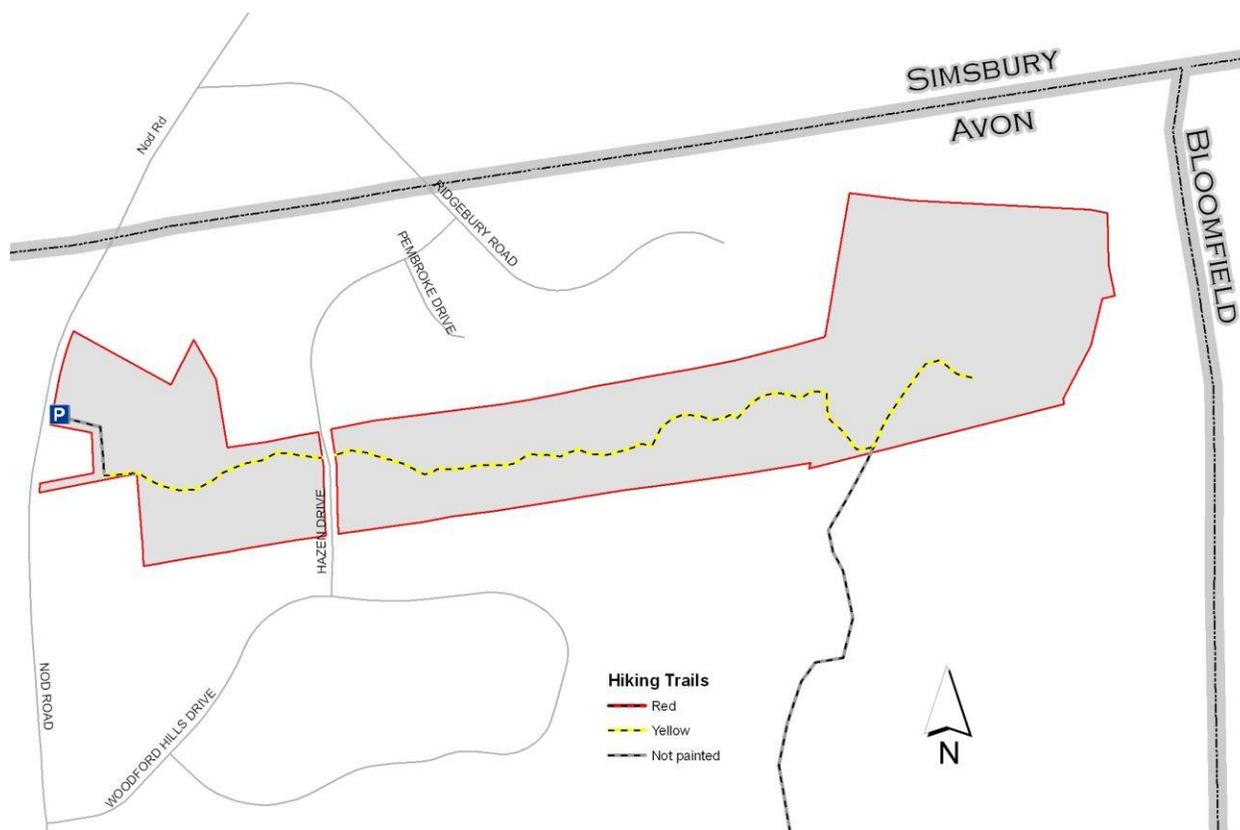
A yellow-blazed hiking trail currently runs through much of the Hazen Park property, largely on an old farm/woods road. This trail is best accessed from Hazen Drive, where roadside parking is possible. The trail extends west (downhill) to a small field just east of Nod Road; the endpoint of the trail is unclear, and not easily detectable from Nod Road. This section of trail is also not maintained so locating the trail itself is difficult. From the trailhead at Hazen Road, the trail extends east (uphill) to the easternmost part of the property, where it intersects with both a yellow trail and a blue/yellow dot trail on adjoining Avon Land Trust property. Access to both Avon Land Trust land and Talcott Mountain State Park is possible from the yellow trail. The trail is generally clear, and only small areas of erosion were noted. An approximately 90-foot-long boardwalk crosses a wetland in the eastern portion of the property. Signs installed in 2018-2019 help property users orient themselves while hiking.



Signs installed in the east-central portion of the property in 2018-2019 help trail users stay oriented.

Camping

Historic documents and the Town's website make references to camping in Hazen Park. No formal camping area was noted during the fieldwork for this plan.



Trail map of Hazen Park based on currently available on-line maps. Additional trails in the eastern portion of the property are not shown.

2.4.8 Forest Management

The current open space and forest management program should be continued to maintain the health, aesthetic appeal, diversity and stability of this valuable forested property.

NOTE: Given the size, orientation, and location of the forested stands within Hazen Park, only limited forest management activities are recommended in some stands at this time. Those activities recommended (such as invasive species control or FSI) are to encourage healthy, diverse, resilient forest conditions. In this sense, some portions of Hazen Park can be considered “reserves”. While only limited forest management activities are recommended at this time, the process of regularly collecting forest inventory data can provide valuable insights into changes that are occurring over time on the property in species compositions, tree growth rates, etc.

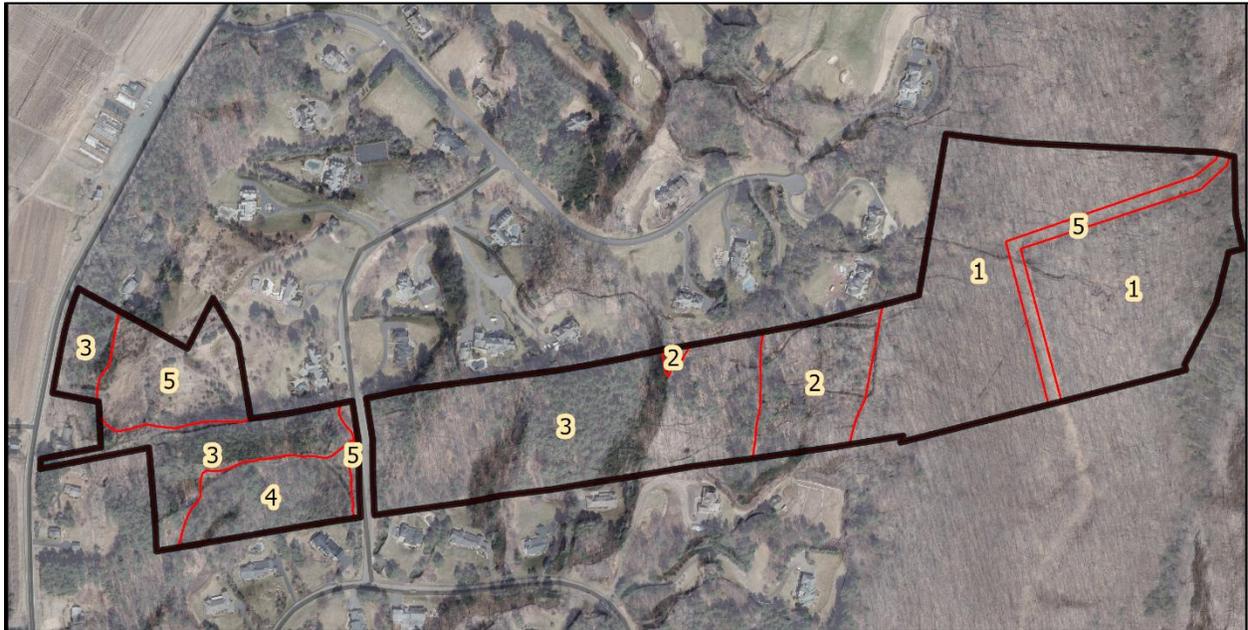
Stand Descriptions and Management Recommendations

Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it easier to describe the property and to make appropriate recommendations. Once identified, each stand is treated separately based on its unique characteristics.

Hazen Park Stand Table

Stand	Acres	Description	Recommendations
1	22.1	Oak/Mixed Hardwood Poles & Sawtimber	Treat invasives, cover well
2	4.1	Poletimber/Wetland	Treat invasives
3	18.5	Mixed Hardwood & Pine Sawtimber	Treat invasives, clear trail
4	3.3	Mixed Hardwood & Hemlock Sawtimber	Treat invasives, plantings
5	5.7	Meadow, Powerline ROW	Mowing

TOTAL 53.7 acres

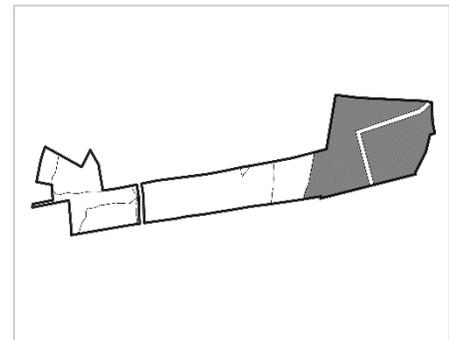


Stand 1: Mixed Hardwood Sawtimber (22.1 Acres)

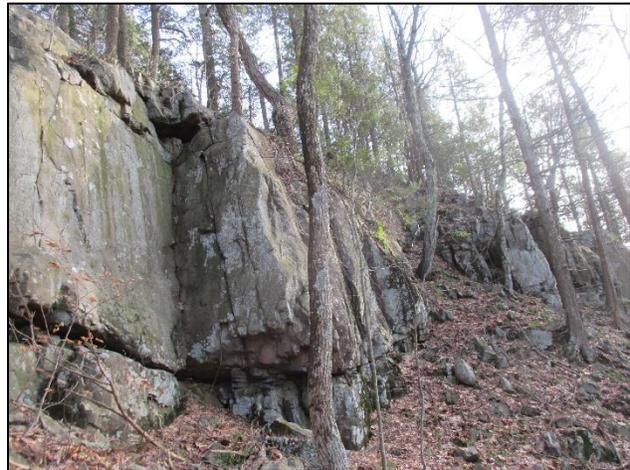
Description:

Stand 1 is a 22-acre stand is located near the top of the hill at the eastern end of the property. Access to this stand is difficult, as the terrain is steep and very rocky in places.

This 100- to 115-year-old stand occupies a highly productive site and is growing many large, high-quality oak and sugar maple. This stand used to have a larger ash component, but most of the ash here have succumbed to emerald ash borer. The overstory trees range from 14 to 24 inches in diameter and are predominately red oak. Sugar maple, hickory, white ash, and black birch are also present. The understory is fairly open, except for some areas with dense barberry. Sugar maple is the most common tree species in the seedling and sapling size classes though there is also



some hickory, beech, and American hornbeam (a.k.a. musclewood) among others. Much of the non-invasive understory is composed of Christmas fern and hay-scented fern. Other species noted include jewelweed, trillium, and violets all at low densities. New trails installed in 2018-2019 provide additional access to this portion of the property and connect to other properties to the east (Talcott Mountain State Park) and south (Avon Land Trust). An open well is located adjacent to a portion of the yellow trail which may be a danger if a trail user walks off the trail. Other features noted during the inventory include an old engine and a laid-stone pool.



Higher elevation portions of the stand contain some exposed ledge with overhangs and crevices that may provide suitable habitat for a variety of wildlife.

Soils

Most of this stand is underlain by only one soil type. It is classified as a Wethersfield loam with 15 to 35 percent slope (WmD). However, a small area of the stand may contain a soil very similar to the above. This soil is classified as a Wethersfield very stony loam with 15 to 35 percent slope (WnD). As their names indicate, both these soils occur on steep, rocky ground. Because of this these soils are commonly associated with forest land and not agricultural or pastureland. Both soils are well drained and moderately permeable, have a high moisture holding capacity and have a fragipan at about 24 inches that can restrict internal drainage. The extreme eastern end of the stand contains a rock outcrop-Holyoke complex (HZE), with 3 to 45 percent slopes, largely associated with the ridgeline.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Vol- ume/acre	Volume/acre AGS
Seedlings			2333			
Saplings			167		2.2^ cord	2.2^ cord
Sawtimber trees	47	47	28	28	4.9 MBF	4.9 MBF
Poletimber trees	40	33	72	62	6.0 cord	4.8 cord
Snags	27		28			
Total	87	80	99	89		
MSD*	12.6					

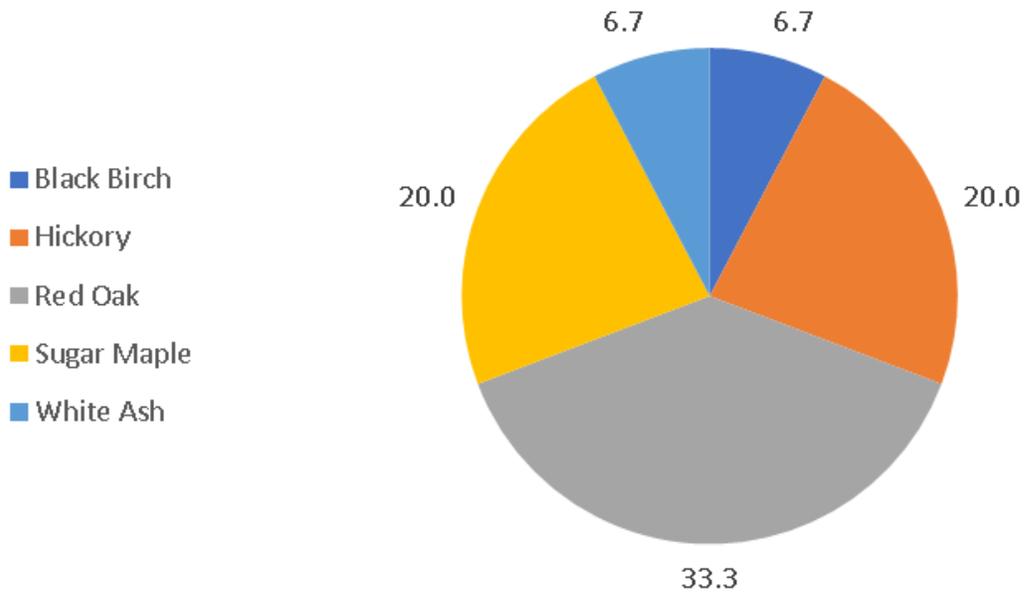
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

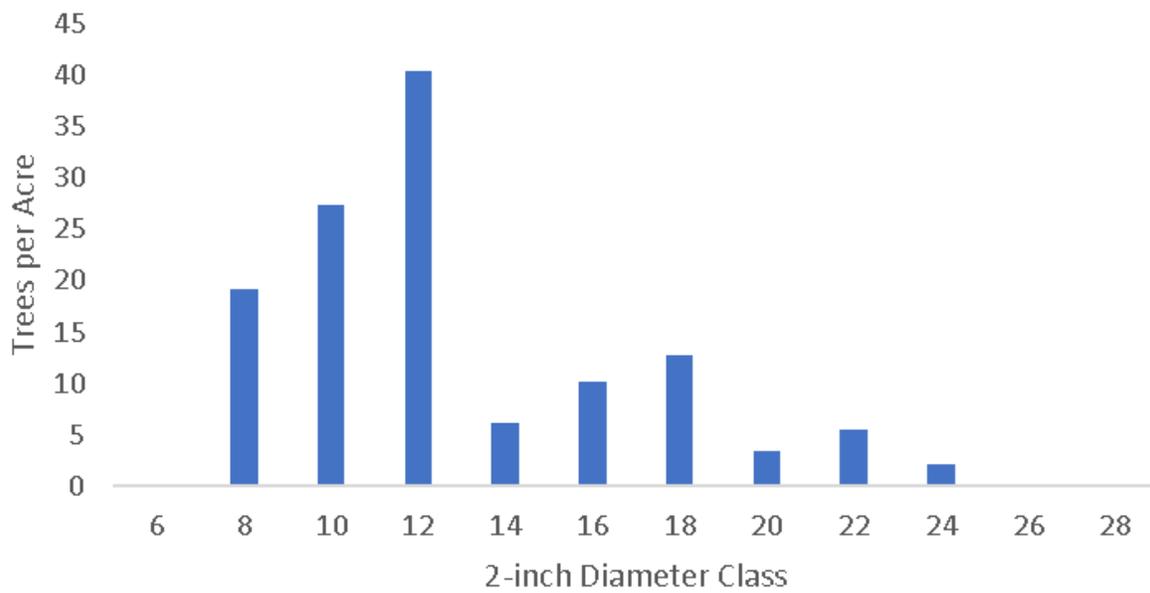
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

Stand 1 Basal Area (ft²/ac) by Species



Stand 1 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Although this stand would benefit from the creation of some canopy gaps, a crop tree release, or a thinning, the difficulty of access and presence of invasive plants make active management here both impractical and undesirable. However, invasive plants should be treated in this stand. Currently, invasive plants, particularly barberry, are established at moderate densities throughout the stand and are already having an impact on tree regeneration and understory diversity. Treating the invasives in this stand before the infestation becomes more severe should be a priority.

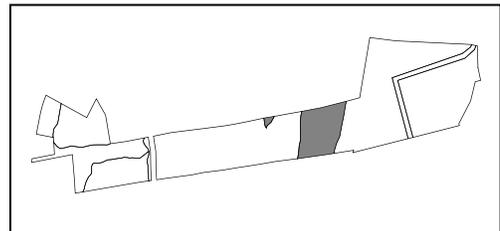
Future Management:

- This stand should be monitored and invasives treated on a regular basis.
- Cover the open well next to the trail

Stand 2: Wetland (4.1 Acres)

Description:

This stand consists of a flat, seasonally wet area in the eastern portion of the property, and a very small open wetland along the property’s northern boundary. The property’s main hiking trail crosses a portion of this stand via a wooden boardwalk. Access to the stand is provided by the former farm road that now forms the trail.



The stand consists mostly of sapling and poletimber-sized black birch and sugar maple, with red maple and red oak also present. The southwest portion of the stand also contains a patch of black birch and white pine sawtimber. Native understory species present includes bedstraws, poison ivy, sedge, spice-bush, jumpseed, wild strawberry, crowfoot, wild geranium, Virginia creeper, ferns, and violets among others. Invasive plants noted include multiflora rose and some densely growing barberry.



Left: The small open wetland feature along the northern property boundary.

Soils:

This stand is shown by the soil survey as being underlain by a Wethersfield stony loam with 15 to 25 percent slope (WmD). This soil is well drained and moderately permeable, has a high moisture holding capacity,

and has a fragipan at about 24 inches that can restrict internal drainage. Based on the stand's current conditions, it is possible that more hydric conditions have developed since the soil survey was performed, and the soils within the stand may be taking on more wetland-like characteristics.

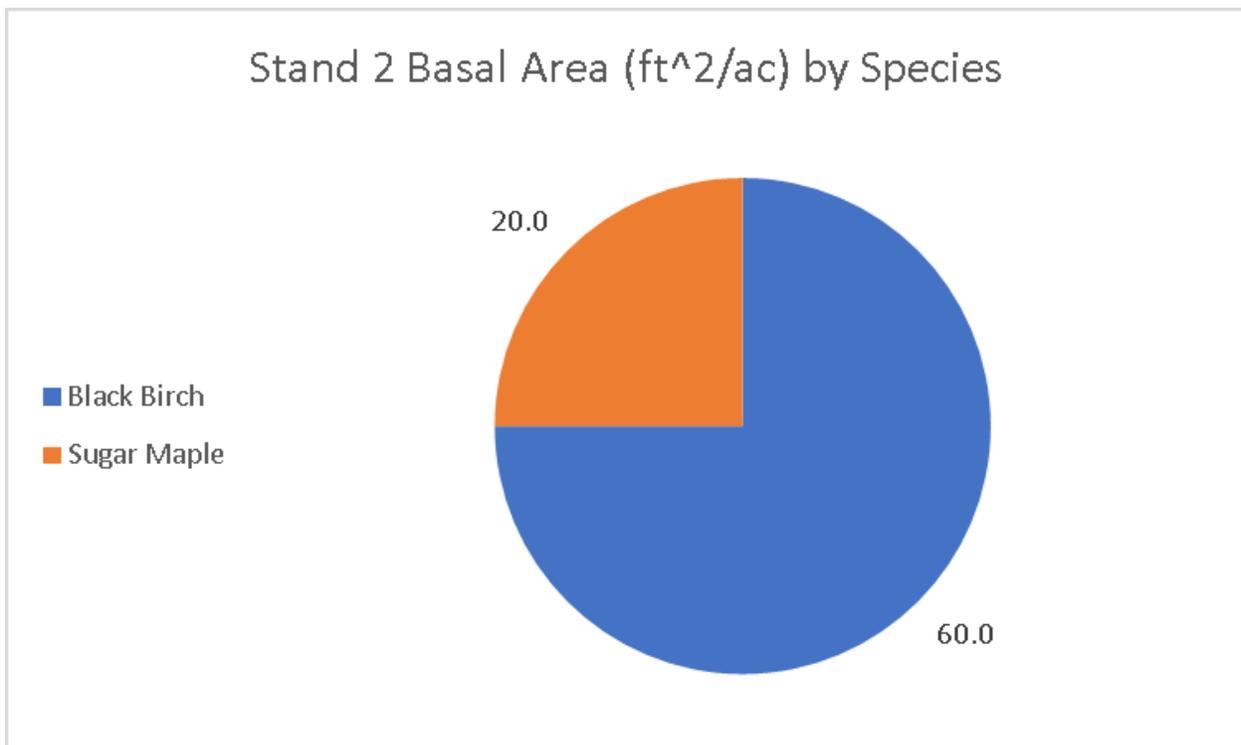
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			9000			
Saplings			200		4.8^ cord	4.8^ cord
Sawtimber trees	50	50	44	44	3.5 MBF	3.5 MBF
Poletimber trees	30	10	81	15	3.1 cord	1.5 cord
Snags	0		0			
Total	80	60	126	60		
MSD*	10.8					

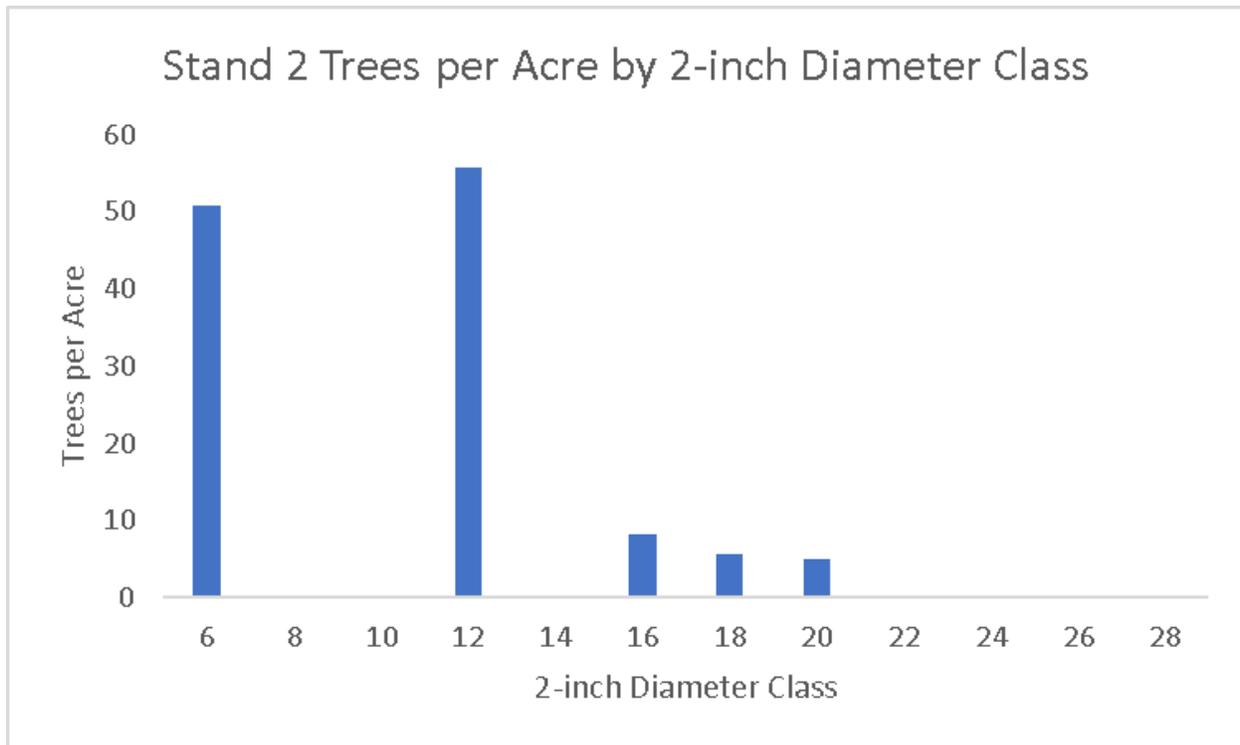
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre





Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Functional and diverse wildlife habitat
- Multiple size and age classes of trees and other vegetation
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

Much like Stand 1, the difficulty of access and prevalence of invasive species makes active management that includes the cutting of trees to influence growth rates and tree composition/structure of this stand both impractical and undesirable. However, invasives here should be treated to limit their populations and the associated negative impacts they have on biodiversity and long-term sustainability of the stand. Invasives are dense in some parts of this stand but largely absent from some others which have notable wetland vegetation, so preventing their spread should be a priority.

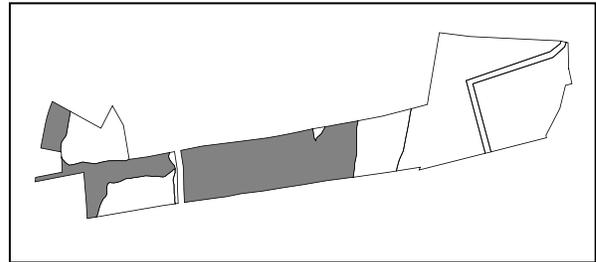
Future Management:

- This stand should be monitored and invasives treated as needed.
- Continue to maintain trail infrastructure including bridging

Stand 3: Mixedwood Sawtimber (18.5 Acres)

Description:

This stand occupies 18.5 acres on the mid- and lower slopes of the property (central and western portions of the eastern block). Because the property and this stand are so narrow, an old farm road in fair condition provides good access to the whole stand. The terrain has a gentle west aspect with very limited rocky soils. There is a large wet area in the central portion of this stand along the southern boundary.



This stand has many very large, 115- to 130-year-old trees. The predominant species are white pine, black birch, and black oak. Hemlock, red oak, sugar maple, basswood, and red maple were also observed. There is a small pocket of likely planted softwood trees in the central-eastern portion of the stand containing red and scotch pine. These trees appear to have low vigor based on how small the crowns are and how anemic the needles appear. Trees in the stand range in diameter but most occur in the 12 to 26-inch category. Most of the trees are in fair health but are beginning to lose live crown due competition for sunlight in overstocked portions of the stand. This is particularly the case in the western blocks of this stand. Some recent storm damage has impacted white pines with rot and poor form (particularly severe V-forking).



Recent storm damage in the western block of this stand created a gap in the canopy which will release the bittersweet and wineberry seedlings in the understory. The pine saplings in the background will also receive additional sunlight and the downed woody material will be used by many species of insects and wildlife in all its stages of decomposition.

The understory is largely open due to limited sunlight reaching the ground in most of the stand because of the mostly closed canopy. Although a lack of understory vegetation may be undesirable, in this case,

the shade that the overstory trees provide has significantly slowed the infiltration of invasives into this stand; where the overstory is densest is where invasives are least dense even where invasive plants grow very densely right adjacent to the stand (i.e., along the boundary with Stand 5 – Meadow). Some openings that have been created after a tree died or blew over are generally occupied by barberry, poison ivy, or hay-scented fern and contain few desirable tree seedlings or saplings. In the wet area in the southcentral portion of the stand dominated by hardwood overstory invasives are growing very densely. Other understory plants noted include maple-leaf viburnum, wild oats, Canda mayflower, shinleaf, sedges, rubus, goldenrod, ferns, striped pipsissewa, sessile leaved bellwort, lowbush blueberry, jumpseed, violets, spicebush, trillium, and Dutchman’s breeches. Barberry, multiflora rose, privet, winged euonymus, bittersweet, wineberry, and garlic mustard are all present in this stand at varying densities.



The white pine trees in the central block of this stand have fair live crown ratios at around 25%, but the crowns are not large due to competition with neighboring trees. Nonetheless, the crown closure is complete enough to limit the presence of invasive plants.

Over time, the lack of desirable seedlings and saplings in the stand may become more of an issue as the overstory trees begin to senesce. To be clear, although that trend appears to be starting, the trees still have sufficient live crowns to continue growing through this plan period and likely beyond. It is likely that without intentional intervention these areas will eventually revert to being hardwood. At some point if gaps begin to form due to tree mortality, underplanting of softwoods may be useful to maintain a viable future population of softwoods on the property.

Some limited amounts of dumping of yard debris and some household items was noted in parts of this stand west of Hazen Road.

Soils:

The main soils found within this stand are a Wethersfield stony loam with 15 to 35 percent slope (WmD) in the eastern portion, and a Manchester gravelly sandy loam with 3 to 15 percent slope (MgC) in the western portion. Very small amounts of Ludlow silt loam, Occum fine sandy loam, and Holyoke rock out-crop complex are also present.

The Wethersfield stony loam is found on the steeper, rockier ground at the east end of the stand. It is well drained and moderately permeable, and to have a high moisture holding capacity and a fragipan at about 24 inches that can restrict internal drainage.

The Manchester gravelly sandy loam is an excessively drained, shallow and droughty soil underlain by coarse sand and gravel. It is rapidly permeable and has a low to moderate moisture holding capacity. Unprotected slopes may be subject to erosion.

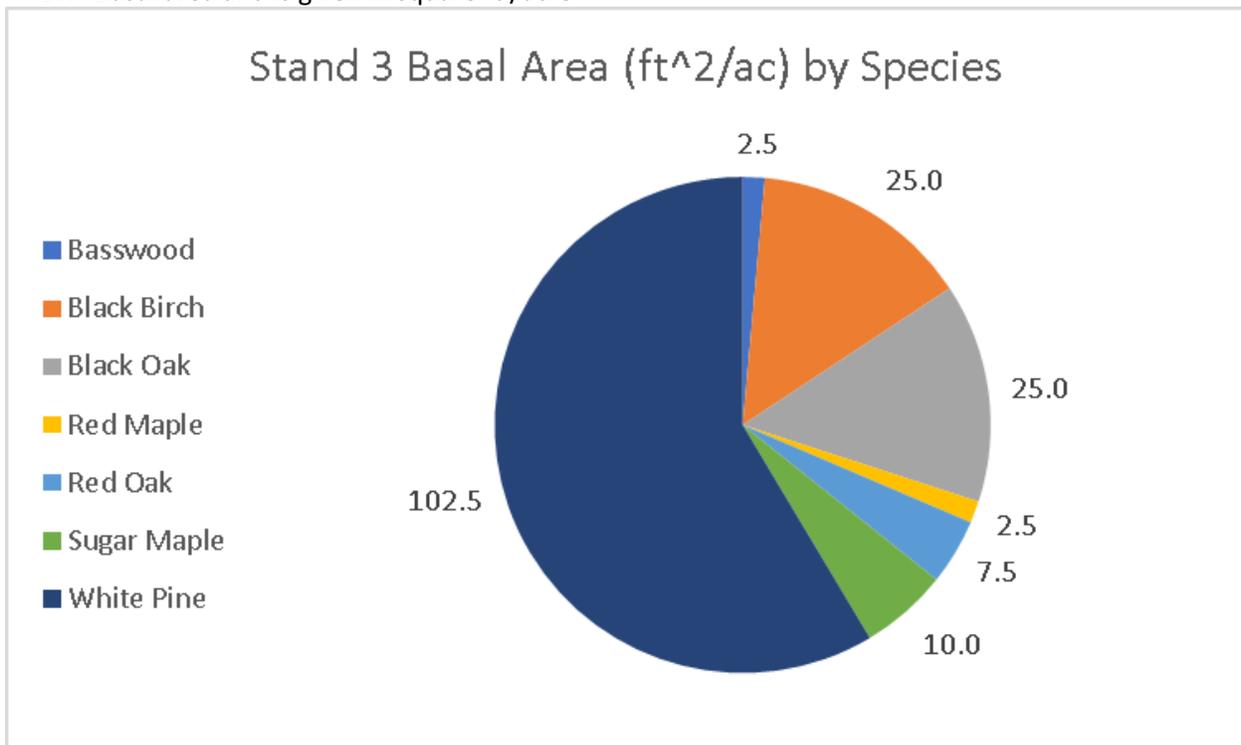
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			500			
Saplings			375		3.8^ cord	3.1^ cord
Sawtimber trees	150	133	84	71	23.4 MBF	21.6 MBF
Poletimber trees	25	13	78	39	1.7 cord	1.2 cord
Snags	28		17			
Total	175	145	161	109		
MSD*	14.1					

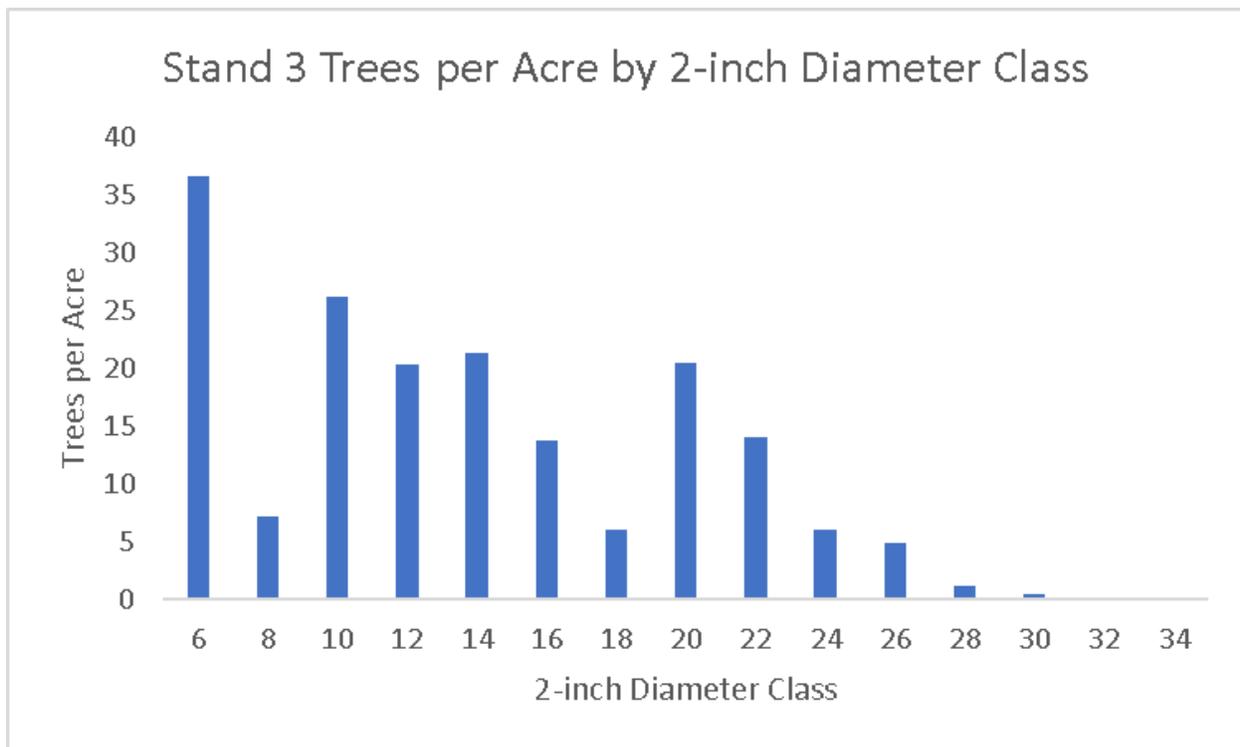
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre





Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Functional and diverse wildlife habitat
- Maintain vigorous softwood component
- Multiple size and age classes of trees and other vegetation
- Limit invasive plant populations
- Maintain mostly closed canopy and move toward old forest conditions
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

Although this stand is overstocked (for optimal growth and vigor for this forest type) and could generally use either a thinning or group selection treatment, the narrowness of the parcel, small acreage of the stand, terrain, presence of invasives along edges and in gaps, and proximity to houses makes active management that includes the cutting of trees in this stand impractical and potentially counter-productive. Invasives should be treated in this stand to allow native understory vegetation and tree regeneration to capitalize on the canopy gaps that are likely to be created over time as trees break, blow over, or die.

Future Management:

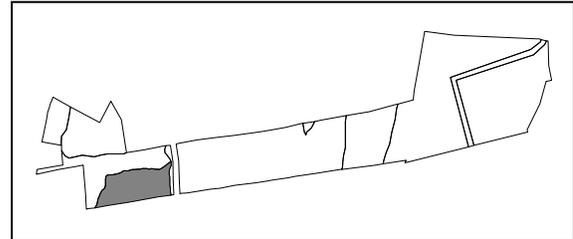
- This stand should be monitored and invasives treated on a regular basis.
- Plant softwoods where site conditions (i.e., appropriate soils and abundance of sunlight) will allow
- Remove dumped materials

- Clear trail through western block of this stand if maintaining the connection to Nod Road is desired
- Some additional bridging may be useful to keep trail users out of wet pockets on trail

Stand 4: Mixedwood Sawtimber and Poletimber (3.3 Acres)

Description:

This is a 3.3-acre stand in the southwest portion of the property. An old farm road in fair condition provides good access to the stand and separates it from Stand 3 to the north, though the road is overgrown, and several trees have fallen across it. The terrain generally slopes gently from east to west and steeply from south to north. Few rocks and no wet areas were observed within the stand.



This stand contains primarily hemlock with a mix of hardwoods. The stand has many very large 115- to 130-year-old trees with a large amount of poletimber mixed in. The predominant species are eastern hemlock and red oak with black oak, white oak, sugar maple, and white pine also present. The eastern portion of the stand is more densely stocked. Trees in the stand are mostly between 12 to 24 inches in diameter. Some of the trees are in fair to poor health due to a variety of causes. Rot, broken tops, and dieback/decline are common in this overstocked stand. There is a relatively dense hemlock midstory which is in fair condition though many noted during the recent inventory have limited live crowns. Both scale and adelgid were noted in this stand. White ash in this stand are almost all dead likely due to emerald ash borer.



A pocket of black birch saplings and seedlings (midground in left photo) is growing under a small canopy gap (right) that was created years ago when a tree died and fell over (foreground left photo). Elsewhere in the stand more recent gaps have resulted in a mix of native and invasive plants, but fortunately this pocket of regeneration is all native.

The understory is mostly open due to limited sunlight reaching the ground in most of the stand. Openings that have been created after a tree died or blew over are generally occupied by hay-scented fern and contain few desirable tree seedlings or saplings. Seedlings and saplings noted include sugar maple, beech, basswood, eastern hophornbeam (a.k.a. ironwood), black cherry, white ash, black birch, and hemlock. Of these species only beech, ironwood, and hemlock appear in even moderate numbers. Other understory vegetation noted includes Canada mayflower, Virginia creeper, sedge, Christmas fern, wild oats, poison

ivy, hay-scented fern, *rubus spp.*, and goldenrod. Invasives including bittersweet, bittercress, winged euonymus, garlic mustard, Norway maple, and barberry are present in this stand, but are not yet extremely dense. Cutting done along the boundary is instructive for this property in general and for this stand specifically. Where trees were cut and gaps created, invasive plants have colonized the area and grow densely.

Soils:

Stand 4 is underlain by Manchester gravelly sandy loam with 3 to 15 percent slope (MgC). This is an excessively drained, shallow and droughty soil underlain by coarse sand and gravel. It is rapidly permeable and has a low to moderate moisture holding capacity. Unprotected slopes may be subject to erosion.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			5500			
Saplings			200		2.7^ cord	1^ cord
Sawtimber trees	120	80	90	51	13.3 MBF	11.7 MBF
Poletimber trees	10	0	37	0	0.0 cord	0.0 cord
Snags	50		98			
Total	130	80	128	51		
MSD*	13.7					

*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

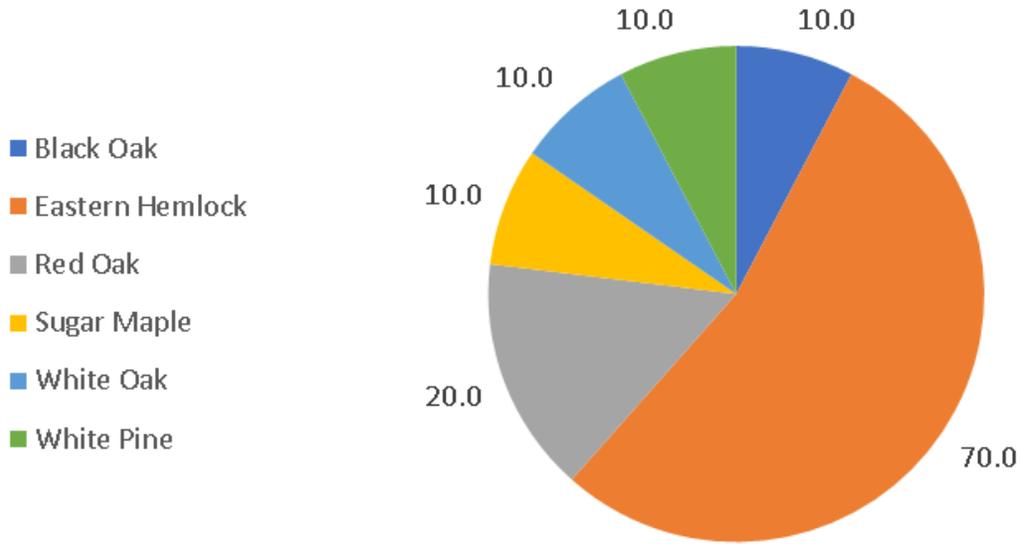
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

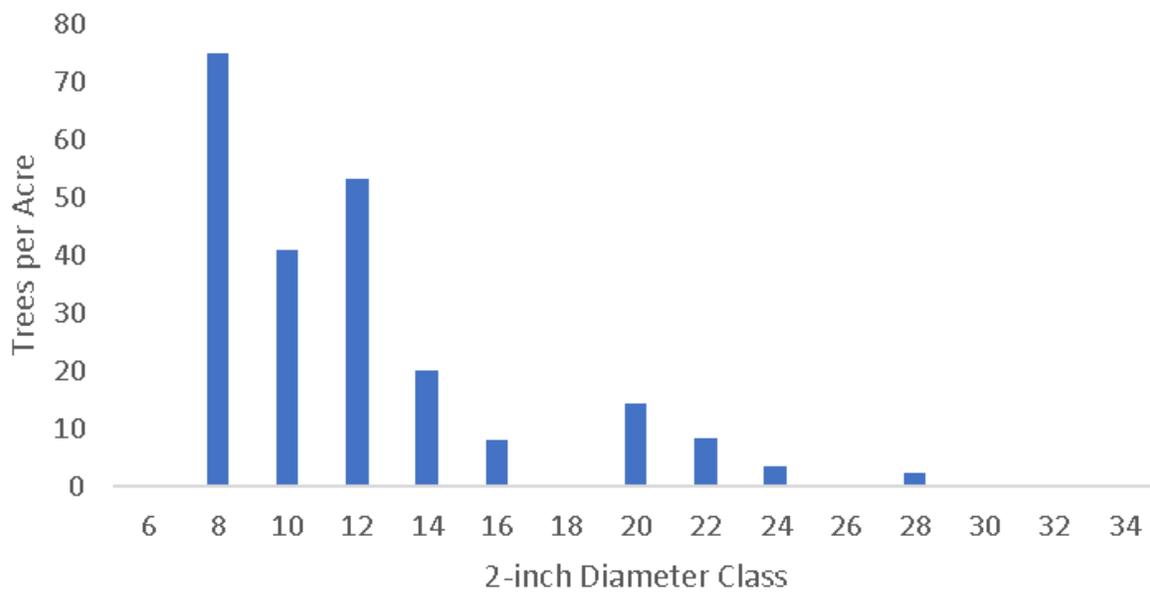


The trail through Stand 4/Stand 3 is impassible in places due to fallen trees and a lack of point to show the location of the trail.

Stand 4 Basal Area (ft²/ac) by Species



Stand 4 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Functional and diverse wildlife habitat
- Maintain vigorous softwood component
- Multiple size and age classes of trees and other vegetation
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

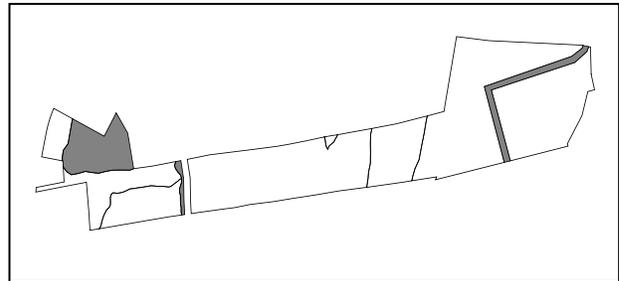
This stand has been largely unmanaged in the past. Active management in the future is impractical and perhaps counter-productive given the stand’s size and proximity to invasive plant populations. However, invasives within the stand and along edges should be treated to prevent their becoming more densely established and to allow native vegetation a chance to occupy available growing sites.

Future Management:

- This stand should be monitored and invasives treated on a regular basis.
- To maintain a softwood component in the stand, monitor hemlock health and underplant in canopy gaps if needed with softwoods

Stand 5: Meadow, Powerline ROW (5.7 Acres)

This stand includes a meadow area in the northwest portion of the property, a small powerline R.O.W. in the far eastern end of the property, and a small mowed area along Hazen Drive, including grassed areas that were once a temporary cul-de-sac. The meadow used to be mowed regularly but is currently in an old field state and is seeding in with invasives and trees. The powerline ROW is also in scrub-shrub; this area likely receives some periodic maintenance, but this has not occurred recently. The area along Hazen Drive appears to receive regular maintenance. Invasive plants including bittersweet, buckthorn, mugwort, autumn olive, barberry (common and Japanese), Norway maple, and multiflora rose are established in this stand.



The meadow is the largest block of this stand and is by far the most productive and diverse from the perspective of wildlife habitat. The western portion of the meadow is still primarily in grasses, but the edges are growing in densely with a combination of herbaceous growth, shrubs, and trees. Grasses, goldenrod, bedstraw, clover, and mugwort dominate the interior portions of the meadow. Tree regeneration along stand edges includes a variety of species including boxelder, locust, crabapple (covered in bitter-sweet vines), cherry, white pine, sumac, dogwood, chokeberry, and a small Cyprus grove among other tree species. Some of the white pine are exhibiting very fast growth (> 30 inches of annual height growth).

On the southcentral edge of the meadow there is a strip of young forest (containing oak, pine, and hickory regeneration) which is found nowhere else on the property. The mix of open grasses and shrubby conditions provides excellent habitat diversity for a variety of species including songbirds, birds of prey, reptiles,



The Cyprus grove (above) is found in the hedgerow that separates the eastern and western portions of the meadow. White pine saplings (right) show astonishing growth along edges of this stand.



and many mammal species. The adjacency of this area to other maintained open areas increases the importance of keeping this area open as part of that matrix and “managing across property boundaries” in cooperation with adjacent owners to maintain those wild-life benefits.

Desired Future Conditions:

- Maintained open condition
- Functional and diverse wildlife habitat
- Maintain vigorous softwood component
- Multiple size and age classes of shrubs and other vegetation
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics
- Find a local beekeeper to keep bees on the property

Recommendations:

The meadow portion of this stand should continue to be mowed annually to maintain it as meadow and prevent it from becoming forest. The crabapples in this stand should also be pruned to improve their production as the crabapples themselves are a valuable form of soft mast for wildlife. Invasives should be treated in this stand to prevent them from completely taking over. Where feasible, large shrubby invasive plants should be removed and replaced with desirable native alternatives using a phased approach over time so that the cover they provide is not eliminated all at once. If plantings are to be done, features to include are nectar, pollen, and mast production as well as dense growing habit to continue to provide cover.

Regular mowing will help with this. Mowing should be done after flowering is complete in the late fall or in late winter before flowers begin to open. Mowing done early in the season in 2023 resulted in some

cutting from equipment so timing of mowing with appropriate ground conditions is important. If feasible, work with adjacent owners to stagger timing of mowing to allow for multiple age classes of vegetation in meadow and shrubby conditions. If equipment can handle mowing woody plants, some of the shrubby areas should be mowed to reset their succession and keep the area as young shrubs/meadow.



Conditions in the western block of the meadow after a recent mow in early spring. Over time, continuing to keep this area open with periodic mowing before or after flowering and bird migrations can help maintain the productivity of this area for pollinators and wildlife.

One mature Norway maple, an invasive tree often planted as an ornamental, was noted in the western block of this stand, along the west side of Hazen Drive. Cut and remove this tree so that it does not provide a source of seed that can infest the rest of the property.

Future Management:

- This stand should be mowed yearly, ideally after flowering is complete in the fall or before flowering begins in late winter.
- This stand should be monitored and invasives treated on a regular basis. Replace invasives with native alternatives as feasible

2.4.7 Recommendations

Previous management plans have called for boundary marking and trail construction activities, and only very limited forest management within Hazen Park. A continuation of these activities is generally recommended for this plan.

1. A portion of the boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place. The rest of the boundaries should be clearly marked with both paint and signs.
2. Several small instances of encroachment exist throughout the property, involving dumping of yard or other debris from adjacent properties. An outreach effort should be considered by the Town to discourage this activity.
3. Ten-year management plans should continue to be used to guide future forest management activities on this parcel.

Recreation Recommendations

As stated in previous recommendations for the property, a looped hiking trail system is not practical for this property because of its long, narrow shape. Other than the trail's inherent value, additional value

comes from the connection to Land Trust trails, and trails on state land. Improvements to the existing trail are possible and are recommended.

1. Improve signage at Nod Road and at the Hazen Park/Avon Land Trust boundary. The entrance from Nod Road is currently unmarked, the trail heading west from Hazen Drive is not apparent, and the boundary with the Avon Land Trust is still somewhat vague. The signs installed near the land trust property in 2018-2019 have helped clarify which trails lead where. The signage at the Hazen Drive entrance to the property was enhanced since the last plan was written.
2. Parking along Hazen Drive and off Nod Road should be better defined, especially off Nod Road. Delineation of the parking area and a potentially lockable gate would make this parking area both more useable and securable, if need be.
3. Existing trail blazes are becoming faded and should be refreshed.
4. A small vista could be created at or near the top of the property, allowing views to the west. This could be accomplished with a narrow cut that would not be visible from surrounding residential properties.
5. On steeper portions of the trail, additional treadways, stepping-stones, or the like could assist hikers and help prevent small erosion problems.
6. Vegetation on and around small glacial erratics along the trail could be cleared. This would provide small sitting areas and feature the stones.
7. Regular maintenance of the trails is recommended to remove debris. This is especially relevant for the portion of the trail system west of Hazen Drive.

Hazen Park		
Summary of Management Activity by Stand		
2024-2033		
Year	Stand/Area	Treatment
2024-2033	All	Monitor and Treat Invasive Plants
2024-2033	All	Maintain Boundaries
2024-2033	All	Maintain Trails/Recreation Infrastructure
2024-2033	5	Mow Meadow Once Per Year
2024-2033	5	Maintain Growing Space around Crabapples
2025-2030	5	Phase in Native Pollinator Shrubs in Place of Invasives

2.5 HUCKLEBERRY HILL RECREATION AREA

2.5.1 Property Description

Huckleberry Hill Recreation Area consists of 312.7 acres in western Avon, an increase from 282.4 acres at the writing of the last plan. The entirety of the increase in acreage is due to the acquisition of a parcel which connects the northern portion of the property to Northington Drive, beyond which is Found Land. The property is almost completely surrounded by moderate-density residential development. Countryside Park and Buckingham Road Recreation Area are across Huckleberry Hill Road near the southwest portion of the property.

This property contains a mix of several forest stands, wetland areas, and one recreation area that contains a soccer field. The wetland areas are mostly connected to Hawley Brook, which runs from north to south throughout the western portion of the property. One unique feature found in the forests on this property that it shares with Found Land is the volume of American chestnut saplings found throughout in the understory and midstory. Although present in parts of the property, invasive plants are not ubiquitous. The vast majority of the species noted in the understory of the interior of the forested stands is native and highly productive³⁷.



The combination of three or four distinct tree sizes and age classes shown here in the central portion of Stand 1 combined with the highly diverse understory help make this area highly resilient to disturbances.

Many species of wildlife use this property and given its size and connectivity to other open and forested areas (i.e., Found Land Conservation Area to the northeast and other Town-owned lands to the west across Huckleberry Hill Road) it acts as an important travel corridor. Wildlife species noted during field visits include deer, turkey, many species of small mammals, and bear the latter of which was not noted to be present during the last plan in 2009. Bird species noted include brown creeper, scarlet tanager, wood thrush, veery, ovenbird, northern flicker, red-eyed vireo, black-throated blue warbler, pine warbler, ruby-crowned kinglet, yellow warbler, eastern wood-pewee, common yellowthroat, and pileated woodpecker among others. Many of these species are part of the group of important commonly found species of birds representing different habitat conditions that Audubon Connecticut recognizes as Connecticut's [Birder's Dozen](#).

³⁷ In this case, highly productive refers simultaneously to the actual productivity of the understory in terms of mast and cover for wildlife (i.e., huckleberry, blueberry, maple-leaf viburnum, blackberry, raspberry, etc.), and the diversity found in this part of the forest that will produce a diverse future forest (i.e., tree seedling and sapling diversity).

2.5.2 Property History

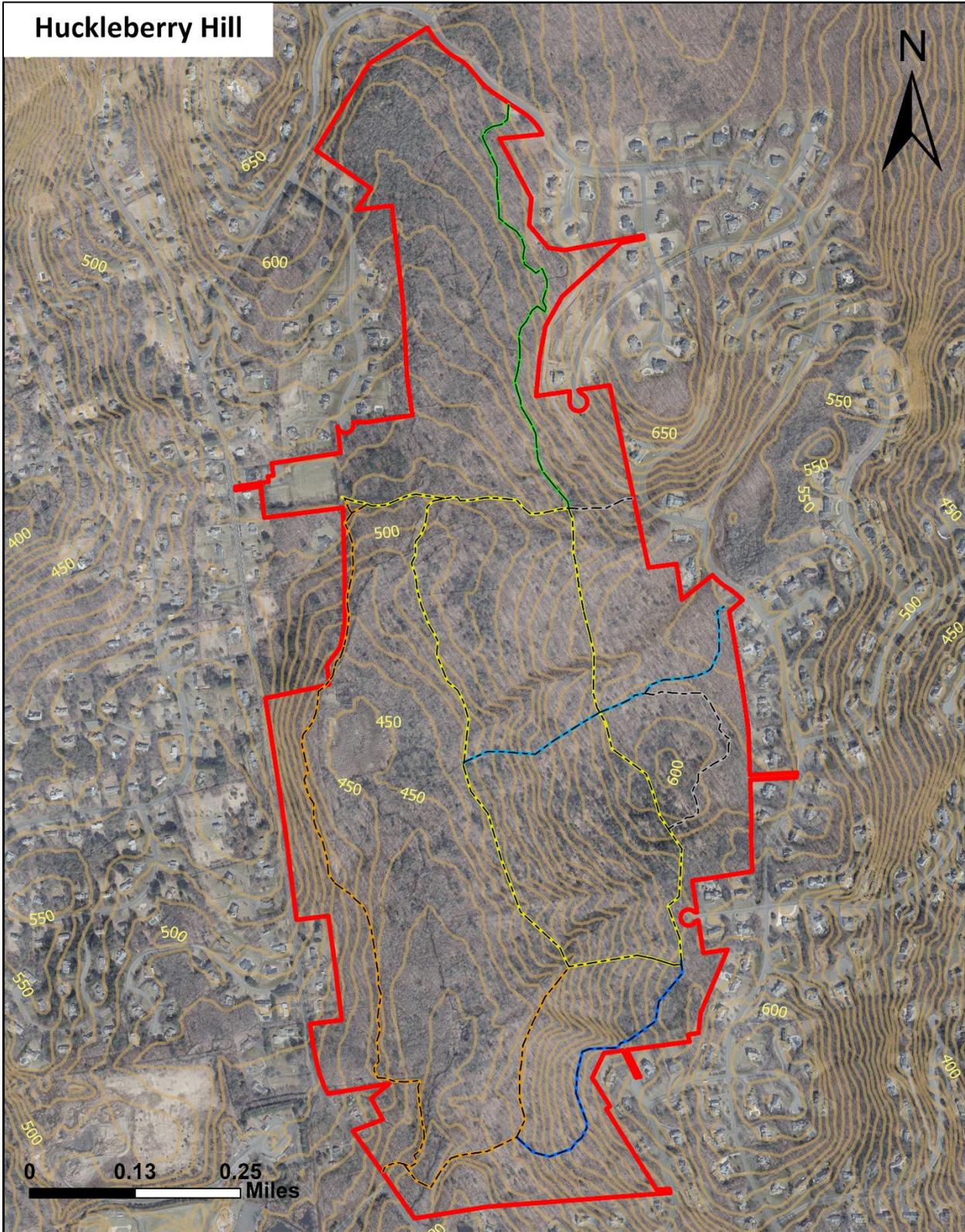
Aerial imagery from 1934 indicates that almost all of this property was forested at that time. The surrounding area to the north, east, and south was all forested as well with some agricultural and residential development along Huckleberry Hill Road at that time. Over the last 33 years here have been many silvicultural treatments undertaken throughout the property to enhance tree vigor, encourage additional sizes and age classes of trees, enhance wildlife habitat features, and provide recreational access and educational opportunities for the public. The results of these efforts that the Town has overseen have been very successful.

2.5.3 Access

Access to the property with equipment can be achieved from a gated entrance along Huckleberry Hill Road. Only a small portion of the property is accessible from there, but a bridged crossing over Hawley Brook provides fair access to much of the rest of the property for management purposes. In 2017 or 2018 that bridge was blown out and washed downstream by a major surge of high water, and has not yet been replaced. Access could also be gained from a few areas along Northington Drive along the eastern portion of the property. These access points would not require bridged crossings. A concern about accessing the property from the east includes a temporary increase in truck traffic through the neighborhood when forest management activities occur. The maximum grade on Northgate is a steep, but manageable, 12.2%.



The bridged crossing over Hawley Brook over the years. Top is shown in 2015. Above left is shown during the last management project when bridge mats were temporarily installed over the bridge to prevent damaging it. Above right shows the conditions in 2023. The bridge washed out in 2017 or 2018 during a high water event due to very low clearance even in dry conditions.



Note the northern connecting trail is shown as green in the map but is not painted in green in the field.

Access on foot or on bike can be gained from several trailheads surrounding the property and once on foot there is a series of loop trails that provide property visitors good access throughout. Additional detail about the trail system can be found in Section 2.5.7.

2.1.4 Water Resources

Hawley Brook and its associated riparian areas and wetlands are the most significant water resources on the property. Hawley Brook is a perennial watercourse that flows from north to south through the entire western third of the property. There are at least eight drainages that flow east to west acting as tributaries to Hawley Brook. Fish were noted in the shallow waters of some of the watercourses closer to Hawley Brook during the inventory.

There are several wetland types associated with Hawley Brook found on the property. One is a 5.5-acre wet meadow that is mostly grasses, sedges, rushes, cattails and phragmites. Although treating phragmites (a fast spreading and densely growing invasive plant) can be difficult, it is worth attempting to do so given how completely it can dominate wetlands. Because this wetland is one of the largest open wetlands in the surrounding area, actively managing it to help keep it functioning well is advisable.

There is also a shrub swamp that is a little less than three acres and is comprised of phragmites, alder, spicebush, grasses, sedges, rushes and red maple, grey birch, winterberry, ferns, and yellow poplar seedlings and saplings. Invasive plants grow densely along some of the edges and some of the tributaries especially to the west of the swamp. There is also a significant amount of forested wetland straddling most of the rest of Hawley Brook. Approximately eight intermittent watercourses drain to the east into Hawley Brook. There are also a couple of drainages from the roads to the west that periodically flow into the Hawley Brook wetland system, including one that comes from Huckleberry Hill Road near the intersection with Edwards Road. One of these drainages is experiencing some significant erosion coming from Huckleberry Hill Road.



Erosion on a side hill in Stand 8 from stormwater coming from Huckleberry Hill Road.

Potential vernal pools are also found on the property and are described in Stand 10.

2.5.5 Rare, Endangered or Species of Special Concern

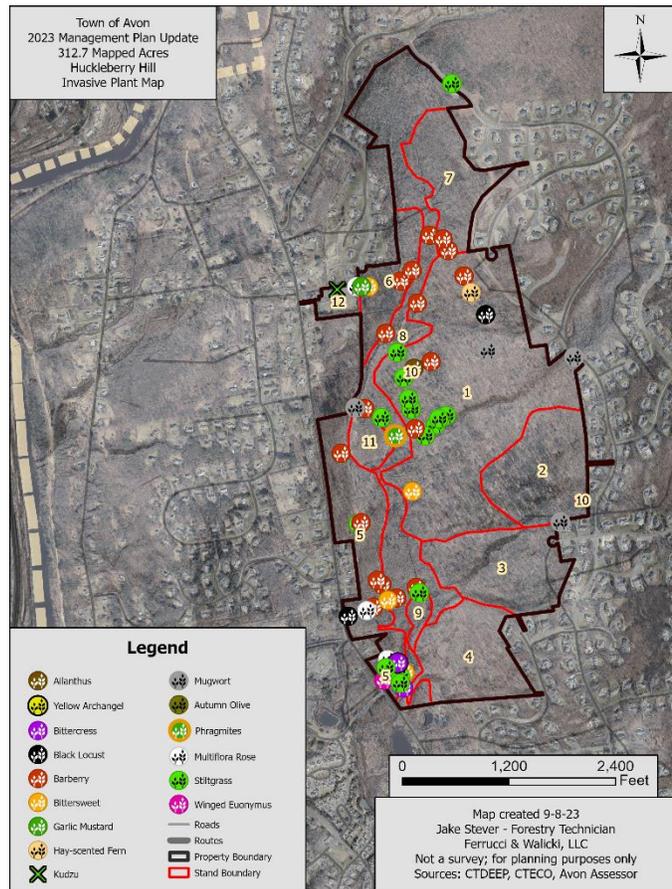
Rare, Endangered or Species of Special Concern

According to the State's Natural Diversity Database (June 2023), there are no rare or endangered species present in or around the property. See map for this area and Found Land showing nearby known areas of concern for NDDB in Section 2.3.5.

2.5.6 Invasive Species

Invasive species are established throughout the property with the densest populations occurring surrounding and to the west of Hawley Brook, at access points, and along drainage/within wetlands. Invasives found here include Japanese barberry, multiflora rose, mugwort, Japanese knotweed, Japanese stiltgrass, garlic mustard, bittersweet, bittercress, winged euonymus, ailanthus, Phragmites, and one isolated patch of mile-a-minute (a.k.a. kudzu).

The forest interior in the east-central portion of the property has relatively few invasives. Partially because of the lack of invasives, the recent forest management activities in Stands 1-4 have resulted in dense regeneration of desirable tree and herbaceous species with very few to no invasives among them.



Some of the invasive plants noted during the 2023 inventory. Invasive plants are especially dense in the northern and western portions of the property and surrounding drainages.

2.5.7 Recreation

Parking

Access for hiking can be found at several points around the property. There is parking available along Huckleberry Hill Road at the south end of the property, at the old Huckleberry Hill Elementary School, at the end of Northgate and along Northington Drive between Hawks Ridge and Saddle Ridge Drive. Hikers and bikers have also established some short connector trails from yards or roads where there is no parking or official trail head. There are kiosks in various states of disrepair at the Huckleberry Hill Road parking area, the Northgate parking area, the school parking area, and the parking area west of Northgate across from Found Land. None of these kiosks currently have suitable information including updated maps or any information about the property. Some of the kiosks are completely bare. Trail maps and information in these kiosks should be updated and the kiosks themselves should be repaired if needed.

Picnic Areas

There is one picnic area with two tables and a fire ring in a small clearing in the woods next to a small fire pit in the northern portion of the property along the yellow trail east of the recreation field (Figure 2.5.6). The table are in fair condition, and the area seems to be well maintained by users. To reduce the risk of fire in an area that the Town does not monitor, the fire pit could be removed.

Trails

A yellow-blazed hiking trail currently loops through the property with access from the recreation field and the Northgate parking area. An orange-blazed hiking trail runs north-south through the western portion of the property between trail heads at the recreation field and the Huckleberry Hill Road parking area and also crosses Hawley Brook and connects to the southwest corner of the yellow-blazed loop trail. A blue-blazed trail runs from the Northington parking area and cuts across the middle of the yellow-blazed loop trail. Since the last plan was written, a connector trail has been created from the northern portion of the yellow trail to the parking area at the far northern end of the property across from Found Land. There are several unmarked and unauthorized trails that have been created over time that connect eastern and western portions of the yellow trail. The Town should decide if these trails should be left as they are, incorporated into the official trail system, or closed off to limit the amount of maintenance the trails require. In the last few years many of the old painted blazes have been replaced with metal hiker medallions of the appropriate color to indicate which trail they are on. Mountain biking has become a much more prevalent use of these trails over time.



The aluminum medallions showing a hiker with different background colors now cover many of the painted blazes on the trails. This is on the yellow trail in the southwestern portion of the property.

In the southeast portion of the property there is a trail with old, faded blue paint. It connects the orange-blazed trail with the yellow-blazed trail roughly following the property boundary. This trail is not painted but gets significant use and should be added to the official trails. There are several unofficial trails that are not painted that get varying degrees of use. The short connector from Saddle Ridge Drive gets a moderate amount of use and a trail in the eastern portion of the property between the blue-blazed trail and the yellow-blazed trail gets some use. This trail should be ignored and not become part of the official trail system. The trail from Saddle Ridge Drive could be blazed yellow like the yellow-blazed spur to the recreation field. Other unofficial trails should be ignored or blocked.



The bridge over a narrow section of Hawley Brook on the orange trail near the southern boundary is being undercut by the brook. Reinforcing the abutments and/or raising the bridge would be useful.

The trails range from flat to moderately steep, with some areas that can get wet and several rocky sections. The newest portion

of trail in the north is both wet and rocky in spots. The two sections of the orange-blazed trail that run along Hawley Brook can get wet at times. There are several footbridges that have been installed over Hawley Brook in other areas where there are wet soils. Corduroy has also been installed in places to help keep visitors above wet areas. Some of the drainages over which the trails run are fords that users must walk through or over where no infrastructure is present. Much of the work in the wet areas seems to have been done by people using the trails and is working well. Some additional work could be done in these areas to enhance what has already been done. Bridges over Hawley Brook need to be replaced and/or lifted to ensure they are not undercut and washed downstream as happened a few years ago.

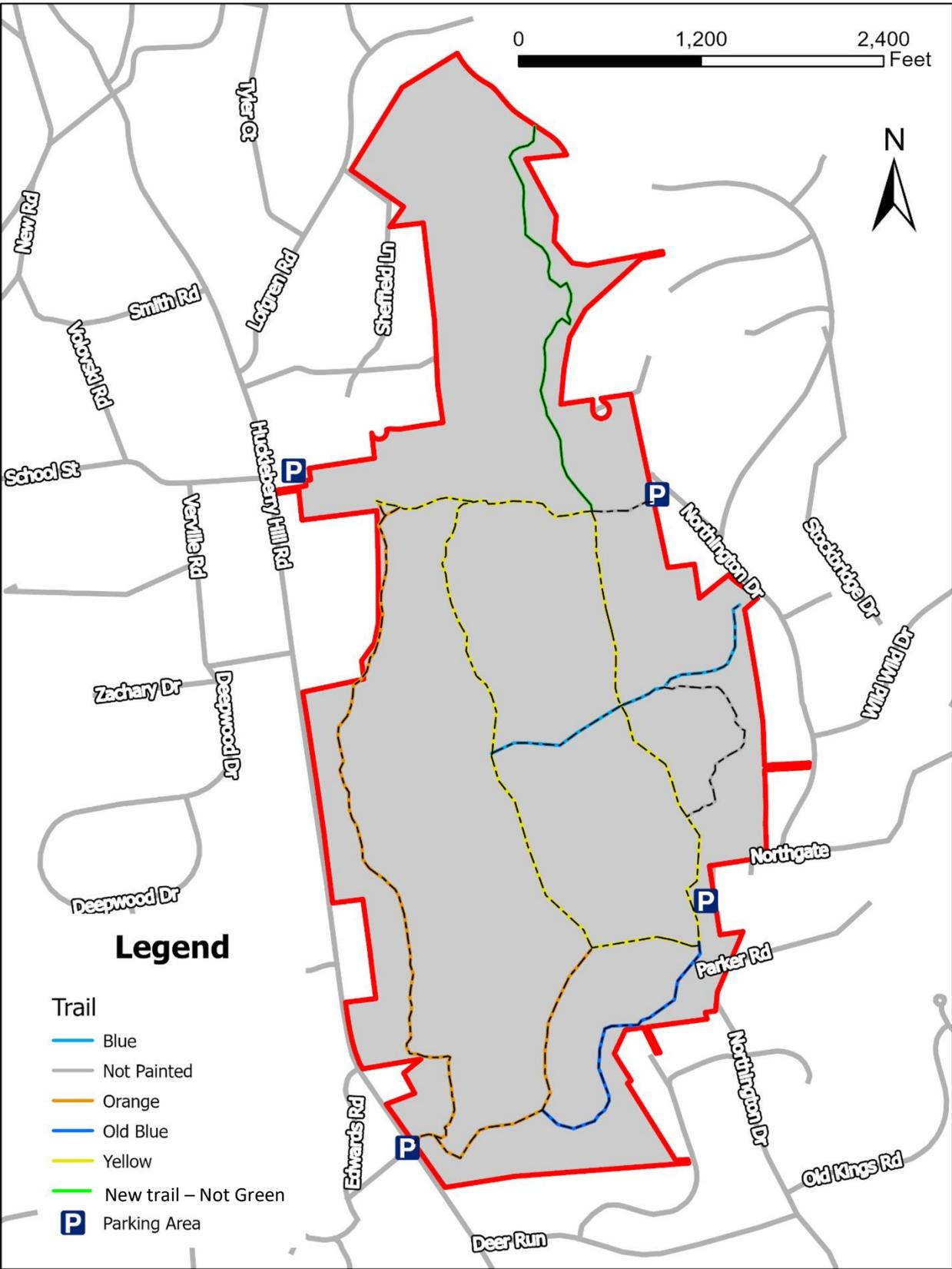
Environmental Education

Currently there are no interpretive or educational resources available along these trails. There was previously a viewing area looking into the wet meadow, but it is now fallen apart. A new viewing area or bird blind etc. could be installed in a similar location along with a dedicated spur trail to it. Recent beaver activity in the area may limit the sustainability of that location if water levels begin to rise. The success of the recent forest management projects could be highlighted with signage, educational programming, or other tools and resources.



Vertical growth rates of white pine saplings in various conditions throughout the property. In photo 1 there was +/- 7 inches of growth in a small gap in the central portion of Stand 3; photo 2: +/- 10 inches of growth in an older tree in the same gap in Stand 3; photo 3: +/- 18 inches of growth in a larger gap in Stand 1; photo 4: +/- 3 inches of growth in Stand 6 with a mostly closed canopy. The distance between each whorl of branches represents one year of growth. The photos below are the canopy closures of photos 1 and 2 (below right), and 4 (below left).





2.5.8 Forest Management

The current open space and forest management program should be continued to maintain the health, aesthetic appeal, diversity, resilience, and productivity of this valuable forested property.

Stand Descriptions and Management Recommendations

Stands are separate natural communities that are distinct from each other. Dividing a property into stands makes it easier to correctly describe the property and to make appropriate recommendations. Once identified, each stand is treated separately based on its unique characteristics. The forest on Huckleberry Hill consists of eight stands, with four additional non-forested areas described in this plan.

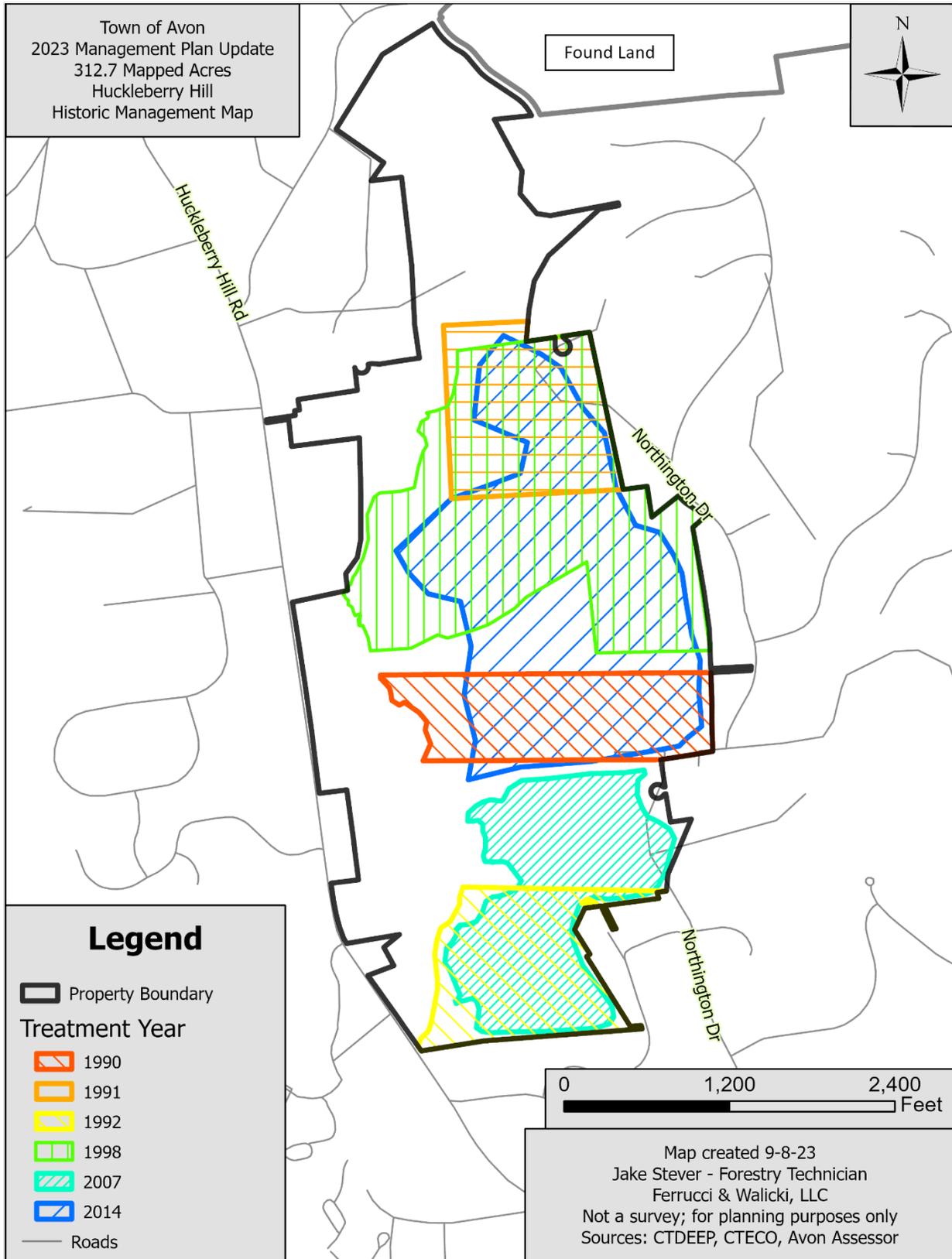
Huckleberry Hill Recreation Area Stands

Stand	Acres	Description	Recommendations
1	98.9	Oak and Mixed Hardwood Sawtimber with Regeneration	Single tree/Group selection
2	27.3	Oak and White Pine Sawtimber	Single tree/Group selection
3	27.9	White Pine, Oak and Mixed Hardwood Sawtimber and regen	Single tree/Group selection
4	25.0	Oak Sawtimber	Single tree/Group selection
5	29.0	Maple, Oak and Ash Sawtimber and Poletimber	Treat invasives
6	13.4	Oak and Mixedwood Sawtimber and Poletimber	Treat invasives
7	20.8	Mixed Hardwood Sawtimber	Treat invasives
8	57.8	Forested Wetland	Treat invasives, monitor
9	2.9	Shrub Swamp	Maintain as open wetland
10	0.4	Potential Vernal Pools	Monitor
11	5.5	Wet Meadow	Monitor, treat invasives, install blind
12	3.8	Recreation Field	Treat invasives, install kiosk, plantings
Total	282.4 acres		

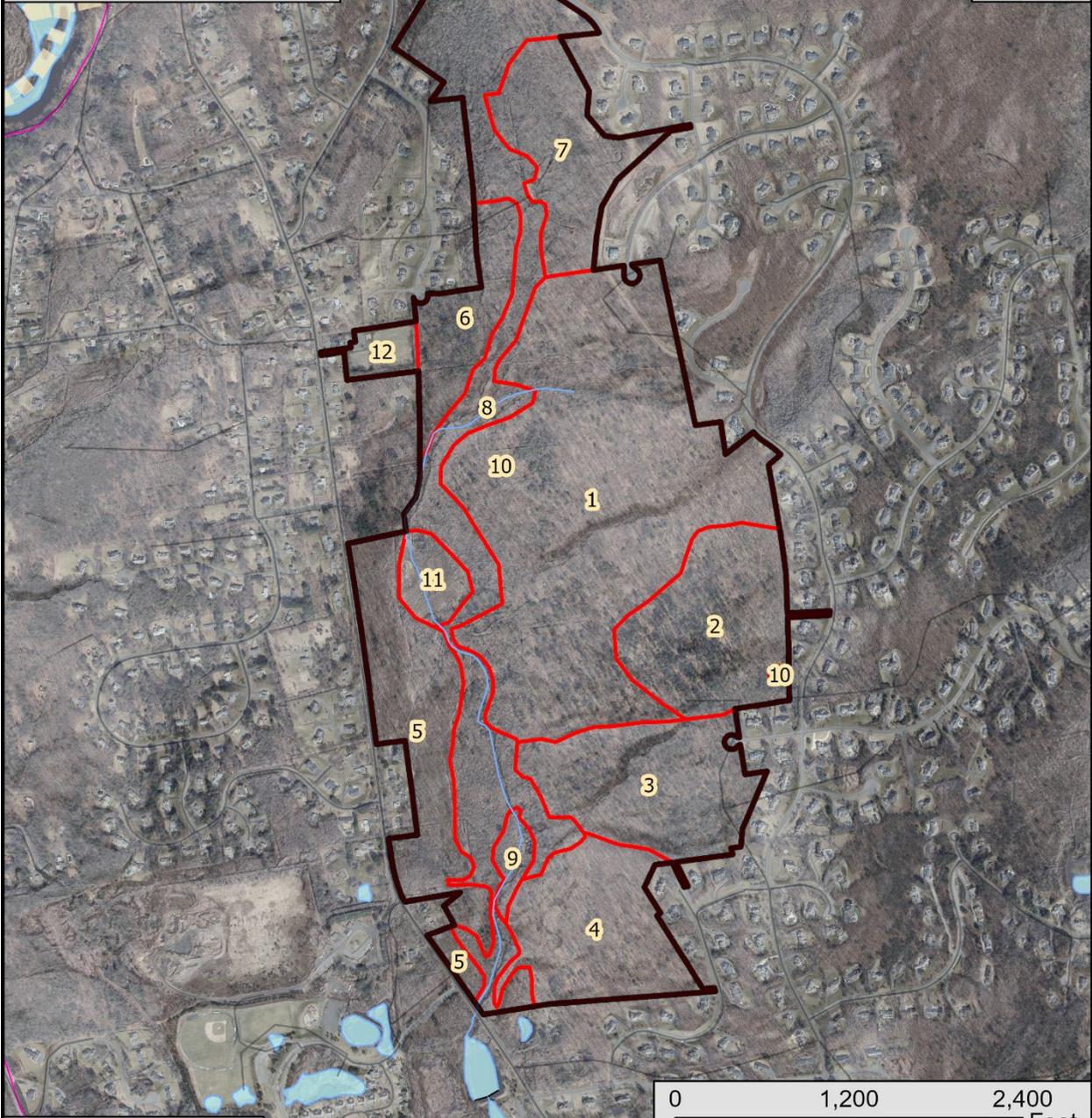


The “stilts” of this yellow birch in Stand 8 are from a time when the tree germinated and grew on a stump or log that has since decomposed.

Treatment History Map



Town of Avon
2023 Management Plan Update
312.7 Mapped Acres
Huckleberry Hill Stands Map



Legend

- Roads
- ▬ Property Boundary
- ▭ Stand Boundary
- Town Boundary

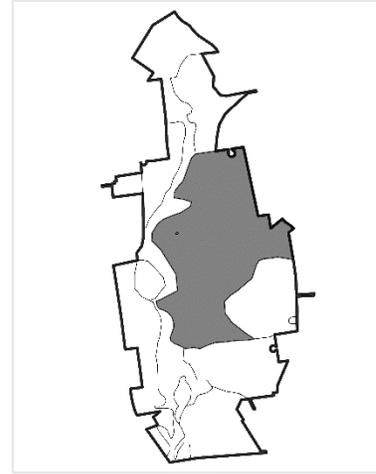
Map created 9-8-23
Jake Stever - Forestry Technician
Ferrucci & Walicki, LLC
Not a survey; for planning purposes only
Sources: CTDEEP, CTECO, Avon Assessor

Stand 1: Mixed Hardwood Sawtimber (98.9 Acres)

Description:

This is the largest stand on this property covering about 99 acres east of Hawley Brook. It is located on a moderate, west-facing slope with two intermittent watercourses within the stand and one forming the southern boundary with Stand 3. The western boundary is the forested wetland associated with Hawley Brook. The site is easily operable with equipment access from the existing woods road that crosses Hawley Brook and woods roads throughout the stand. Much of the yellow-blazed loop trail is in this stand as well as the entire blue-blazed trail.

This stand is extremely diverse and more than 12 different tree species are notable parts of this stand including red oak, black oak, white oak, white pine, tulip poplar, and sugar maple. Some of the white pine in this stand had significant amounts of pine cones during inventory in 2023. Acorn production appeared limited. There is a sizable contingent of black birch, red maple, and hemlock poletimber-sized trees growing underneath the mostly sawtimber-sized overstory. This stand contains many canopy gaps intentionally created during previous forest management activities that have filled in with abundant and diverse regeneration. White pine seedlings and small saplings growing in gaps are consistently growing at 1.5-2 ft. in height per year. (see a photographic explanation of this at the end of Section 2.5.7)



A pocket of very large diameter tulip poplar growing in the western portion of Stand 1 shown above and at right. Large trees are important for a variety of reasons and are found throughout this and all other properties covered in this plan.

There have been three major management projects that have been conducted in this stand over the last 30 plus years. The resulting influx of vegetation is very diverse and almost completely composed of native



trees, shrubs, and herbs with the exception of the northern portion of this stand where barberry grows densely in some places. The additional growing space that has been created by periodically cutting and removing trees has maintained vigorously growing overstory trees retained during each treatment. The most recent treatment which occurred between 2015-2016 encouraged a massive influx of tree and shrub species including prodigious amounts of oak, hickory, and tulip

poplar seedlings along with other desirable associates like white pine, maple-leaf viburnum, huckleberry, and blueberry. In addition to creating favorable conditions for retained trees and regeneration, the cutting and removal of trees to create these conditions has resulted in the sustainable production of wood products from locally used firewood to veneer quality logs. Some of the retained trees show signs of epicormic branching following the most recent treatment.

The current basal area is 86 square feet per acre, which is within the stocking range considered optimal for maintaining overstory tree vigor for this forest type. Many of the stand's trees are in good health and have been able to increase their vigor and growth rates in response to the extra growing space they have received because of previous treatments. This stand has a good mix of very large trees, smaller sawtimber, poletimber and pockets of seedlings and saplings that give it structural diversity, different size and age classes, and a diverse mix of species in all strata (understory, midstory, overstory). Deer browse is present in this stand, but has not yet resulted in overwhelming damage to the regeneration that established following the last treatment.



An excellent pocket of regeneration dominated by white oaks and mix of native shrubs in the central portion of Stand 1 along the blue trail (above). Over time, expanding the gap that was created during the last treatment will help ensure the regeneration can continue to be a viable part of the future of this forest.

There are moderate to dense amounts of understory and midstory trees and shrubs throughout the stand. These include viburnums, American chestnut, spicebush, witch hazel, ironwood, and muscledwood. Both blueberry and huckleberry are common throughout the stand, particularly within gaps. Other understory vegetation noted in the stand includes a diverse mix of herbaceous species. Club mosses are very dense in clusters. Ferns are present in moderate density across much of the stand. Other well distributed species, in notably lesser densities, include maple-leaf viburnum, spicebush, and sedges. Lowbush blueberry, wild strawberry, witch hazel, and striped pipsissewa were noted in moderately dense patches, but not well distributed throughout the stand. In lower densities, beaked hazelnut, Canada mayflower, false Solomon's seal, wild grape, huckleberry, Indian cucumber, Jack-in-the-Pulpit, mountain laurel, partridgeberry, sweet fern, rattlesnake plantain, *rubus spp.*, shinleaf, skunk cabbage (in poorly drained soils and along drainages), violets, Virginia



creeper, wild geranium, spring beauties, cinquefoil, zigzag goldenrod, whorled loosestrife, sarsaparilla, baneberry, wild oats, nettles, and white wood aster were all observed. In a small drainage in the eastern portion of the stand American golden saxifrage was noted. Spicebush, sweet pepperbush, and muscledwood are found closer to Hawley Brook. Royal fern was noted in some isolated wet pockets.



Densely growing barberry in the northern portion of Stand 1. Reducing the percentage of invasive plants here can help allow native species the ability to occupy the site.

Japanese barberry is present in the northern portion of the stand and grows somewhat densely in places. One pocket of Ailanthus (a.k.a. tree-of-heaven) was noted in the western portion of this stand near the potential vernal pool in Stand 10. No invasive plant treatments were conducted prior to the last forest management activities.

Soils:

Soils in this stand consist of Canton and Charlton soils, Charlton-Chatfield complex, Sutton and Ridgebury, Leicester and Whitman soils. All these soils are very stony or rocky glacial till soils that are moderately well drained to very well drained, except Ridgebury, Leicester and Whitman soils which are poorly drained wetland soils associated with Hawley Brook. These soils are mostly associated with forestland and are not important farmland soils. The Sutton soils are closer to the Ridgebury, Leicester and Whitman wetland soils at the bottom of the hill, while the others are mixed amongst each other throughout the remainder of the stand.

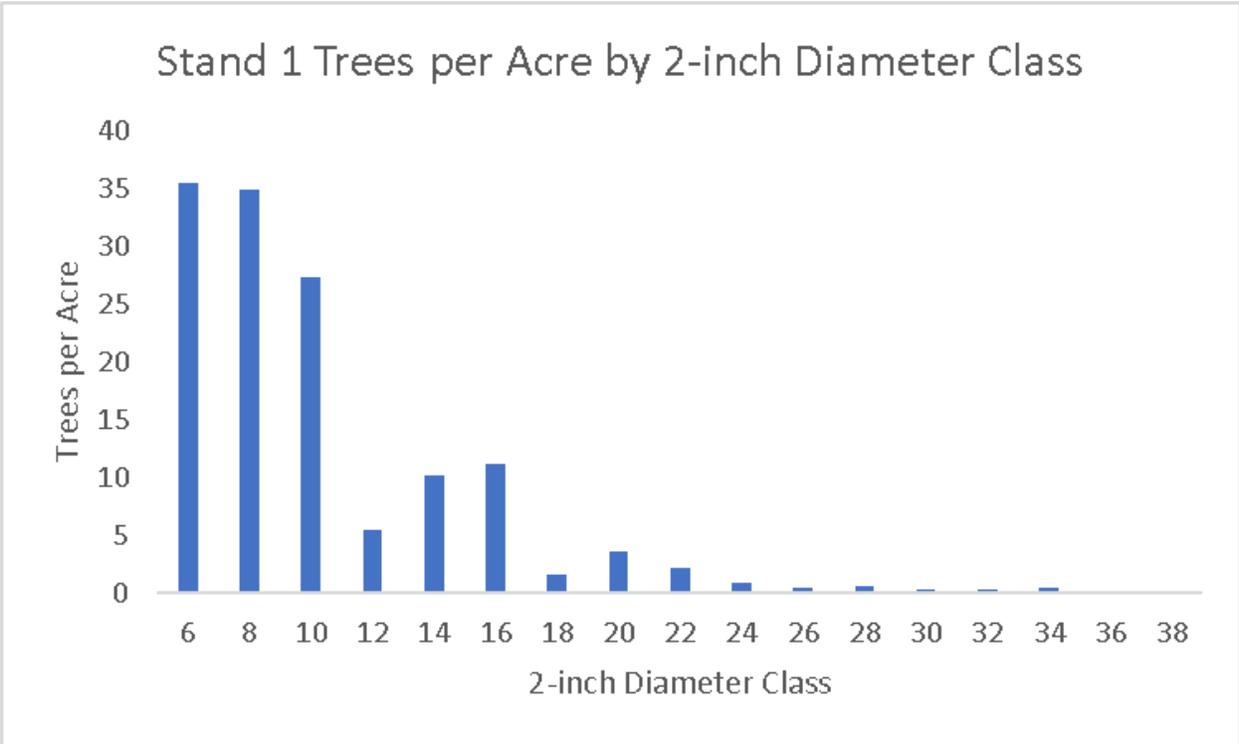
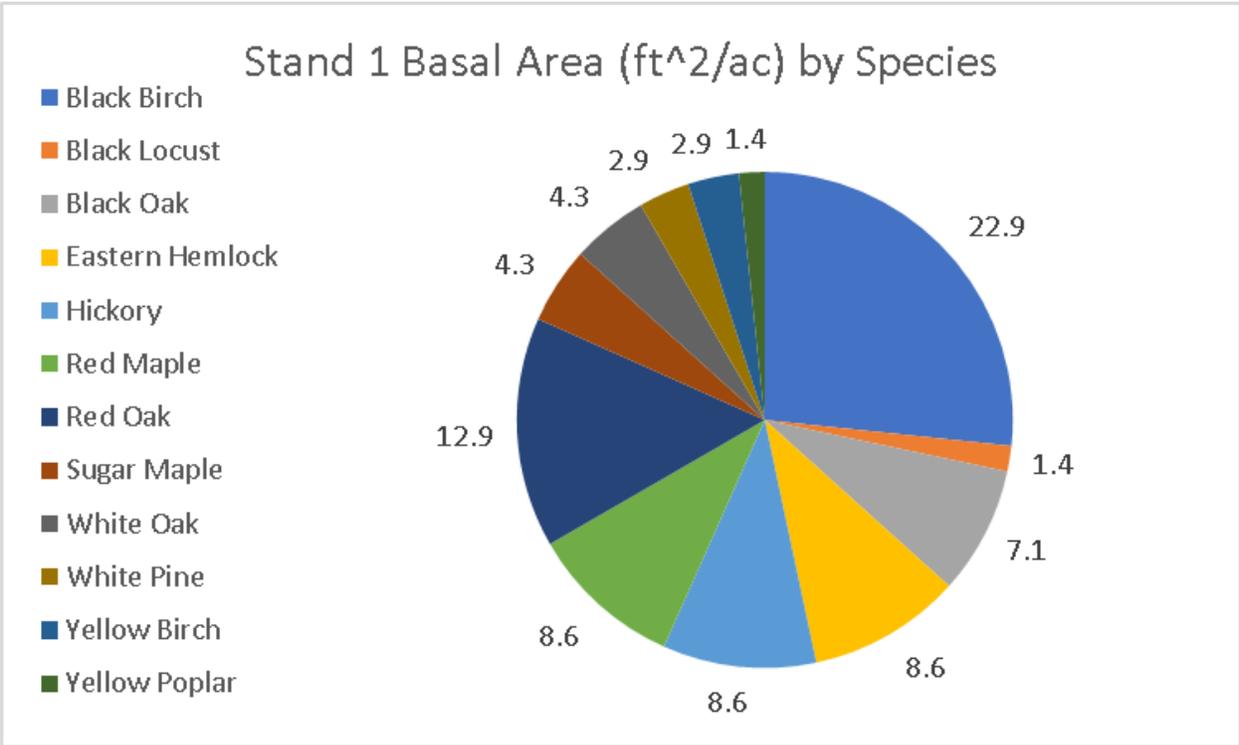
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			10,565			
Saplings			393		8.7^ cord	6.1^ cord
Sawtimber trees	59	49	38	30	5.6 MBF	5.2 MBF
Poletimber trees	27	19	95	57	1.3 cord	1.2 cord
Snags	1		3			
Total	86	67	133	87		
MSD*	10.9					

*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre



Desired Future Conditions:

- Diverse, vigorous, resilient forest

- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component
- Maintain and enhance production of hard and soft mast
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

The goals for the management of this stand are to continue maintaining a mixed species forest with a high degree of diversity, continue to improve wildlife habitat and structural complexity, and maintain trail function. To accomplish these goals, single tree and group selection focusing on gap expansion should be used. With this system, individual trees are removed where doing so can increase growing space for retained trees, and/or to remove trees at high risk for falling out of the stand before the next potential entry. High risk trees are those that are showing signs of decline, rot, poor form (usually in the form of V-forks which are prone to split), or have some other kind of physical damage. The increase in growing space is intended to increase growth rates and vigor, maintain live crown, and in turn resilience of retained trees to potential stressors.

Where group selection is used, most or all trees in areas of ¼-acre up to 2 acres are removed, creating the light and seedbed conditions required for desired tree species including the various oaks, hickories, and white pine to regenerate. During the last treatment, the gaps created with small group selections successfully regenerated with a diverse mix of native vegetation. Groups should be anchored on pockets of desirable regeneration or poor overstory health whenever possible to maximize their impact, as well as expanding on gaps created during previous treatments. Retain most large trees with full crowns. Select, mark, and map some trees that will be left as legacy trees to be retained to their biological lifespan. Retain snags and cavity trees. Cut some poor-quality trees and with the intent of keeping them on site where they are felled to increase the amount of large woody material on the ground to enhance that structural feature which is somewhat lacking in this stand and throughout most of Avon’s properties.

In 8-10 years, 5-10% (approximately 5-10 acres) of the stand should be treated with group selection. This will continue to diversify the structure of the stand, release existing regeneration, and encourage the presence of another size and age class of trees. Where diverse mixes of regeneration exist, attempt to help ensure they can become a viable part of the future forest by removing some of the competing vegetation. Where black birch saplings and pole-timber-sized trees are found to be overtopping more diverse regeneration, cut some of the black birch to release the understory. Although black birch is a native tree species, their populations are increasing in the state over time and will likely continue to do so. This treatment is meant to maintain and enhance diversity by taking advantage of desirable regeneration already present.

The northern portion of this stand has contained invasive plants for some time. Efforts to treat invasives prior to the management project in 2015-2017 did not occur. Develop mapping that indicates the boundaries of the main infestations. Prior to tree cutting in any future management activity, treat invasive plants to limit their spread and to give native species a chance to occupy the site when/if canopy gaps that allow sunlight to reach the forest floor are created.

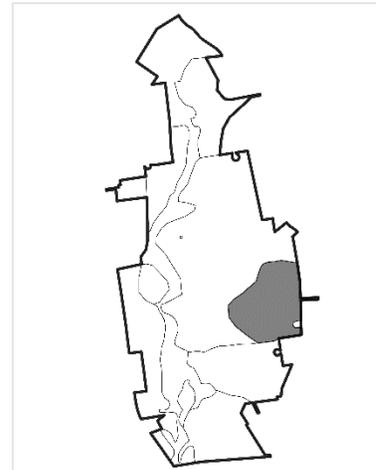
Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps every 15-20 years to continue diversifying the stand’s structure and continue the transition to an uneven-aged structure which is likely to be highly resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor progress of current cohort of seedlings that established following the last treatment
- Install some temporary deer fencing in areas where deer browse appears to be an issue. Fencing can help show if deer browse impacts limit growth rates and/or diversity of regeneration. If this is to be done within view of any of the official trails in the stand, install signage to explain what the fencing is and why it is there.

Stand 2: Oak and White Pine Sawtimber (27.3 Acres)

Description:

This stand consists of approximately 27 acres of mostly oak and white pine sawtimber on top of the hill in the eastern portion of the property. This stand is relatively flat with a knoll in the middle of the stand which has gentle north, south, east, and west aspects. The site is easily operable with equipment access from the existing woods road that crosses Hawley Brook and skid trails throughout the stand, or from Northgate and Northington Drive. Some of the yellow-blazed loop trail is in this stand as well as an unmarked trail. There are no streams in this stand, which is quite dry except for a possible vernal pool in the southeast corner.



This stand contains mostly red oak, white oak, black oak, and white pine sawtimber-sized trees with a mix of red maple, black birch, hickory, hemlock, and white pine pole timber-sized trees. Occasional pitch pine are present in the central portion of the stand and are in fair to poor health. Like Stand 1, there



Excellent regeneration in a gap in the western portion of Stand 2. The combination of oaks, pine, black birch, and a mix of native shrubs and herbs provides excellent cover and a bright outlook for the long-term diversity in this stand.



The unique blocky pattern of this pitch pine found in the central portion of Stand 2 is a distinguishing feature that helps tell it apart from the white pine in the stand.

densely growing pockets of regeneration in this stand. Regeneration from the last treatment (2015-2017) is very diverse and contains a mix of oaks, hickory, white pine, American chestnut, tulip poplar, black birch, and other tree species as well as a similar mix of shrubs and herbs. Previous treatments resulted in a mix of tree seedlings (now saplings and small poletimber-sized trees) dominated by black birch, white pine, and red maple with a fair amount of American chestnut, and some white oak, black oak, and hickory as well.

The current basal area is 93 square feet per acre, which is within the stocking range considered optimal for maintaining tree vigor for this forest type. Many of the stand's trees are in good health and are benefiting from the increased space and light created by previous treatments. This stand has a good mix of large trees, smaller sawtimber, poletimber, and dense pockets of seedlings and saplings that provide structural diversity and different age classes, all of which increase the resilience of the stand to potential stressors. The softwood component (dominated in the overstory by white pine but with the occasional pitch pine as well as hemlock in the midstory) also provides valuable wildlife habitat for species that prefer mixedwood conditions as opposed to primarily or exclusively hardwood.

Understory vegetation is dominated by blueberry and huckleberry, both of which have excellent wildlife value. Very few invasive plants were noted in this stand. Other understory vegetation noted includes sedges, Canada mayflower, maple-leaf viburnum, starflower, striped pipsissewa, sweet fern, witch hazel. Browse damage is common in parts of the stand, but as of yet browse has not limited the overall success of tree, shrub, and herbaceous vegetation in the stand.

Soils:

Soils in this stand consist of Canton and Charlton soils, Charlton-Chatfield complex and Sutton soils of varying slope percentages. All these soils are very stony or rocky glacial till soils that are moderately well drained to very well drained. These soils are mostly associated with forestland and are not important farm or wetland soils. The Sutton soils in this stand surround the potential vernal pool, while the western part of the stand is Charlton-Chatfield complex and the eastern part of the stand is Canton and Charlton soils.



The bushy appearance of this red maple stump sprout in the central portion of Stand 2 is due to repeated browse of the buds by deer. Over time, this intensity of browse can kill young trees.

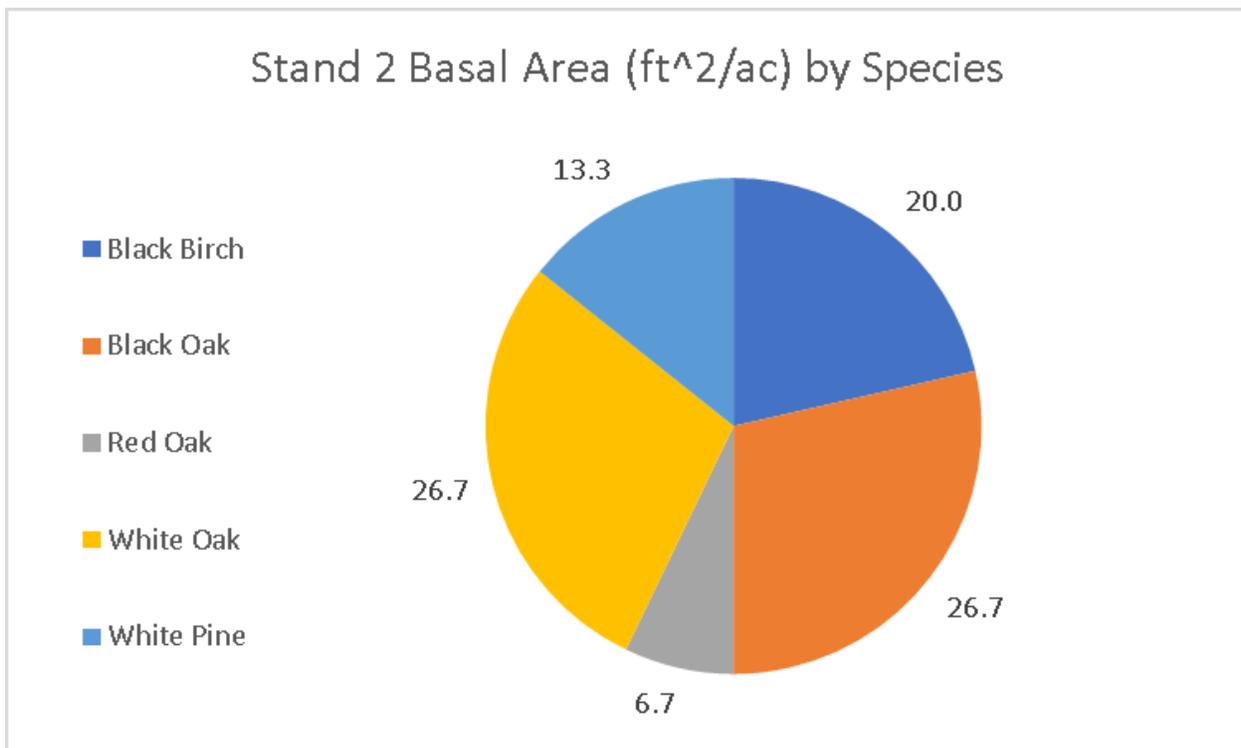
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			1,000			
Saplings			967		3.4^ cord	2.6^ cord
Sawtimber trees	67	60	54	46	5.9 MBF	5.9 MBF
Poletimber trees	27	20	101	86	2.3 cord	1.2 cord
Snags	0		0			
Total	93	80	155	132		
MSD*	10.5					

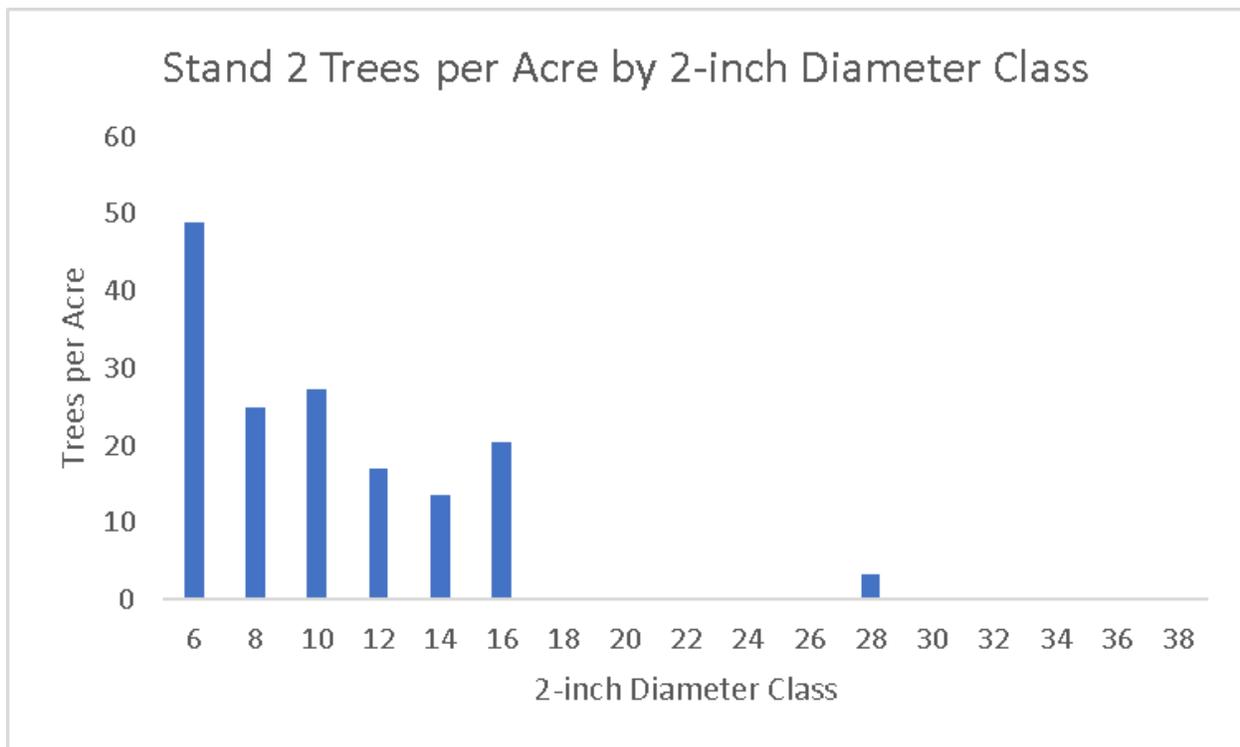
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre





Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component (including pitch pine)
- Maintain and enhance production of hard and soft mast
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

The goals for the management of this stand continue to be similar to those for Stand 1, therefore gap creation and expansion using group selection and single tree selection is warranted given the success of these treatment types in the past. Expand existing gaps to increase the amount of sunlight available to seedlings that regenerated after the most recent treatment. White pine and oak regeneration, which is the most common regeneration in this stand, should be favored and released where it exists. Retain most healthy large-crowned trees with a focus of retaining the pine, especially the pine near the yellow trail to maintain a mostly closed canopy.

Locate and treat any invasive plants in this stand.

The next treatment should occur in about 2027 a few years prior to the recommended treatments in Stands 3 and 4 to remain consistent with the timing of previous treatments in each area. Retain vigorous

trees of good form of a variety of species and size classes to continue growing and to provide a seed source for the future focusing on oaks (especially red and white oak), hickory, and white pine.

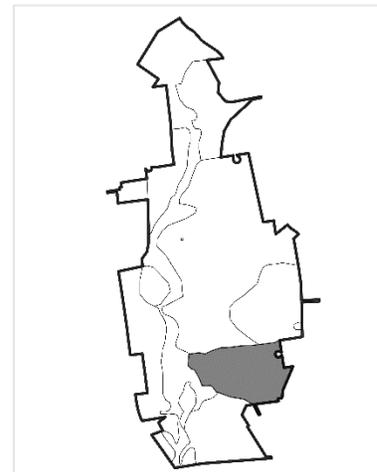
Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps every 15-20 years to continue diversifying the stand’s structure and continue the transition to an uneven-aged structure which is highly likely to be resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor condition of pitch pine in the stand
 - Underplant with other softwoods as needed and where conditions warrant (i.e., in areas with sufficient amounts of sunlight and physical growing space) if pitch pine continue to decline
- Monitor for invasive plants and treat them as needed to ensure they don’t become established

Stand 3: White Pine, Oak, and Mixed Hardwood Sawtimber (27.9 Acres)

Description:

This stand consists of approximately 28 acres of mixed hardwood sawtimber with notable white pine and hemlock components. This stand is completely on a west-facing slope in the southwestern portion of the property. The site is operable with equipment access from the existing woods road that crosses Hawley Brook and skid trails throughout the stand. There are intermittent drainages on both the north and south boundaries of the stand and one intermittent drainage through the middle of the stand. The western boundary of the stand is the forested wetland associated with Hawley Brook. The drainages have been successfully crossed during previous management activities. The orange-blazed trail and the old blue-blazed trail meet up with the yellow-blazed loop trail in this stand.



This stand contains mostly sawtimber-sized trees with a substantial poletimber component mixed in as well as beneath the sawtimber. Mixed hardwoods including black oak, red oak, white oak, red maple, and yellow birch make up the majority of the basal area, but some of the largest trees in the stand are white pine. Canopy gaps created during the last treatment have successfully regenerated to a variety of native species of trees, shrubs, and herbs. Hemlock can be found in the mid-story. HWA and scale is present on many individual trees in the stand. (See photo of a hemlock in this stand with HWA on page 28)

The current basal area is 100 square feet per acre, which is within the stocking range considered optimal for this forest type for maintaining tree vigor. Many of the stand’s trees are in fair to good health and are benefiting from the increased space and light created by previous treatments. This stand has a good mix of very large trees, smaller sawtimber- and poletimber-sized trees, and many pockets of seedlings and saplings that provide structural diversity and multiple age classes. The tree regeneration in this stand contains most of the species present in the overstory with white oak making up the majority. Other species present (especially in gaps) include tulip polar, red maple, hickory, white pine, red oak, and white ash

among others. The additional size and age classes in combination with the maintenance of species diversity and general lack of invasive plants can all help buffer the negative impacts of forest or tree health threats. The presence of healthy softwood pockets (pine and hemlock) also provides important habitat for wildlife in the form of cover, browse, and nesting preferences for certain species.



The white oak stump sprout seen here (left) in the northeastern part of the stand along the yellow trail has been able to grow a bit in the understory with relatively limited amounts of light available. Expanding the gap in the canopy above it can help it continue to grow.



The understory in this stand, like Stand 2, is relatively open. However, blueberry, huckleberry, maple-leaf viburnum, some sedges, poison ivy, striped pipsissewa, ferns, hazelnut, and other woody shrubs are all present. Very few invasive plants were noted in this stand.



The structure and conditions of a portion of the stand where no canopy gaps were created during the last treatment. Red maple, beech, and black birch saplings dominate the midstory with occasional sugar maple and hemlock. Due to mostly complete canopy closure, there is limited sunlight reaching the forest floor and limited understory vegetation.

Soils:

Soils in this stand consist of Charlton-Chatfield complex, Sutton and Ridgebury, Leicester and Whitman soils of varying slope percentages. These soils are very stony or rocky glacial till soils that are moderately well drained to very well drained, except Ridgebury, Leicester and Whitman soils which are poorly drained wetland soils associated with Hawley Brook. These soils are mostly associated with forestland and are not important farmland soils. The Sutton soils are closer to the Ridgebury, Leicester and Whitman wetland soils at the bottom of the hill while the majority of the stand is Charlton-Chatfield complex.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			1,800			
Saplings			580		4.9^ cord	3.9^ cord
Sawtimber trees	88	72	52	43	7.5 MBF	6.4 MBF
Poletimber trees	12	8	70	41	0.4 cord	0.4 cord
Snags	12		13			
Total	100	80	123	84		
MSD*	12.2					

*Quadratic Mean Stand Diameter

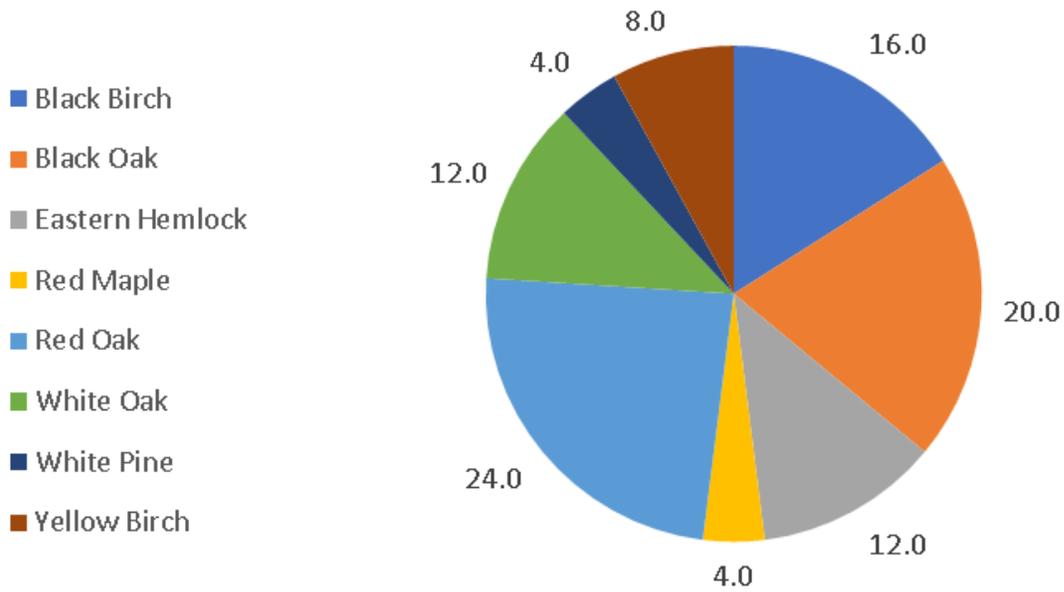
** Total trees includes sawtimber and poletimber-sized trees only: MBF= Thousand board feet

BA= Basal area and is given in square ft./acre; ^=Firewood volume from trees >12" DBH

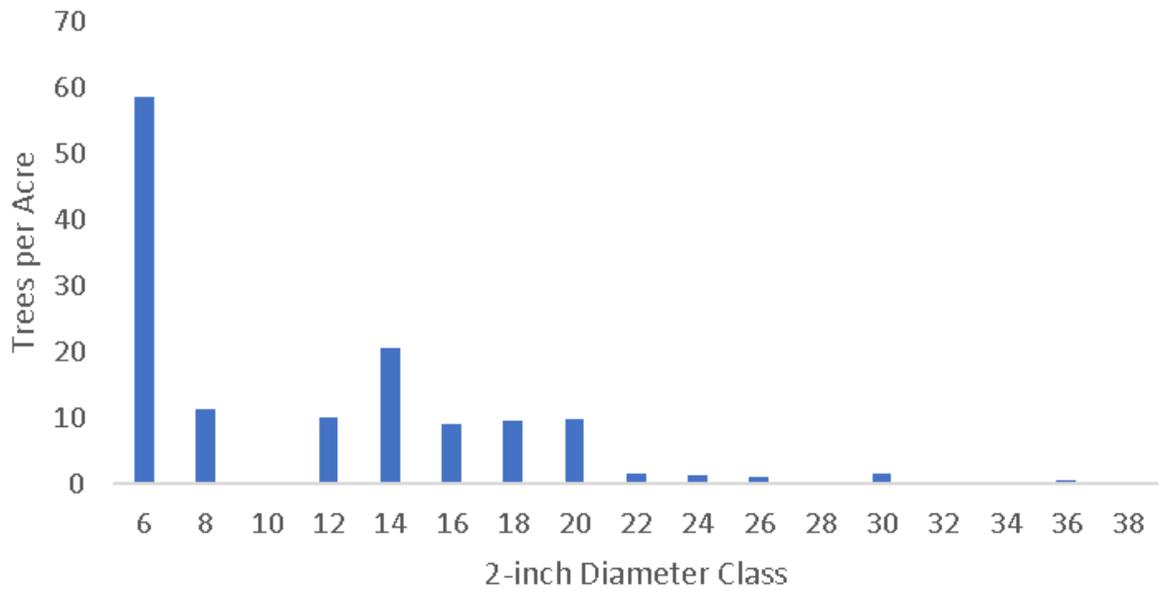


One of the new trail markers on the Blue Trail in this stand. Periodically backing the fasteners out of the tree will help keep these signs usable over the long term. This sign is beginning to bend as the tree grows each year.

Stand 3 Basal Area (ft²/ac) by Species



Stand 3 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component
- Maintain and enhance production of hard and soft mast
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

The treatment that was marked in this stand shortly before the writing of the last plan was completed in 2009-2011. No management activities have occurred since then. Like Stands 1 and 2, management within this stand should be focused on regenerating desirable species and increasing the stand’s structural complexity. Continue to use group and single tree selection concurrently with the next round of management in Stands 1, 2, and 4. Group selections should be anchored on pockets of desirable regeneration or areas with poor overstory health to maximize their effect. Expand existing gaps where desirable regeneration is already present within a gap.



Mixed species regeneration including black birch, oaks, pine, and maples is present in this small canopy gap along the Yellow Trail in the central portion of the stand. Over time, expanding the edges of the gap and/or creating new gaps adjacent to existing gaps can help maintain growth of younger trees, establish new size and age classes of vegetation, and maintain the diversity of tree species currently on the property. Below is a lowbush blueberry in full sun with prolific flowers and fruit.

Future Management:

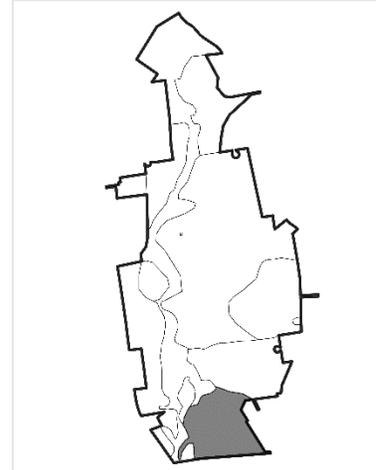
- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps of 1 acre or more every 10-20 years to continue diversifying the stand’s structure and continue the transition to an uneven-aged structure which is highly resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor for invasive plants and treat as needed to help ensure they don’t become established



Stand 4: Oak Sawtimber (25.0 Acres)

Description:

This stand contains about 25 acres in the southern-most portion of the property. The eastern portion of this stand is one of the steepest parts of the property with the slopes facing west. Glacial erratics (remnant boulders dropped by advancing or retreating glaciers during the last ice age) are found in parts of this stand. The western portion of this stand flattens out closer to Hawley Brook. The northern boundary of this stand is an intermittent drainage, while the western boundary is either shrub swamp or forested wetland associated with Hawley Brook. Equipment can access this stand where the orange-blazed trail crosses the intermittent drainage. The orange-blazed trail and the old blue-blazed trail traverse this stand.



This stand contains mostly red and black oak sawtimber-sized trees with some scarlet oak, white oak, and tulip sawtimber. There is also some white pine, sugar maple, yellow birch and black birch poletimber growing underneath the sawtimber. Regeneration within this stand is both prolific and diverse including American chestnut, beech, black birch, yellow birch, black cherry, black oak, red maple, hickory, white oak, red oak, sassafras, tulip, and white pine. There are significant numbers of both seedlings and saplings. Pockets of the beech in this stand contain beech leaf disease.



Beech leaf disease is more advanced in this stand than in other parts of the property. Note the alternating bands of dark and light green as well as the cupped leaf shape of the beech at right. At left is the nearly naked appearance of the beech at the end of June. This pocket of infestation is in the southcentral portion of the stand.



The current basal area is 72 square feet per acre, which is on the lower side of what is considered full stocking to maximize vigor and growth for this forest type. Many of the trees in this stand are in good health, particularly around the edges of the gaps created in the last treatment where they have been able to use the additional sunlight to increase their growth rates and vigor. This stand has a good mix of very

large trees, smaller sawtimber, poletimber, and pockets of seedlings and saplings that provide structural diversity and different age classes.



A mix of native trees, shrubs, and herbs in a small gap in the northcentral portion of the stand. The general absence of invasive plants in the interior of this stand is remarkable.

Understory species present here include spicebush, poison ivy, Virginia creeper and viburnums mixed throughout. Soft masting species, specifically lowbush blueberry and huckleberry in moderate density with highbush blueberry and maple-leaf viburnum in relatively low density, comprise the majority of the non-tree understory vegetation. Clubmosses, sedges, and striped pipsissewa were also observed in relatively low density.

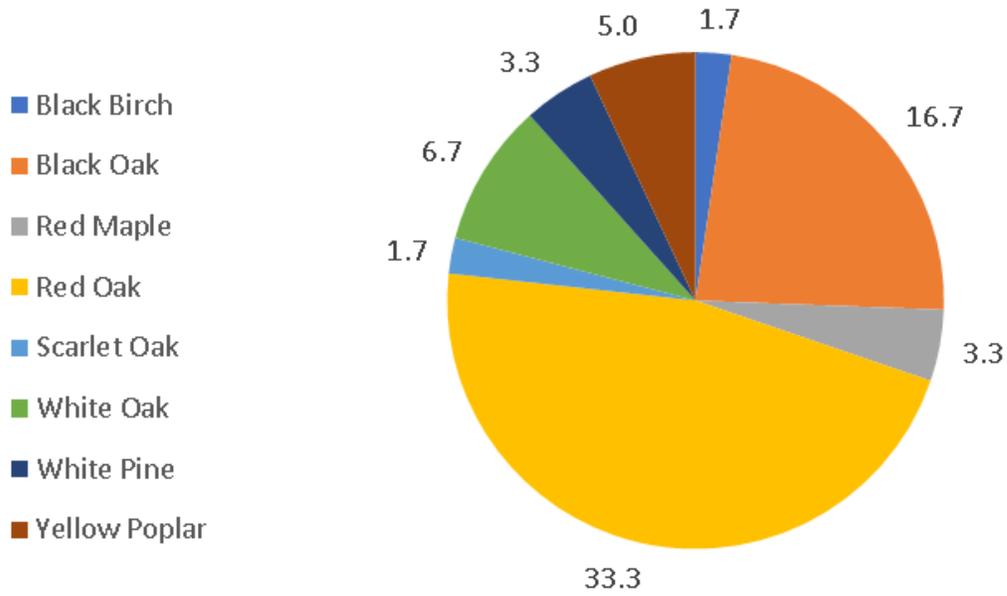
Soils:

Soils in this stand consist of Paxton and Montauk, Woodbridge, Sutton and Gloucester soils of varying slope percentages. These soils are very stony or rocky glacial till soils that are moderately well drained to very well drained. These soils are mostly associated with forestland and are not important farm or wetland soils. The Sutton and Gloucester soils in this stand are found toward the bottom of the slope near Hawley Brook, while the majority of the stand is Charlton-Chatfield complex.

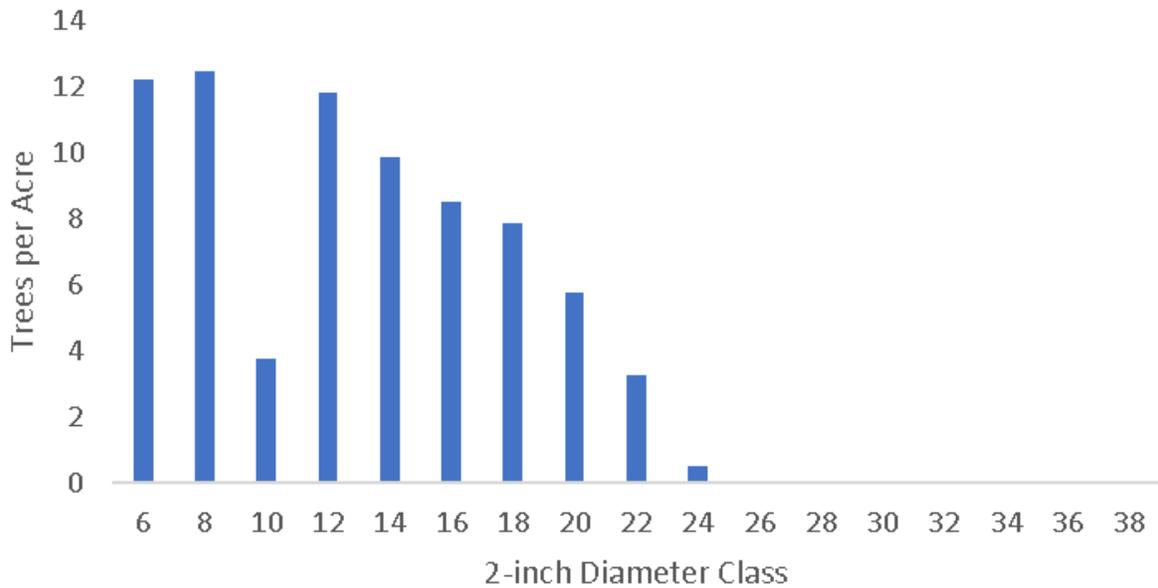
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			4,000			
Saplings			900		6.1^ cord	6.1^ cord
Sawtimber trees	60	58	40	39	6.6 MBF	6.6 MBF
Poletimber trees	12	10	36	34	0.6 cord	0.4 cord
Snags	0		0			
Total	72	68	76	73		
MSD*	13.1					

*Quadratic Mean Stand Diameter; ** Total trees includes sawtimber and poletimber-sized trees only; MBF= Thousand board feet; BA= Basal area and is given in square ft./acre; ^=Firewood volume from trees of sawtimber size (>12" DBH)

Stand 4 Basal Area (ft²/ac) by Species



Stand 4 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component
- Maintain and enhance production of hard and soft mast
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

The treatment that was marked in this stand shortly before the writing of the last plan was cut in 2009-2011. No management activities have occurred since then. Like Stands 1, 2, and 3, management within this stand should be focused on continuing to regenerate a diverse mix of desirable species and increasing the stand’s structural complexity. Continue to use group and single tree selection to further the stated goals for this stand. Expand existing gaps where doing so can release desirable, diverse regeneration. Group selections should otherwise be anchored on pockets of desirable regeneration or poor overstory health to maximize their effect. Where diverse regeneration created by the last management project is being overtopped by pure stands of sapling and small pole-timber-sized black birch, cut the competing birch to release the more diverse regeneration. The larger scale single tree and group selections should be done concurrently with the next round of management in Stand 3. Retain healthy large, crowned trees of a variety of species (but especially oak, hickory, pine, yellow birch, and tulip). Retain snags and cavity trees where doing so does not create hazards for property users. Continue to recruit large downed woody material by cutting and leaving some large, poorly formed trees.

Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps every 15-20 years to continue diversifying the stand’s structure and continue the transition to an uneven-aged structure which is highly resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor beech status where BLD is worst and ensure that invasive plants do not begin to occupy growing space vacated by beech if they continue to decline

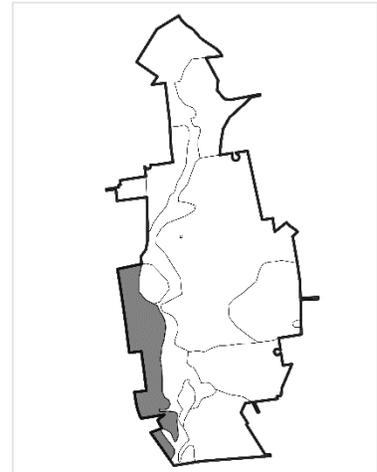
Minimal defoliation of some oak species was noted in limited areas during the 2023 inventory.



Stand 5: Maple, Oak and Ash Sawtimber and Poletimber (29.0 Acres)

Description:

This stand contains about 29 acres in the western portion of the property. This stand is relatively flat with east-facing slopes down to the wetlands associated with Hawley Brook. The exception is right along Huckleberry Hill Road where it is moderately steep in places. Equipment access comes from Huckleberry Hill Road on the existing road just north of the northern inholding. The southern portions of this stand are effectively cut off from management with equipment due to the presence of a wetland complex that limits feasible crossing options. The orange-blazed trail runs north-south through the entire stand. The log landing used for most of the treatments is located in this stand.



This stand contains a mix of small, medium, and large sugar maple and red oak sawtimber-sized trees with some red maple, black oak and scarlet oak sawtimber. There is also a fair amount of sugar maple poletimber, saplings and seedlings growing in the understory throughout the stand. Many of the ash that were noted in previous inventories are now dead or nearly dead due to the presence of emerald ash borer. In the northern portion of the stand there are also some black locust sawtimber-sized trees.



The white pine regeneration in the southwestern portion of the stand is growing well (left). The canopy gap above the seedlings and saplings (right) is allowing some sunlight to reach them which help facilitate their vigor.

The current basal area is 80 square feet per acre, which is near the optimum stocking level for maintaining tree vigor for this forest type. Many of the stand's trees (except for ash) are in fair to good health. This stand has a good mix of very large trees, smaller sawtimber, poletimber, and pockets of seedlings and saplings that give it structural diversity and different age classes. White pine, white ash, beech, black birch, and sugar maple seedlings are present in pockets, though the sugar maples dominate.

There are limited amounts of understory and midstory trees and shrubs throughout the stand. Where present they include viburnums, ironwood, spicebush, blueberry, and musclewood. Spicebush and ferns are found closer to Hawley Brook. Herbaceous vegetation density in this stand is relatively low. False Solomon's seal, ferns, huckleberry, Jack-in-the-pulpit, maple-leaf viburnum, nightshade, sedges, spicebush, and Virginia creeper are all present at low densities. Closer to drainages and roads, invasive plants are present including Japanese stiltgrass, Japanese barberry, garlic mustard, mugwort, burning bush, multiflora rose, and others including a dense patch of pachysandra. No overstory treatments or invasive plant treatments were conducted in this stand during any of the previous plan periods largely due to lack of good access. Some unauthorized motorized vehicle access was noted in parts of this stand.

Unique features of this stand include the former wildlife viewing area and a wet meadow just east of Huckleberry Hill Road. The wet meadow provides valuable wildlife habitat for feeding and cover especially. Despite its proximity to Huckleberry Hill Road it is likely that a variety of birds, amphibians, reptiles, and mammals can use the area for these and other purposes.



The wet meadow on the western side of this stand near Huckleberry Hill Road contains a mix of species and provides a condition not found elsewhere in the stand. There are open wet areas elsewhere on the property, but this one is unique in its smaller size. Some invasive plants are present in the stand and do provide some wildlife habitat values. Over time removing and replacing these with comparable native alternatives that can support pollinators, birds, and other wildlife can help enhance the utility of the area and its long-term resilience and productivity.

Soils:

Soils in this stand consist of Woodbridge, Gloucester, Sutton, Paxton and Montauk and Ridgebury, Leicester and Whitman soils of varying slope percentages. These soils are very stony or rocky glacial till soils that are moderately well drained to very well drained, except for Ridgebury, Leicester and Whitman soils which are poorly drained wetland soils associated with Hawley Brook. These soils are mostly associated with forestland and are not important farmland soils. The Paxton and Montauk soils are found at the top of the hill along Huckleberry Hill Road in the northern section of the stand. Woodbridge soils are found between the Paxton and Montauk soils and the Ridgebury, Leicester and Whitman soils on the flatter parts of the northern section of the stand. Sutton and Gloucester soils are found in the southern portion of the stand.

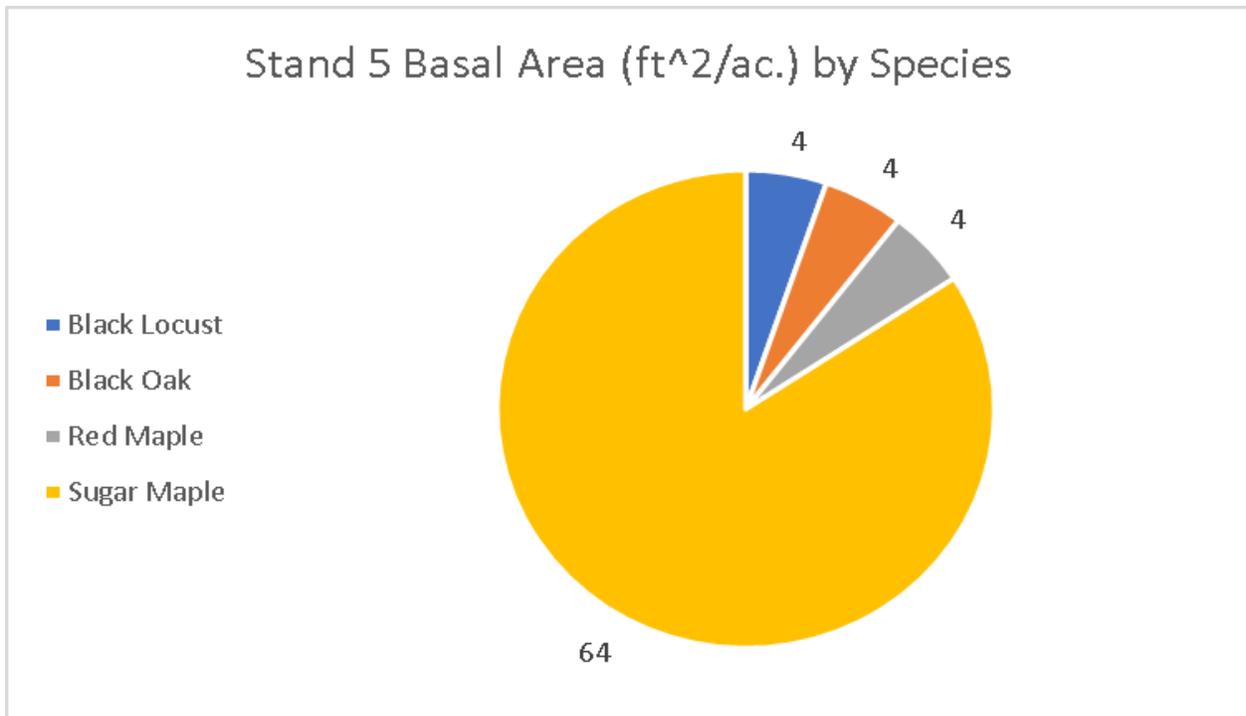
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			1,800			
Saplings			200		4.2^ cord	2.4^ cord
Sawtimber trees	65	55	41	36	5.3 MBF	5.0 MBF
Poletimber trees	15	15	32	32	2.7 cord	2.7 cord
Snags	30		20			
Total	80	70	72	68		
MSD*	14.2					

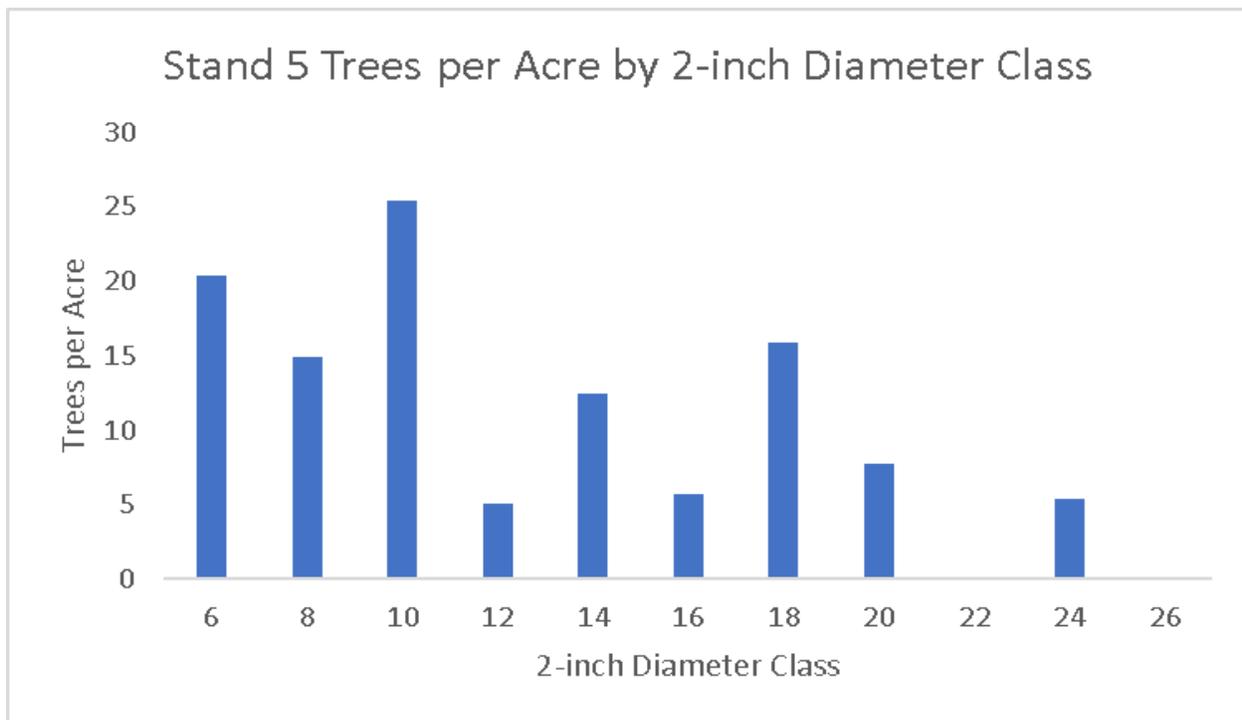
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre





Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Recommendations:

Treat invasive plants near the landing.

Most of this area was treated in 2003 with the southern portion of Stand 1 and Stand 2. It was scheduled to receive a crown thinning and group shelterwood in 2015 with the southern portion of Stand 1 and Stand 2, but that did not get done. Many of the ash trees have died and although the canopy is mostly closed at this point, that appears to be somewhat limiting the continued spread of the invasive plants present. No other action is recommended during this plan period.

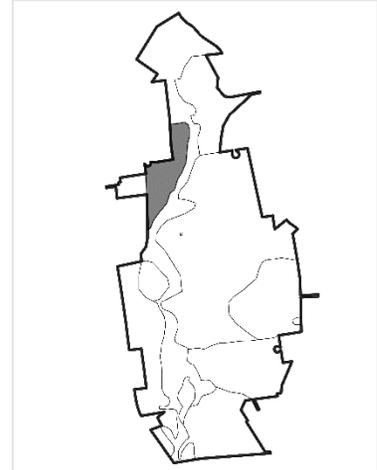
Future Management:

- This stand should be treated every 20 years or so to maintain favorable conditions for tree growth, to remove dying and unhealthy trees and to stimulate or release desirable regeneration.
- Treat invasive plants in roads and adjacent to trails

Stand 6: Oak and Mixedwood Sawtimber and Poletimber (13.4 Acres)

Description:

This stand contains more than 13 acres in the northwest portion of the property, nearest to the recreation field. This stand is one of the flatter areas of the property with a slight slope down to Hawley Brook, which bisects the stand. Most of this stand is bordered by forested wetland associated with Hawley Brook with a portion of the western boundary bordered by the recreation field. Equipment access to this stand is difficult with either a sizeable wetland crossing or crossing the recreation field. The orange-blazed trail and the yellow-blazed trail meet in this stand at the edge of the recreation field.



This stand contains mostly small to medium mixedwood sawtimber-sized trees including white pine, red maple, red oak, black oak, white oak, yellow birch, and tulip poplar sawtimber. There is also some hemlock sawtimber. Poletimber is a significant component of this stand and includes black birch, hemlock, hickory, ash, red maple, white pine, and sugar maple. There are some scattered pockets of oak and white pine seedlings.

The current basal area is 135 square feet per acre, which is within the optimum stocking level for maintaining tree vigor and growth rates for mixedwood stands. This stand has a good mix of very large trees, smaller sawtimber, poletimber and pockets of seedlings and saplings that give it structural diversity and different age classes. The strong presence of softwood trees provides important habitat diversity. The large size of many of the white pines in the stand is notable. Red maples grow densely along the edges, but the interior is dominated by the large pines and oaks. Seedlings and saplings present here include white oak, black oak, red maple, black birch, white pine, tulip poplar, hemlock, hickory and sugar maple.



Conditions and structure in the eastern portion of Stand 6. Note a mix of size classes and likely age classes. The combination of white pine and yellow birch seen here provide useful habitat features for a variety of birds and other wildlife.

Invasive plants grow densely along the boundaries of this stand both along the riparian forests associated with Hawley Brook and along the edge with Stand 12 (the recreation field). Barberry, rose, bittersweet, garlic mustard, and burning bush are all present in this stand. No treatments to either the invasive plants or to the trees in the overstory have been conducted during the previous or any other past management plan period.



Barberry grows very densely in the understory in parts of the stand close to Hawley Brook (east) and as seen here in the west.

There are low to moderate amounts of understory shrubs throughout the stand. Spicebush is the most abundant shrub species with varying amounts of Japanese barberry, blueberry, and witch hazel. There are also areas with densely growing ferns. Herbaceous understory species are relatively sparse and are composed of maple-leaf viburnum, eastern starflower, clubmoss, ferns, highbush blueberry, Jack-in-the-pulpit, partridgeberry, *rubus spp.*, sarsaparilla, sedges, Virginia creeper, white wood aster, and winterberry. The picnic area in this stand adds a useful bit of additional recreational opportunity for property users.

Soils:

This stand mostly consists of Sutton soils with some Ridgebury, Leicester and Whitman soils and a very small area of Canton and Charlton soils. These soils are very stony or rocky glacial till soils that are moderately well drained to very well drained, except Ridgebury, Leicester and Whitman soils which are poorly drained wetland soils associated with Hawley Brook. These soils are mostly associated with forestland and are not important farmland soils.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			750			
Saplings			175		6.4^ cord	4^ cord
Sawtimber trees	125	100	51	41	16.1 MBF	14.1 MBF
Poletimber trees	10	5	33	14	0.5 cord	0.5 cord
Snags	5		1			
Total	135	105	84	56		
MSD*	17.1					

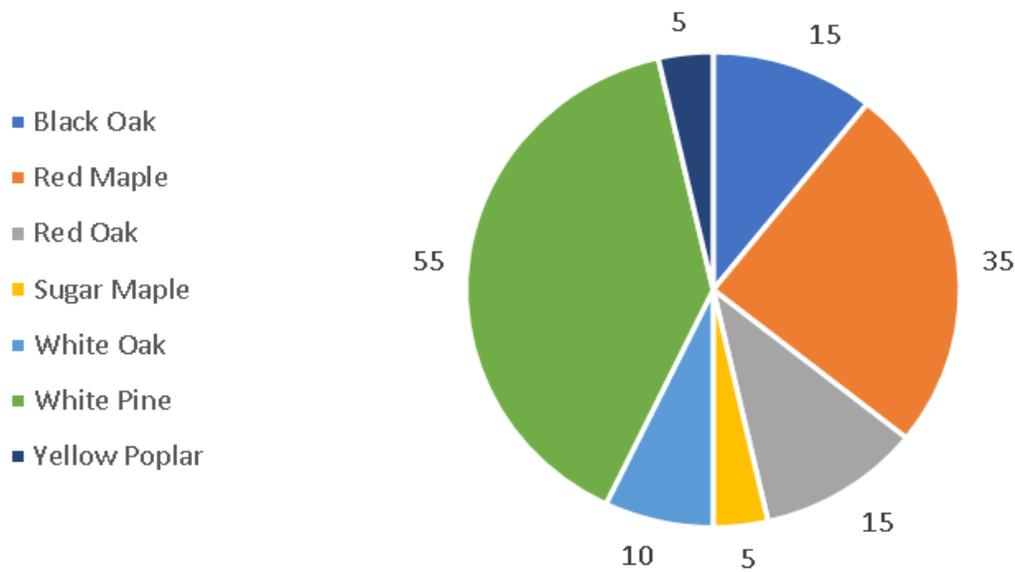
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

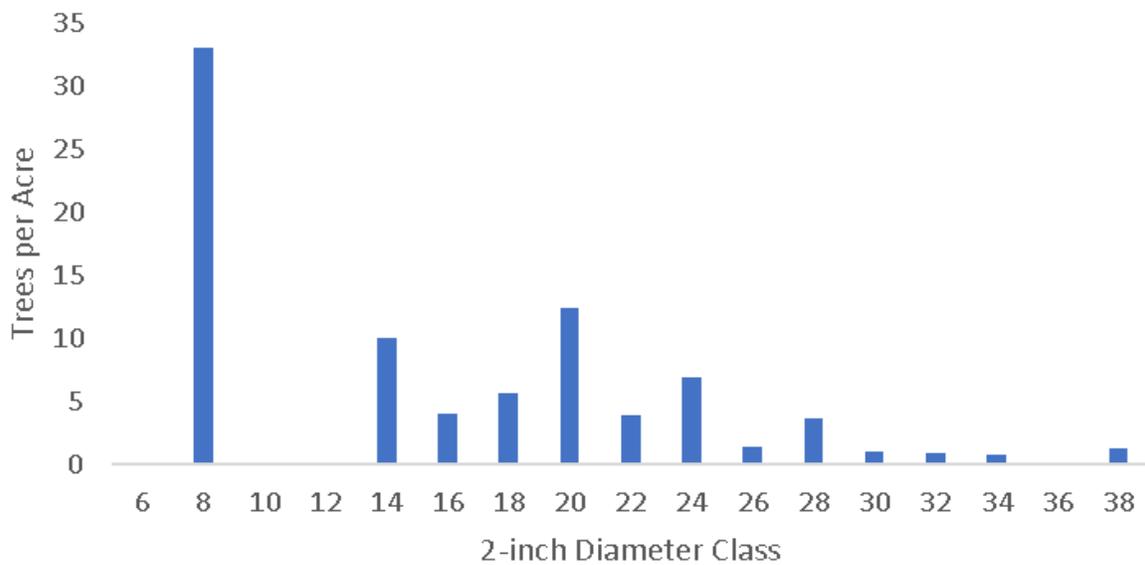
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

Stand 6 Basal Area (ft²/ac.) by Species



Stand 6 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat

- Maintain softwood component
- Limit invasive plant populations
- Continued safe access for variety of property users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

This area has not been actively managed during the time that the Town of Avon has been managing this property. There is a high density of high quality, healthy white pine and oak with good live crown ratios. Allow this area to continue to develop on its own with little to no manipulation except invasive plant treatment.

Future Management:

- Monitor and treat invasive plant populations to reduce their presence in the stand over time
- Monitor the area and continue to collect information about the stand to see how it changes over time with limited human intervention

Stand 7: Mixed Hardwood Sawtimber (20.8 Acres)

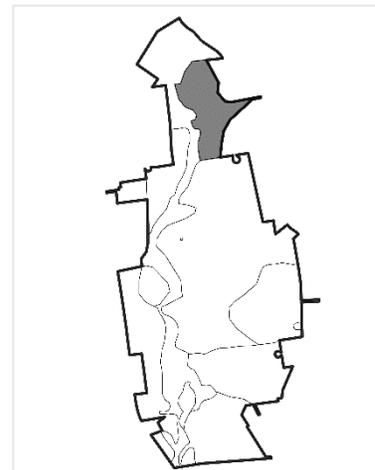
Description:

This stand contains almost 21 acres in the northernmost portion of the property. This is double the amount of area described in the last plan and includes additional land that the Town acquired after the last plan was written. This stand is rocky with pockets of wet soils, and is relatively flat with a slight slope west to Hawley Brook. The western boundary of this stand runs along the riparian forest associated with Hawley Brook. There is no easy equipment access to this stand because there are multiple wetlands which would require crossings, and rocky and wet soils scattered throughout. There are two intermittent drainages in this stand, which flow into Hawley Brook. A somewhat rocky and wet spur trail connects the parking area at Northington Drive across from Found Land to the Yellow trail.

This stand contains mostly small to medium sized mixed hardwood sawtimber including red oak, red maple, tulip poplar, and hickory sawtimber. There are also significant amounts of hemlock, with associates of hickory, red maple, and yellow birch poletimber and some scattered mixed hardwood seedlings. White ash is the most prevalent species noted in the seedling size class while ironwood, musclewood, sugar maple, and hemlock dominate the sapling size class.



Downed woody material acts as excellent locations for the germination of young seedlings as the wood decomposes. This log found in the southwestern portion of the stand supports a young birch seedling. Over time, as the stand continues to develop and more trees in the overstory die and fall to the forest floor, the structural attributes including woody material, and new age classes of mostly shade tolerant seedlings are likely to continue to accumulate.



The current basal area is 160 square feet per acre, which is well above the optimum stocking level for maintaining vigor in this forest type. This stand is mostly small sawtimber with some large trees that provide some structural diversity. Hemlock scale was noted here, but HWA was not found during the 2023 inventory.

There are moderate amounts of understory shrubs throughout the stand. Native species of shrubs noted here include spicebush and sweet pepperbush. Herbaceous vegetation is limited in the understory though trillium (which can be an indicator of enriched soils) is present. Ferns are present in relatively low abundance throughout. Invasive plants grow densely in places and include Japanese barberry and multiflora rose.

Soils:

This stand consists of pockets of Woodbridge soils separate by Ridgebury, Leicester and Whitman soils and a very small area of Charlton-Chatfield complex soils at the southern end of the stand. These soils are very stony or rocky glacial till soils that are moderately well drained to very well drained, except Ridgebury, Leicester and Whitman soils which are poorly drained wetland soils associated with Hawley Brook and the intermittent streams. These soils are mostly associated with forestland and are not important farmland soils.

	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			1,500			
Saplings			400		0.9^ cord	0.9^ cord
Sawtimber trees	100	100	51	51	11.8 MBF	11.8 MBF
Poletimber trees	60	40	187	113	4.8 cord	3.7 cord
Snags	20		17			
Total	160	140	238	165		
MSD*	11.1					

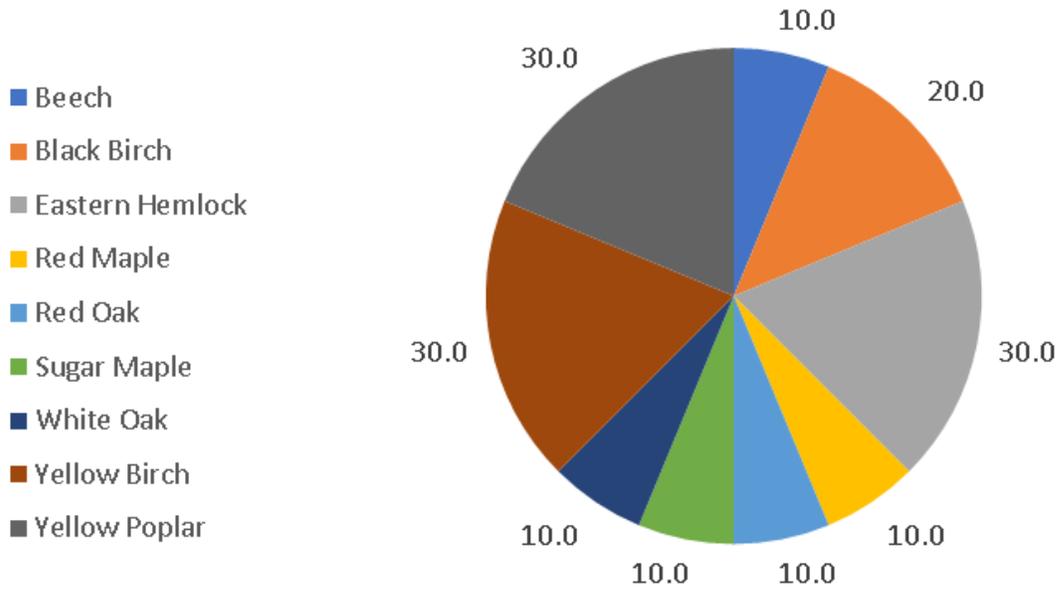
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

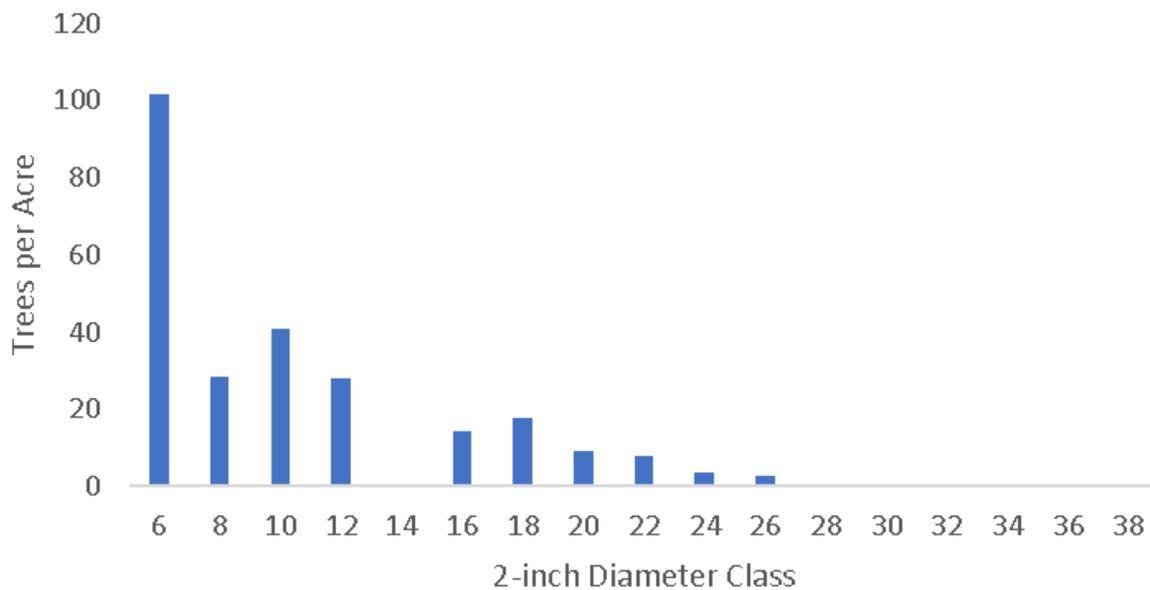
MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre

Stand 7 Basal Area (ft²/ac) by Species



Stand 7 Trees per Acre by 2-inch Diameter Class



Desired Future Conditions:

- Diverse, vigorous, resilient forest

- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component
- Maintain and enhance production of hard and soft mast
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Treat invasive plants.

Access with equipment to this stand is difficult and complicated due to the distance to established landing areas, the rocky and wet soils, and the drainages. Due to the prevalence of invasive plants and difficulty of access, only treat invasive plants during this plan period and otherwise allow this area to continue to develop.

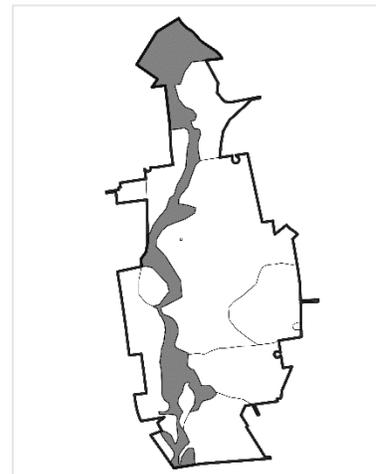
Future Management (Stand 7):

- Monitor hemlock health. If health appears to be declining and sufficient amounts of physical growing space and sunlight exist, underplant with softwoods to maintain viable softwood component
- Monitor and treat invasive plants when and where feasible.

Stand 8: Forested Wetland (57.8 Acres)

Description:

This stand contains almost 58 acres running north-south throughout the property, mostly along both sides of Hawley Brook. This stand is flat, forested wetland/riparian area that borders almost every stand and is a dominant feature of this property. A good crossing was established over a bridge just south of Stand 11. That bridge washed out in a storm in 2017 or 2018 and has not yet been replaced. The yellow-blazed trail crosses through the stand in the northern part of the property and the orange-blazed trail crosses in the southern part of the property. There is a bridge along the Orange Trail at the southern tip of this stand along the property boundary that is being undercut by Hawley Brook and may also at some point get washed downstream in high water if the erosion around the blocks on which the bridge sets is not addressed.



This stand contains mostly red maple sawtimber and poletimber with scattered mixed hardwood sawtimber and poletimber. In places along Hawley Brook (especially in the southern portion of the property) hemlock poletimber- and small sawtimber-sized trees grow densely along the banks of the brook overtopping the water. The dense foliage of the hemlock helps to keep the water clean and helps to regulate water temperatures in addition to the habitat benefits they provide to multiple species of birds, mammals,



Maintaining a vigorous softwood component (especially hemlock with its dense foliage) can help continue to regulate water temperatures in Hawley Brook.

insects, and others. Other important species noted in this stand include some pockets of shagbark hickory. The strips of exfoliating bark of that species are used by a variety of species of insects, birds, and mammals (including bats) for cover and gleaning.

The current basal area is 98 square feet per acre, which is above the optimum stocking level for maintaining tree vigor in this forest type. Despite the closed canopy overstory and densely growing invasive plants, overall, tree seedlings and saplings are both abundant. White ash, red maple, red oak, ironwood, musclewood, and hickory seedlings were noted while sugar maple, red maple, hemlock, black birch, yellow birch, American elm, and a mix of the same species as noted in the seedling size class are also present. In addition to the hemlock and pine in the stand, there is a small pocket of Norway spruce adjacent to the semi-open wetland/shrub swamp (Stand 9) in the southwestern portion of the property which adds a little additional diversity. Even small pockets like this can provide suitable nesting or breeding habitat for certain species of birds like pine warbler or Blackburnian warbler.

There are moderate to high amounts of understory shrubs throughout the stand. Spicebush and Japanese barberry are the most abundant shrub species with varying amounts of hornbeam, hop hornbeam, witch hazel, blueberry, and azalea. Ferns are the most prevalent herbaceous species in stand 8. The density of ferns ranges from relatively high in patches to moderate density. Indian cucumber root is also present in moderate density. False Solomon's seal, sedges, and spicebush were observed in higher density than other species, trout lily, Canada mayflower, Jack-in-the-pulpit, maple-leaf viburnum, partridgeberry, poison ivy, jewelweed, trillium, skunk cabbage, Virginia creeper, and white wood aster are also present. Shrubby species noted include spicebush, witch hazel, blueberry, winterberry, sweet pepperbush, and azalea. Invasive plants are somewhat ubiquitous throughout the length of the area and are mostly composed of barberry, rose, bittersweet, burning bush, stiltgrass, bittercress, among others. The densest growing barberry patches on the property are found in this stand. Evidence of deer browse and the presence of bear was noted.



Barberry grows densely along many portions of the brook and its associated riparian areas. Realistic chances of successful control of invasive plants here are limited.

Soils:

This stand mostly consists of Ridgebury, Leicester and Whitman soils and a couple small areas of Sutton and Gloucester soils. Ridgebury, Leicester and Whitman soils are extremely stony, poorly drained wetland soils associated with Hawley Brook. These soils are mostly associated with forestland and are not important farmland soils.

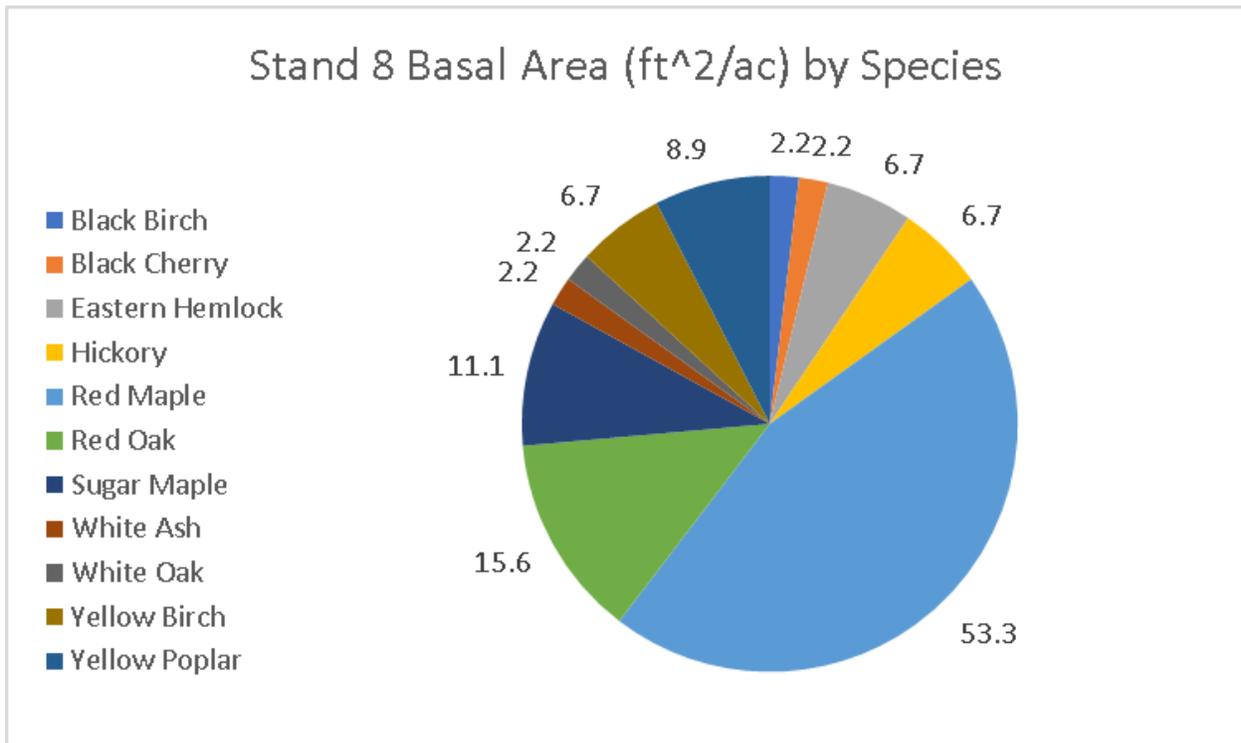
	BA/acre**	BA/acre AGS**	Trees/acre**	Trees/acre AGS**	Volume/acre	Volume/acre AGS
Seedlings			2,100			
Saplings			330		8.4^ cord	5.4^ cord
Sawtimber trees	84	72	54	47	8.2 MBF	7.8 MBF
Poletimber trees	14	10	45	75	2.5 cord	1.8 cord
Snags	8		10			
Total	98	82	99	122		
MSD*	11.7					

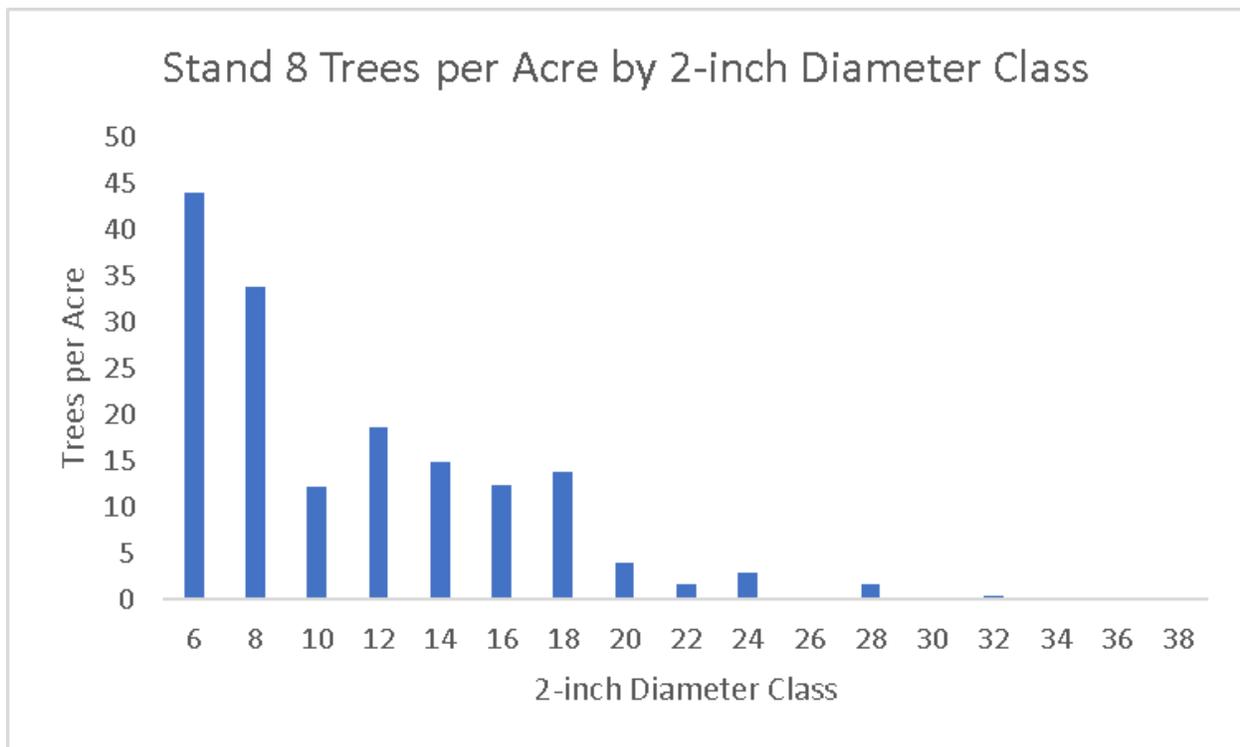
*Quadratic Mean Stand Diameter

** Total trees includes sawtimber and poletimber-sized trees only

MBF= Thousand board feet; ^=Firewood volume from trees of sawtimber size (>12" DBH)

BA= Basal area and is given in square ft./acre





Desired Future Conditions:

- Diverse, vigorous, resilient forest
- Multiple size and age classes of trees and other vegetation
- Functional and diverse wildlife habitat
- Maintain and enhance softwood component
- Maintain and enhance production of hard and soft mast
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Treat invasive plants. This is especially important for the roads and trails within which stiltgrass is growing. Stiltgrass seed can be transported on shoes or tires so recreational uses and forest management equipment can unintentionally result in further spread of this plant.

This area provides valuable wildlife habitat, provides aesthetic backdrops from surrounding areas and land uses, protects the water quality within the Hawley Brook watershed (which eventually empties into the Farmington River) and generally enhances the diversity of Huckleberry Hill. Some trees could be removed from the edges when conducting management operations in adjacent stands to create canopy gaps to release existing regeneration or encourage the establishment of a new cohort of regeneration to enhance structural complexity and age class diversity within the stand. Most of this area should be managed passively with limited tree cutting to keep a mostly closed canopy above the brook. This can also help limit

how prolifically the barberry in the stand produces seed though frankly it may not be relevant given how densely they are growing in places.

Future Management:

- Monitor for invasive plant spread. Attempt to shrink populations over time.
- Monitor hemlock health along watercourses in this stand especially Hawley Brook. If HWA and scale appear to be resulting in reduction in vigor/live crown ratios, attempt to treat the trees to reduce negative impacts to water quality and habitat value
- Monitor health of shagbark hickory trees. If high tree densities appear to be resulting in reductions of vigor, conduct a crop tree release on the east, south, and west sides to allow sunlight to reach the crowns and the main trunks of the trees. This is especially relevant when there are groups of shagbarks growing together near water as the likelihood that they can be used by bats increases with those conditions exist.



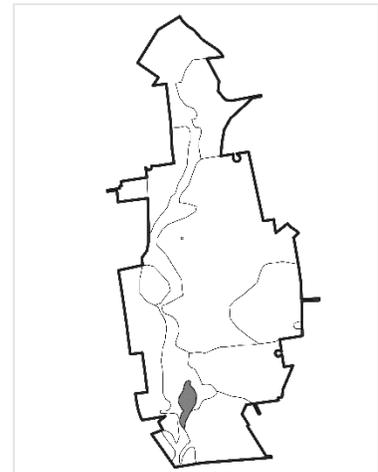
The fresh scar (light colored horizontal lines) on this ash is likely from a bear (left). Three bears were noted in the area during the inventory. This tree is located in the southeastern corner of the stand close to the boundary with Stand 1.

Stand 9: Shrub Swamp (2.9 Acres)

Description:

This stand contains almost 3 acres in the southern portion of the property. This area is flat with standing water and is a semi-open wetland associated with Hawley Brook. Vegetation is relatively dense along most edges and there are islands of vegetation in the interior. Phragmites, alder, spicebush, sweet pepperbush, grasses, sedges, rushes, royal fern, and forbs are all present in the interior. Phragmites is especially dense in the southern portion of the stand. Trees in the wetland and along the edges include red maple, gray birch, willow, and tulip poplar poletimber-sized trees, seedlings, and saplings.

In addition to phragmites there are a handful of other invasive plants growing along edges of this stand including dense stiltgrass and barberry on the northwestern edge along a drainage that flows into the swamp.



Semi-open wetlands such as these are much less common than forested wetlands in Connecticut, and they provide habitat for a different suite of wildlife species than do closed canopy forested wetlands. This area adds to the richness of habitats that this property contains in a relatively concentrated area.



The northern portion of Stand 9 showing some of the open characteristic of much of the area along with the dense vegetation along edges, some downed wood and some islands of vegetation in the interior (along right edge of photo).

Soils:

This stand consists of Ridgebury, Leicester and Whitman soils and Woodbridge soils. Ridgebury, Leicester and Whitman soils are extremely stony, poorly drained wetland soils associated with Hawley Brook. Woodbridge soils are very stony or rocky glacial till soils that are moderately well drained to very well drained. These soils are mostly associated with forestland and are not important farmland soils.

Desired Future Conditions:

- Maintain semi-open condition
- Functional and diverse wildlife habitat
- Maintain and enhance pollinator habitat
- Limit invasive plant populations
- Continued safe access for variety of property and trail users
- Maintain water quality and soil stability
- Maintain aesthetics

Management Recommendations:

Allow this area to continue to develop and provide valuable hydrologic and habitat functions.

Future Management:

- Keep this area as a semi-open wetland. Monitor and cut groups of trees in the interior if the area begins to reforest. This would be best accomplished during frozen winter conditions. Felled trees can be left on site to add to the structure in the area and provide perches and basking areas for birds and other wildlife.
- The Phragmites in the southern portion of the stand grows very densely, but it is unlikely that the area will be able to be successfully treated to reduce populations in a meaningful way. If at all feasible, attempt to limit the spread of phragmites to maintain the semi-open character and native species diversity present in the central and northern portions of the stand.

Stand 10: Potential Vernal Pools (0.4 Acres)

Description:

This stand is comprised of two potential vernal pools, one in the eastern portion of the property and the other in the central portion of the property. Vegetation in the interior of these areas is limited, though there are some royal fern and sweet pepperbush in the western pool. Large swamp white oak trees surround the area in the eastern portion of the property which is one of the only places on the property where swamp white oaks are found. Vernal pools are usually small depressions in otherwise relatively flat areas. The pools fill up with water in the late winter and spring and frequently dry up in the latter parts of the season. Vernal pools provide critical habitat for amphibians like salamanders, some frogs, and other

creatures like fairy shrimp which is where they breed and lay their eggs. Because the water in the pools is ephemeral there are typically no fish species to eat the eggs. In this case, these areas are called potential vernal pools because no studies were done to confirm their use by obligate vernal pool species. Nonetheless, these areas should be treated and protected as though they are functional pools because they are unique on this property.

Neither of these areas contain a significant amount of invasive vegetation in or on the edges of the pools.

Soils:

These areas are both within Sutton soil types, which are very stony, fine sandy loams that are derived from glacial till and are moderately well drained.

Management Recommendations:

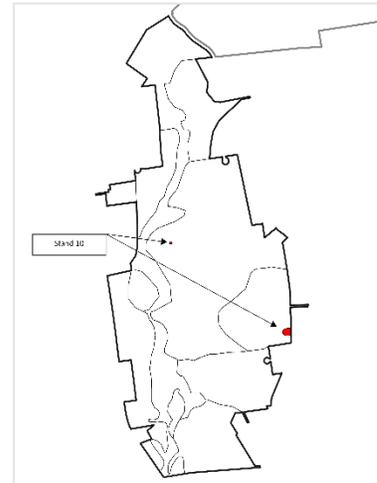
Monitor these areas for invasive plants and treat them if noted before they can become established.

Maintain a mostly closed canopy surrounding the pools to help maintain shade. Despite the water that trees adjacent to the pools likely suck out of the ground during the growing season, it is generally agreed that maintaining shade is important for the continued function of the pools. When conducting forest management operations in adjacent stands, use the best management practices as laid out in *Forestry Habitat Management Guidelines for Vernal Pool Wildlife* (Calhoun, A.J.K., and P. deMaynadier. 2004).

The eastern portion of this stand is near significant residential development and should be monitored to make sure it remains intact and functional.

Future Management:

Monitor the areas to ensure continued function.



The western block of the vernal pool in this stand contains some important features including downed woody material and species found infrequently on the property including royal fern.

Stand 11: Wet Meadow (5.5 Acres)

Description:

This stand is 5.5 acres of open wetland. Phragmites and cattails dominate most of the stand with many grasses, sedges, rushes and forbs. Like the unique habitats described in Stands 9-10, this area provides critical habitat features. Most of the area is vegetated, but there is a small portion of the center of the area with seasonally open water. There is evidence of active beaver use of the area in the southern portion of the stand near the outflow as Hawley Brook reconstitutes into a more discreet channel and continues southward.

Soils:

The soils in this stand are Catden and Freetown soils. They are very deep, very poorly drained soils in very flat areas. They are usually associated with marshes.

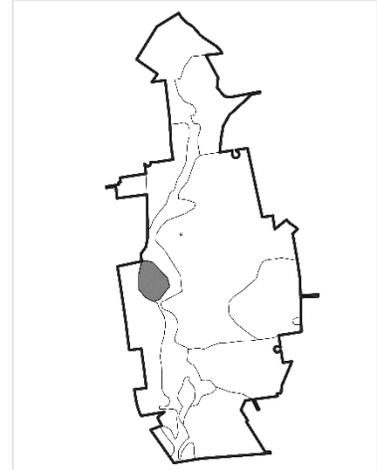
Management Recommendations:

Monitor the area for impacts from beaver. Given the location of this stand, it may be a suitable area within which allowing beaver to modify the hydrology and vegetation on this part of Hawley Brook is acceptable. One of the potential risks if water begins to back up in this area is the further loss of access over Hawley Brook where the bridge blew out in 2017 or 2018. The beaver activity is currently very close to that crossing.

There was a viewing area along the southern portion of this area that has fallen apart and is no longer functional. Depending on how widespread the beaver activity becomes, constructing another viewing area could be explored as an educational and wildlife viewing opportunity. If this is to happen, it would be a good idea to simultaneously re-install a bridge spanning Hawley Brook just east of the old location of the structure if it is determined that that is a suitable location for replacement.

Future Management:

Keeping native vegetation in this stand – particularly the cattail – is important but will be very difficult to actively manage. This area should mostly just be monitored and observed.



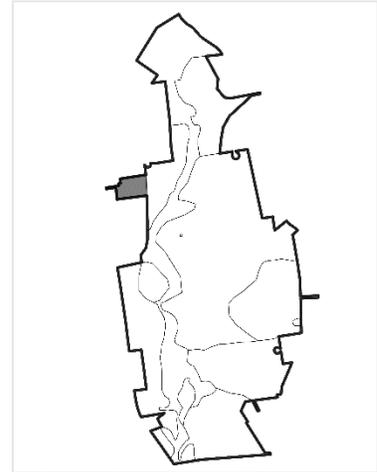
The southern portion of this area contains very densely growing phragmites which limits the diversity this area would otherwise offer.

Stand 12: Recreation Field (3.8 Acres)

Description:

This area is mostly a seasonally used soccer field with a basketball court, parking lot and former tennis courts behind the old Huckleberry Hill Elementary School, which is now an apartment building. The tennis courts were removed prior to the 2009 plan being developed. There is a fence with a gate between the parking lot and soccer field.

During inventory in 2023, a small patch of mile-a-minute (a.k.a. kudzu) was noted on the northern boundary of this area within the shrubs. These plants grow very quickly (up to a foot a day) and should be treated and removed as soon as possible. This is the only place on the entire property or any of the other properties observed as part of this plan where this plant was noted.



Soils:

The soils in this stand are mostly Udorthents, which are urban and disturbed soils.

Management Recommendations:

Treat the mile-a-minute and develop a monitoring and re-treatment program to ensure it is eliminated.

Continue to manage for active recreation. Install a functional kiosk and mark the trailhead at the southeastern boundary of the stand.

If any plantings are needed, plant native species that can provide sources of nectar, pollen, mast, and cover. Examples include shadbush, hazelnut, highbush blueberry, highbush cranberry, inkberry, nannyberry, dogwoods, etc.

Future Management:

- This area will continue to be used for active recreation and parking.
- Monitor the mile-a-minute population and re-treat as needed



The small triangle-shaped leaves of the vines in this photo are from the mile-a-minute noted on the northern edge of this area. Because this plant is so invasive and spreads so quickly getting this population under control is important. This was the only place on any of Avon's properties included in this plan where this plant was noted.

2.5.9 Recommendations

We make the following recommendations for Huckleberry Hill Recreation Area so that it may continue to be a healthy, valuable resource for the residents of Avon:

Management Recommendations:

1. Locate, paint and post new boundaries and repaint existing boundaries. Boundaries should be repainted every four to five years to prevent having to re-locate them. New residential development may have altered the property or created new evidence and this should be updated.
2. Invasive species should be regularly monitored in areas where there are few invasive species. Invasive plants should be removed from these areas when found. The areas between Huckleberry Hill Road and Hawley Brook and the northernmost portion of the property are well established with invasive species and would need a sizeable grant or volunteer effort to be of substantial value.
 - a. Where invasive plant species are dense, investigate with the Town the ability to gradually push back the edges of the dense areas to shrink their populations over time. This also includes attempting to eliminate Japanese stiltgrass in roads and trails where it occurs on the western side of the property.
3. Continue to actively manage the forest to maintain tree vigor and increase structural complexity, size, age class, and species diversity of trees and other vegetation and overall resilience. The primary treatments scheduled for this plan period are in Stands 3-4 (2026-2027) and Stands 1-2 (2031-2033).
4. Maintain mostly closed canopy forest surrounding watercourses, wetlands, potential vernal pools, and other water features; limit drainage crossings and avoid operating in sensitive water features.
5. Enhance old forest and multi-aged characteristics including the retention of large, older trees, the retention and recruitment of downed woody material of a variety of sizes, the retention of snags and cavity trees, and the active creation of canopy gaps to encourage new size and age classes of trees.

Recreation Recommendations:

1. Update information posted on all kiosks and make repairs where needed. Most of the kiosks contain almost no information and some are blank. Others contain outdated maps that should be updated with current information and trail extents and locations.
2. Mark the trailhead at the southeast corner of the Recreation Field.
3. Continue to maintain the area surrounding the picnic tables and remove the fire ring to discourage fire building on the property.
4. Continue to maintain the existing official trails including the faded blue trail in Stands 3-4. Regular maintenance to remove fallen trees from the trail and hazard trees from near the trail should be done. Repaint or re-sign the trails as needed, fixing wetland crossing structures as needed, and blocking unauthorized trails when needed.
5. Explore rebuilding the wildlife viewing area of the Wet Meadow stand and a trail leading to the viewing area if beaver activity appears limited enough to allow the sustainable creation and presence of such a feature.
6. Work with an organization like Audubon or the Xerces Society to create trail information that highlights the property's utility for wildlife and pollinators.

Huckleberry Hill		
Summary of Management Activity by Stand		
2024-2033		
Year	Stand/Area	Treatment
2024-2033	All	Monitor and Treat Invasive Plants
2024-2033	All	Maintain Trails/Recreation Infrastructure
2024-2033	All	Maintain Boundaries
2024-2025	1	Map and Treat Invasive Plants in Northern Portion of stand
2030-2032	1	Single Tree and Group Selection; Gap Expansion
2030-2032	2	Single Tree and Group Selection; Gap Expansion
2026-2027	3	Single Tree and Group Selection; Gap Expansion
2026-2027	4	Single Tree and Small Group Selection; Gap Expansion
2026-2027	4	Release Regeneration Overtopped by Black Birch
2025	8	Treat Stiltgrass
2027-2033	8	Selection Methods Along Border with Adjacent Stands
2024-2033	11	Monitor Beaver Activity
2025	11	Rebuild Viewing Area in Southern Portion and Service Bridge Over Hawley Brook
2024-2033	12	Treat and Monitor Mile-a-Minute
2025	12	Install Kiosk at Southeastern Trail Access Point

Appendices

APPENDIX A - RECREATIONAL PLAN

A.1 GENERAL

A.1.1 Website

Websites are excellent outlets for providing information to the public. The Town's website should continue to be used as much as possible to promote recreational opportunities. The Town should continue to post maps and information about these properties so that the public can pre-plan trips and learn about new areas. Additionally, it is possible to use the Town's website to offer mapping data (such as KML files) that allow the public to interactively explore Town-owned properties in web-based mapping programs. Lastly, the Town's website could host information that could be made accessible using a QR code on trail maps at kiosks so that property users could have access to all relevant information about the parcel's they're visiting on their device. This can simultaneously provide a safe user experience to limit the possibility of people getting lost as well as provide background information about the properties if people are interested in finding out more information.

A.1.2 Hiking & Walking Trails

All the properties covered by this Management Plan contain hiking and/or walking opportunities. Taken together, the collection of trails can be considered multi-modal, as hiking, jogging, mountain biking, dog walking, and cross-country skiing are all possible. This helps to provide a wide range of recreational opportunities for the entire community. Easy, moderate, and difficult trails are all available, and are all currently well used. Continuation of this strong trail network should be a priority.

A.1.3 Maps & Brochures

Many of the properties have had maps and brochures previously produced and made available to the public. Update all maps to reflect current conditions more accurately. Maps could be made available in paper form available for use at kiosks or digitally with QR codes on large scale maps posted on kiosks and/or available on the Town's website. Posting maps to digital platforms like Avenza could also increase access to the information.

A.1.4 Picnic Areas

Most of the properties covered by this Plan contain picnic areas of varying quality and level of maintenance. Picnic areas are generally a useful complement to parking areas and walking/hiking trails. Regular or semi-regular maintenance of these areas help ensure that they will remain safe for public use, are not negatively impacting the site, and can encourage additional use.

A.1.5 Geocaches & Letterboxes

Geocaching and letterboxing are activities that have grown in popularity over the past few decades. These activities are essentially "scavenger hunts" where participants use either descriptive clues or GPS coordinates to find small boxes hidden in the woods. The boxes typically contain notebooks where visitors can record their visit, creating a history of everyone who has located the letterbox/cache. On-line logs are also popular.

Both letterboxing and geocaching provide excellent opportunities to expand passive recreation on the Town of Avon's properties for all age levels. The activities are low impact, require little investment of time or materials, and can potentially help develop problem-solving and navigational skills.

All the properties covered by this plan currently have letterboxes, and all properties except for Hazen Park have geocaches. Information about these is available on the Internet at www.letterboxing.org (letterboxes) and www.geocaching.com (geocaches).

Geocaches:

Alsop Meadows

Huckleberry Hill

Found Land

Fisher Meadows

Letterboxes:

All properties

A.2 PROPERTY-SPECIFIC RECREATION RECOMMENDATIONS

A.2.1 Alsop Meadows

Management Recommendations:

Previous management plans have called for management activities that promote species diversity, mixed habitat types, and aesthetics. A continuation of these overall goals is generally recommended for this plan. In addition to the stand-specific recommendations above, more general recommendations include the following:

1. Boundaries have been previously blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place. The property’s existing blazes and signs are becoming faded/worn in places. Additional markings, especially at the southwestern tip of the property, are also recommended.
2. Two intermittent watercourses that flow through the property are being impacted by sedimentation from upstream sources. An outreach effort should be considered by the Town to promote more aggressive cleaning and maintenance of stormwater systems that discharge onto or through Alsop Meadows.
3. Ten-year management plans should be used to guide future forest management activities on this parcel.

Recreation Improvement Recommendations:

Alsop Meadows is an active recreational area, due in part to the array of activities available. Activities include hiking/walking, dog walking, canoe launching, swimming, fishing, and gardening. In addition to continuing these activities, it is generally recommended that efforts be restarted to develop and use Alsop Meadows as an environmental education/demonstration park.

1. Better signage is highly recommended at the southern end of the property. Under current conditions, it is very easy for trail users to wander off Town property.
2. Both existing and new trails could be developed into an interpretive nature trail with several stations or teaching areas that illustrate the property's natural features and demonstrate silvicultural techniques, wildlife habitat management techniques. Signage that has been used at Fisher Meadows would be an excellent model. A printed guide to the nature trail could further explain the features at each station and be made available on-site or placed on the Town’s website.
3. Erosion control measures are recommended at the property’s canoe launch site. This area appears to be heavily used and some significant erosion has taken place. Establishing more vegetation on the slope and/or creating a more formalized launch with steps to limit traffic to one area are possibilities to assist with this goal. A collaboration with the Farmington River Watershed Association and/or an organization like Trout Unlimited may help provide technical expertise and/or funding for this kind of activity.
4. Efforts to revitalize the previously established arboretum area along the boundary between Stands 1, 5, and 6 are recommended. This would entail maintenance of both the planted trees and surrounding vegetation.
5. Existing trail blazes are faded and should be refreshed.
6. Regular maintenance of all trails is recommended to remove trash and debris such as fallen branches/trees and check for erosion.

7. Monitor the creation of new unauthorized trails and attempt to close them off if noted. Install signs to indicate trail users must stay on authorized trails and make sure trail maps are readily available.
8. Install information at kiosk

A.2.2 Fisher Farms

Management Recommendations:

Previous management plans have called for boundary marking, trail construction and maintenance activities, and active forest management where feasible and advantageous within Fisher Farms. A continuation of these activities is generally recommended for this plan, along with some additions.

1. Invasive species are a problem on this property. Efforts should be made to control these species where they exist and prevent further spread.
2. Recreational activities should continue to be encouraged on this property and expanded where possible.
3. A portion of the boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place.
4. Ten-year management plans should be used to guide future forest management activities on this parcel.

Recreation Improvement Recommendations:

Fisher Farms is an active recreational area and farm. This mix of activities should be continued and enhanced through the following recommendations.

1. Re-paint or blaze trails to ensure all official trails are visible and obvious. This should include the relatively recent reroute in the southern portion of the western block.
2. Determine if the trails that run off the property in the southern and western portions of the property are part of the official trail system and are acceptable to the adjacent owners. If so, put the trails on updated maps.
 - a. If trails are to end at property boundaries, install signage indicating that that is the end of the trail and trail users should turn around.
3. Update the trail maps to show the trail re-route in the southern portion of the western block of the property.
4. All trail blazes along abandoned trails should be removed. These could be confusing to walkers/hikers, especially those not familiar with the property.
5. Continue to regularly maintain all trails to remove trash and wood from fallen branches/trees and check for erosion. This is especially applicable along the Farmington River and in the moderately steep sections in the central and southern portions of the trail system in the western block.
6. The property should continue to be made available to schools and other groups for research or education programs. With good access, easy terrain and a mixture of land uses, Fisher Farms is an excellent spot to bring groups for field trips dealing with a variety of natural resource issues.
7. Attempt to limit ATV traffic. Determine where they are coming from and install gates or other deterrents if feasible.

A.2.3 Fisher Meadows

Management Recommendations:

Previous management plans have called for boundary marking and trail construction activities, and only very limited forest management within Fisher Meadows. A continuation of these activities is generally recommended for this plan, along with some additions.

1. Due to the location, size, and orientation of the forested areas within Fisher Meadows, thinning and other forest management activities that actively manipulate forest structure are generally not recommended at this time, except in specific areas detailed below.
2. Invasive species are a major problem on this property, particularly in the northwest and southeast portions of the property. Continued efforts should be made to control these species where they exist and prevent further spread.
3. A wide variety of recreational activities should continue to be encouraged on this property and expanded where possible.
4. A portion of the boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place.
5. Only minor erosion and sedimentation was noted at the fishing access points around Spring Lake and along the Farmington River, but given the property’s extensive water frontage, this should be regularly monitored to ensure continued bank stability.
6. Ten-year management plans should be used to guide future forest management activities on this parcel.

Recreation Improvement Recommendations:

Fisher Meadows is a very active recreational area with an array of activities available. It is generally recommended that this wide mix of activities be continued and enhanced through the following recommendations. Many of the recommendations from the last management plan have been implemented so fewer recommendations are made in this plan.

1. Minor erosion control measures are recommended at the property’s canoe launch and fishing areas around Spring Lake and along the Farmington River. While currently minor, erosion issues can quickly grow, and should be regularly monitored.
2. Better signage is highly recommended at the far northern end of the property. Under current conditions, it is very easy for trail users to wander off of Town property.
3. Many of the existing trail blazes are becoming faded and should be refreshed.
4. All trail blazes along abandoned trails should be removed. These could be confusing to walkers/hikers, especially those not familiar with the property.
5. Regular maintenance of all trails is recommended to remove trash and debris such as fallen branches/trees and check for erosion.
6. The property should continue to be made available to schools and other groups for research or education programs. With good access, easy terrain and a mixture of land uses, Fisher Meadows is an excellent spot to bring groups for field trips dealing with a variety of natural resource issues.
7. Examine culverts and bridges to determine if any upgrades are needed to ensure proper function with higher volumes of precipitation

A.2.4 Found Land

Management Recommendations:

1. Locate and paint new boundaries; repaint existing boundaries. Boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place. Portions of the boundary have changed due to new residential development. Adjustments to the boundary should be located, posted with boundary signs, and painted.
2. Maintain the landscaping around the sign at the main entrance in the cul-de-sac at the end of St. Michael's Court. The sign is currently overgrown with vegetation.
3. Reroute the trail near the end of Scarborough Drive where it has been eroded. In planning a new route for the trail, be sure to consider the flow of water to avoid more erosion occurring in the future.
4. Continue regular maintenance of all trails to clear fallen trees and remove debris.
5. Update both kiosks with a new trail map and information. Post instructions on how to download the interpretive trail brochure from the internet (fwforesters.com would be pleased to host this service on behalf of the town).
6. Treat invasive plants around the perimeter of the property and at all access points, as well as wherever they exist in the forest interior.
7. Continue to actively manage the forest on the property to maintain vigor and diversity. Ten-year management plans should be used to guide forest management activities on this parcel into the future.
8. Formalize a policy on the construction of new trails. Consider decommissioning some of the many trails currently on the property and work with local user groups to find appropriate places for such use and to discourage riding/walking off trail and construction of additional trails.

A.2.5 Hazen Park

Management Recommendations:

Previous management plans have called for boundary marking and trail construction activities, and only very limited forest management within Hazen Park. A continuation of these activities is generally recommended for this plan.

1. A portion of the boundaries have been blazed and posted with Town Forest signs – these should be periodically inspected and maintained to keep the paint visible and the signs in place. The rest of the boundaries should be clearly marked with both paint and signs.
2. Several small instances of encroachment exist throughout the property, involving dumping of yard or other debris from adjacent properties. An outreach effort should be considered by the Town to discourage this activity.
3. Ten-year management plans should continue to be used to guide future forest management activities on this parcel.

Recreation Improvement Recommendations

As stated in previous recommendations for the property, a looped hiking trail system is not practical for this property because of its long, narrow shape. Other than the trail's inherent value, additional value

comes from the connection to Land Trust trails, and trails on state land. Improvements to the existing trail are possible and are recommended.

1. Improve signage at Nod Road and at the Hazen Park/Avon Land Trust boundary. The entrance from Nod Road is currently unmarked, the trail heading west from Hazen Drive is not apparent, and the boundary with the Avon Land Trust is still somewhat vague. The signs installed near the land trust property in 2018-2019 have helped clarify which trails lead where. The signage at the Hazen Drive entrance to the property was enhanced since the last plan was written.
2. Parking along Hazen Drive and off Nod Road should be better defined, especially off Nod Road. Delineation of the parking area and a potentially lockable gate would make this parking area both more useable and securable, if need be.
3. Existing trail blazes are becoming faded and should be refreshed.
4. A small vista could be created at or near the top of the property, allowing views to the west. This could be accomplished with a narrow cut that would not be visible from surrounding residential properties.
5. On steeper portions of the trail, additional treadways, stepping-stones, or the like could assist hikers and help prevent small erosion problems.
6. Vegetation on and around small glacial erratics along the trail could be cleared. This would provide small sitting areas and feature the stones.
7. Regular maintenance of the trails is recommended to remove debris. This is especially relevant for the portion of the trail system west of Hazen Drive.

A.2.6 Huckleberry Hill

1. Locate, paint and post new boundaries and repaint existing boundaries. Boundaries should be repainted every four to five years to prevent having to re-locate them. New residential development may have altered the property or created new evidence and this should be updated.
2. Invasive species should be regularly monitored in areas where there are few invasive species. Invasive plants should be removed from these areas when found. The areas between Huckleberry Hill Road and Hawley Brook and the northernmost portion of the property are well established with invasive species and would need a sizeable grant or volunteer effort to be of substantial value.
 - a. Where invasive plant species are dense, investigate with the Town the ability to gradually push back the edges of the dense areas to shrink their populations over time. This also includes attempting to eliminate Japanese stiltgrass in roads and trails where it occurs on the western side of the property.
3. Continue to actively manage the forest to maintain tree vigor and increase structural complexity, size, age class, and species diversity of trees and other vegetation and overall resilience. The primary treatments scheduled for this plan period are in Stands 3-4 (2026-2027) and Stands 1-2 (2031-2033).
4. Maintain mostly closed canopy forest surrounding watercourses, wetlands, potential vernal pools, and other water features; limit drainage crossings and avoid operating in sensitive water features.
5. Enhance old forest and multi-aged characteristics including the retention of large, older trees, the retention and recruitment of downed woody material of a variety of sizes, the retention of snags and cavity trees, and the active creation of canopy gaps to encourage new size and age classes of trees.

Recreation Recommendations:

1. Update information posted on all kiosks and make repairs where needed. Most of the kiosks contain almost no information and some are blank. Others contain outdated maps that should be updated with current information and trail extents and locations.
2. Mark the trailhead at the southeast corner of the Recreation Field.
3. Continue to maintain the area surrounding the picnic tables and remove the fire ring to discourage fire building on the property.
4. Continue to maintain the existing trails. Regular maintenance to remove fallen trees from the trail and hazard trees from near the trail should be done. Repaint or re-sign the trails as needed, fixing wetland crossing structures as needed, and blocking unauthorized trails when needed.
5. Explore rebuilding the wildlife viewing area of the Wet Meadow stand and a trail leading to the viewing area if beaver activity appears limited enough to allow the sustainable creation and presence of such a feature.
6. Work with an organization like Audubon or the Xerces Society to create trail information that highlights the property's utility for wildlife and pollinators.

A.3 PROPERTY-SPECIFIC FOREST MANAGEMENT RECOMMENDATIONS

A.3.1 Alsop Meadows

Stand 1

Management Recommendations:

The goals for the management of this stand are to continue maintaining a mixed species forest with a high degree of diversity, continue to improve wildlife habitat, and maintain aesthetics along the trails. To accomplish these goals, invasives treatment and a crop tree release of desirable poles and small sawtimber trees should be conducted in combination with the creation of one small (1-acre) patch cut to increase the stand's structural complexity and encourage more vigorous growth of understory vegetation.

Treatments that alter the structure of the forest and allow more light to reach the forest floor should only be conducted after successful control of invasive plants to prevent them from expanding into recently treated areas. After the crop tree release and small patch cut, monitor the entire area and spot treat invasives as needed. If tree regeneration in the patch cut is insufficient, augment with plantings. If plantings are needed, they will likely need to be protected from deer with tree tubes or temporary deer fencing.

Future Management:

Monitor invasives and treat as necessary. Monitor regeneration in the patch cut and augment as necessary, protecting plantings until they have outgrown the reach of deer.

Stand 2

Management Recommendations:

The goals for the management of this stand are similar to those in Stand 1, but the actual techniques are different due to the difference in composition and structure. To both perpetuate softwoods on the landscape and increase the stand's structural diversity, two small patch cuts of approximately 1 acre should be created. Because both white pine and red oak, two of the more important tree species in this stand, require a large amount of sunlight to regenerate and become established, it is necessary to remove most or all trees in small canopy gaps to create conditions conducive to their establishment. This treatment will also increase the stand's structural complexity and encourage denser growth of understory species, greatly increasing this stand's habitat value.

Invasive plants should be treated successfully before carrying out this operation to limit the likelihood of their colonizing the newly created gaps. Monitor regeneration within the gaps and augment with plantings if it is insufficient. If plantings are needed, in addition to white pine and red oak, swamp white oak, tulip poplar, and sweetgum should be considered as well. If plantings are undertaken, temporary fencing to exclude deer may be required. If this is done, it can be a useful educational tool.

Regularly monitor and treat invasive plants in the strip of this stand on the southeastern sides of Stands 5-6. Periodically cut groups of trees in this area to maintain the young forest condition that provides a

semblance of soft edge. If locust trees in this area begin expanding, develop a plan to remove them or reduce the populations. Cut and remove buckthorn.

Monitor the condition of the hemlock along the river and in the interior of the stand. Having densely growing softwoods aids in water quality and water temperature regulation and hemlock's growth habit is the densest of the large softwoods we have in this area. If hemlock begin to decline due to HWA, scale, or another factor, attempt to maintain their vigor through light release work to increase some sunlight to provide them more resources for defense by increasing potential for photosynthetic activity. Hemlock is very shade tolerant, but increasing available sunlight can help provide additional resources. If hemlock appear to be declining rapidly, where conditions permit plant species with similar growth habits as potential future replacement. Examples include spruces and firs.

Future Management:

- Monitor this stand for invasive plants and treat as necessary.
- Monitor regeneration within the gaps and augment with plantings if necessary. If plantings are necessary, protect plantings with tree tubes or deer fencing until they have outgrown the reach of deer.
- Periodically cut all or portions of the shrubby/young forest edge along the meadows to maintain the shrubby/young forest conditions
- Continue to monitor the hemlock.

Stand 3

Management Recommendations:

Management within this stand should aim to perpetuate the pitch pine component because of its uniqueness and uncommon wildlife value as well as to improve the general forest health of the rest of the stand. To accomplish this, the pitch pine portion of the stand should be lightly thinned, favoring the healthiest and most vigorous trees to allow them to grow more rapidly and increase their vigor. In the remainder of the stand, a light crop tree release favoring the healthiest individuals of all species should be performed. This will allow the crop trees to grow faster and more vigorously, increasing their ability to resist disease and insect pests, as well as to produce more seed and mast.

These treatments should only be performed after invasive plants have been treated throughout this property. After treatment, monitor the stand for invasive plants and spot treat as necessary.

Future Management:

Monitor and spot treat invasive plants. Continue to periodically thin the pitch pine portion of this stand with the goal of creating a pocket of mature, vigorous pitch pine on the ridgetop that ideally can regenerate itself and spread over time.

Stand 4

Management Recommendations:

Invasive species control is urgently needed within this stand. A combination of mechanical and chemical controls is recommended to return the stand to a more meadow-like condition. This will require the cutting of trees as well.

This stand has the potential for being valuable to many species of wildlife for foraging, nesting and shelter. Meadow conditions should be encouraged through regular cutting and mowing on a rotating schedule so that multiple habitat ages and conditions are present within the stand at any given time. Construction and placement of nest boxes and planting native fruiting and flowering shrubs around the edges of this stand could also enhance habitat conditions, especially for pollinators. If nest boxes are installed, attempt to install two boxes approximately 10-15 ft. apart to provide one box for a species like tree swallow and another for eastern bluebird.

Future Management:

- Monitor and spot treat invasive species in this stand.
- Mow this stand on a rotating schedule to maintain several different habitat conditions at the same time.
- If nest boxes are installed, regular maintenance will be required to ensure they are functioning properly.

Stand 5

Management Recommendations:

These areas should continue to be managed as meadows. They provide valuable wildlife habitat, aesthetic backdrops from surrounding areas and land uses, and enhance the diversity of Alsop Meadows as a whole. Continue to brush hog these areas. Ideal timing of mowing would be outside of the active season for pollinators so very early season (before April 15) or late season (after all the flowers are finished blooming (perhaps late October). Some of these areas are likely to be too wet to mow during the early spring (especially the areas along Route 44) so a late fall mow may be more appropriate. Where feasible allowing the meadows or portions of the meadows to remain uncut over winter can provide some cover and seed sources for wildlife.

Attempt to locate populations of endangered, threatened, and special concern species on the property. If they can be found develop a plan of management to help protect and ideally enhance their populations.

The ornamental trees planted along the western edge of the large field complex continue require maintenance and care. Some of these trees have been overtopped by surrounding trees and are also being overwhelmed by vines. Vines are also strangling several catalpas in the portion of this stand adjacent to the community garden. The vines hindering the growth and survival of the trees in this stand should be removed as should some trees that are overtopping the ornamental trees to allow them more access to sunlight. No important large trees should be cut to release the ornamentals. Cut vines in catalpas islands in the western block of this stand.

Along all field edges, other rare tree species and/or that are beneficial to wildlife could be released by cutting adjacent vegetation. After this release work is done, some brush piles should be created to reduce aesthetic impacts and to provide additional cover for wildlife.

Invasive plants are prevalent in all parts of this stand and should be treated. Mugwort, bittersweet, and multiflora rose are of particular concern. Treating invasives throughout this stand would greatly increase its habitat value and reduce the amount of invasive seed that can be transported into forested stands on this property. Remove and replace large invasive trees and shrubs along edges over time using a phased approach. Some recommended replacements include shadbush, dogwoods, hawthorn, hazelnut, though there are many other useful options.

In the Monarch Waystation, if desired, attempt to remove the existing vegetation and replant with monarch-friendly species including mugwort. If this is to be done, portions of the fence that have fallen into disrepair should be fixed.

In fall, when mowing is done if any patches of bare soil are noted, seed with a native mix of wildflowers to enhance diversity and to attempt to limit spread of bittersweet.

Install two sets of paired nest boxes.

Future Management:

- Continued mowing and cutting should be done to maintain field or meadow conditions for habitat diversity.
- If nest boxes are installed, regular maintenance will be required to ensure they are functioning properly.
- Maintain Monarch Waystation as needed to maintain functionality.
- Monitor ornamental trees along edges and maintain with release or pruning as needed

Stand 6

Management Recommendations:

This is a 5.3-acre regularly mowed active recreational field in the western portion of the property. Over time, some tree trimming around the field may be necessary as trees abutting the field encroach on the field's edges.

Stand 7

Management Recommendations:

This is a 1.1-acre community garden in the western portion of the property. A hand pump well has been installed, and many garden plots appear to be well-maintained. The use of this area as a garden is an excellent diversification within Alsop Meadows, and its continuation is recommended. If interest in the program grows, it could easily be expanded into the field area to the south.

A.3.2 Fisher Farm

Stand 1

Management Recommendations:

Treat invasive plants to open growing space for more desirable native understory plants and to allow for better regeneration of native tree species. Consult with Sub Edge Farm prior to undertaking any treatment to ensure treatments will not negatively impact their organic status.

Monitor progression of beech leaf disease. If mortality appears imminent and native vegetation is not yet established under the dying beech, potentially augment with native plantings and/or treat invasive plants in nearby areas to discourage their spread into the newly created growing space from dying beech.

Continue managing the area using single tree and group selection methods to maintain diversity, encourage regeneration of desirable species, release regeneration where it is already present, and maintain vigor of overstory trees. Focus group selection in areas where there is a high percentage of poor quality, declining, or damaged trees. Where previous canopy gaps created during the last treatment established desirable regeneration, expand gaps to further release regeneration to help ensure they can become a viable part of the future forest. Retain the hemlock on the moderately steep hillsides to maintain the softwood component and limit operation on steepest slopes. Retain most of the large trees of a variety of species with full crowns and good form. Retain snags and potential cavity trees. Retain trees from all size classes. Diversity of tree species, sizes, and age classes helps increase resilience to disturbance.

Future Management:

- Monitor invasives and spot treat as necessary.
- Entries into this stand could be approximately every 20 years or so to continue to diversify size and age classes of trees

Stand 2

Management Recommendations:

Treat invasive plants to open growing space for more desirable native understory plants and to allow for better regeneration of native tree species. Consult with Sub Edge Farm prior to undertaking any treatment to ensure treatments will not negatively impact their organic status.

Monitor progression of beech leaf disease. If mortality appears imminent and native vegetation is not yet established under the dying beech, potentially augment with native plantings and/or treat invasive plants in nearby areas to discourage their spread into the newly created growing space from dying beech.

Continue managing the area using group selection and limited single tree selection methods to maintain diversity, encourage regeneration of desirable species, release regeneration where it is already present, and maintain vigor of overstory trees. The overstory density is such that an intermediate treatment like a thinning to release individuals to enhance vigor isn't necessary at this point despite a mostly closed canopy condition in much of the stand. For that reason, group selection should be the primary method of treatment. Focus group selection on expanding existing gaps within which desirable species like pine and oak have successfully become established following the previous two treatments (1986 and 2005). Retain

healthy midstory hemlock maintain the presence of that species. Retain trees of a variety of species with full crowns and good form. Retain snags and potential cavity trees. Retain trees from all size classes. Diversity of tree species, sizes, and age classes helps increase resilience to disturbance.

Future Management:

- Monitor invasives and spot treat as necessary.
- Entries into this stand could be approximately every 20 years or so to continue to diversify size and age classes of trees

Stand 3

Management Recommendations:

Continue to work with Sub Edge Farm to manage operations in this area. Access for forest management or recreational purposes may be necessary or desirable via the farm roads in portions of this area. Where this is the case, work closely with the farm to ensure safe and suitable uses and time frames are observed.

Where applicable and appropriate remove invasive plants and replace with native alternatives.

Future Management:

- Continue working with the farm

Stand 4

Management Recommendations:

Allow this area to continue to develop. Though it would be useful in the long run to be able to reduce Phragmites populations for the health and function of the ecosystem it would likely be difficult and would require the cooperation of Avon Old Farms since the bulk of the population is in the northwestern portion of the wetland on their property.

If work is occurring in portions of Stand 1 or 2 adjacent to the east side of the western block of this stand, create some small (1/10 acre) canopy openings along the edges to soften the edges somewhat. This should only be done if invasive plants are not already established in these areas. One or two of the felled trees could be felled into the wetland and kept on the stump to provide perching and basking sites for birds and reptiles.

Install wood duck boxes at each site to provide additional nesting opportunities.

Inspect the bridge over Tillotson Road at the eastern edge of the eastern block of this stand for proper function. During periods of high water there is very little clearance as Thompson Brook flows under the bridge and flooding may occur.

Future Management:

- It may be possible to create a short spur trail to the eastern shoreline of the western wetland to establish a wildlife viewing area
- Monitor for beaver activity and address if necessary
- Monitor for invasive plants and treat as feasible

Stand 5

Management Recommendations:

Continue to retain a narrow buffer along the edge of the pond where grasses are not mowed. Where and if feasible find some locations along the edges to plant suitable native shrubs to enhance nectar, pollen, and mast production. If mowing does occur at some point all the way to the edge and ground conditions are acceptable, establish native wildflower mixes in places as well. Work with the farm to ensure any plantings are in an area where it will not interfere with farm operations.

Otherwise, monitor this area for invasive plants and remove them before they can become established.

Future Management:

- Monitor for invasive plants and treat as feasible
- Continue to work with the farm to ensure management around this area works with their needs and plans

A.3.3 Fisher Meadows

Stand 1

Management Recommendations:

This stand is well suited to be managed for wildlife habitat, recreation, and educational opportunities. Due to its size, orientation, and location, active forest management that manipulates the structure of this stand is likely neither practical nor desirable. Instead, forest health and understory diversity within this stand could be improved by cutting and removing some of the vines, invasive or not, that are impacting overstory trees and by treating invasives throughout the stand. In some parts of the stand that are accessible, removing invasive plants and – where sunlight and soil conditions permit – replacing them with native alternatives can enhance habitat value and also provide a demonstration opportunity.

Some areas of the stand contain dense grape and bittersweet vines. The grapevines in particular provide wildlife habitat values including soft mast production and use of the bark for nest building material. The grapevine could be maintained in portions of the stand but should be removed when/if damage to trees becomes apparent. Trees within 50 to 60 feet of the hiking trail should be released from the vines, but in other areas grape vines should be encouraged for wildlife. Bittersweet vines should generally be removed where possible.

Invasive plants should be treated throughout this stand to open up growing space for more desirable native understory plants and to allow for better regeneration of native tree species. Additionally, treating invasives will make this stand a more pleasant place to hike through by killing many of the thorniest plants within the stand. The positive association that black-legged ticks (a.k.a. deer ticks – the species that is the primary host for Lyme disease) and white-footed mice (frequently the first host for ticks and the primary carrier of the bacteria that causes Lyme) have with the microclimates created by Japanese barberry make removing some of the trailside barberry a benefit to public health as well.

Future Management:

- Monitor invasives and spot treat as necessary. Continue to maintain trees near trails free of vines.

- Maintain a mostly closed canopy forest to limit prolific seed production of invasive plants
- Monitor flood prone portions of the river along the boundary of this and other stands. If erosion or bank incision is noted or becomes an issue, develop a plan to address it, move trails that may be impacted, etc.

Stand 2

Management Recommendations:

Like Stand 1, large scale active management of the forest structure here is neither practical nor desirable. Invasive species control is by far the most important treatment needed in this stand. Although invasive species can and do provide useful habitat structure, they do not provide the same food source that native wildlife have evolved to use over millennia and are less valuable, overall, than comparable native species. In addition, their presence and spread reduces biodiversity and resilience especially when they grow densely as they've begun to do here. This stand should be maintained as a wildlife management, demonstration and viewing area, and as an environmental education area.

Cutting small groups of trees in portions of this stand along the boundaries with the fields and meadows can provide some useful young forest/shrubby habitat as the areas regenerate. If this is to be done, invasive plant treatments should be undertaken prior to any tree cutting. Large diameter, vigorous trees should be targeted for retention. Poor quality, diseased, damaged, or declining trees should be targeted for removal.

Future Management:

Monitor invasive species in this stand and spot treat as necessary.

If any trees are cut to soften edges, monitor the area and spot treat invasive plants to ensure native plants can successfully regenerate. Augment with targeted plantings of a mix of native shrubs and small trees that can provide sources of nectar, pollen, and mast as well as cover. Examples include blueberries, cranberries, viburnums, dogwoods, hazelnuts, shadbush, etc. Use existing examples of native understory in other parts of the stand as a guide for what will do well here.

Stand 3

Management Recommendations:

Attempt to maintain this area as a mixed softwood stand. Because the younger hardwoods are beginning to outcompete the softwoods conduct a light thinning to remove hardwood trees. Simultaneously remove softwoods with less than 10% live crown that are competing with more vigorous softwoods to help maintain overall stand vigor. Invasive plants should be treated throughout this stand to free up growing space for more desirable native species in the understory. If areas of mortality are noted where sunlight is reaching the forest floor replant with softwood species to help ensure this cover type is perpetuated here. Species that can survive in low light conditions include spruces and firs. Pine, more larch or cedars could work along edges if opportunities exist to plant there. Having softwood pockets within a larger hardwood forest matrix can allow more diverse species of wildlife to use an area including bird species like pine warbler and Blackburnian warbler.

Future Management:

Monitor and spot treat invasives in this stand as necessary. Where opportunities exist for plantings to maintain softwood cover determine appropriate species and plant in fall.

Stand 4

Management Recommendations:

Based on its size, orientation, location, and condition, this stand is not recommended for active management at this time. The trees are competing with each other, and the dominant individuals are beginning to capture the most growing space. Allow the majority of this area to continue to develop. Release several cedar and apple trees in the northeastern portion of the stand. Invasive plants should be treated throughout this stand to improve habitat value and reduce the amount of invasive seed present on the property. Where invasive plants are removed, once control is gained from sprouts etc. replant with native alternatives if feasible. Examples of appropriate shrubs include dogwoods, arrowwood, willows, and alder among others.

Where gaps exist, plant additional softwood species in groups or strips. Planting softwoods in groups as opposed to singly makes it more likely that they'll be able to serve a useful purpose for habitat for species that require softwood.

Where feasible, intentionally fell two additional trees along the shoreline into Spring Lake to provide additional basking sites. Attempt to retain a connection to the stump so the tree stays in place.

Future Management:

- This stand should be allowed to develop naturally, except for the release of several cedar and apple trees.
- Monitor and spot treat invasives as necessary.
- Monitor areas where fishing access has resulted in erosion. Address as needed with stone, fill, fabric or other materials to ensure water quality and user safety is maintained.

Stand 5

Management Recommendations:

These areas are important for wildlife habitat, wildlife viewing, and hiking. Regular mowing of these meadows should continue, ideally on a rotating schedule that allows for the meadows to be mowed at different times to further enhance diversity. Mowings should occur in fall after the wildflowers are done blooming so late season pollinator activity is prolonged. Soil moisture in these areas is high so mowing will need to be done at times when things are frozen, but not snowy or dry.

Attempt to control the invasive plants in the interior and along the edges of the meadows. Remove olive and replace with native alternatives including dogwoods, willow, alder, winterberry, nannyberry, inkberry, northern arrowwood, or others.

Periodically cut the regenerating trees in the northwestern block of this stand (every 5-10 years) to maintain densely growing young forest conditions along the edges. Prune branches of trees on edges that are beginning to encroach on the meadows so they don't shrink over time.

Future Management:

- Regularly monitor for invasive plants and develop a plan for treatment.
- Develop a long-term plan for mowing schedules to diversify habitat conditions from meadow to maintained shrubland and even some young forest conditions
- Soften field edges as feasible
- If legal and reasonable access can be gained to the eastern block of this stand periodically reset succession by using a forestry mower to clear all or portions of the field at a time.

Stand 6

Management Recommendations:

Remove and replace the olive in the smaller block of this stand east of Spring Lake with desirable native alternatives. Periodically continue to brush hog this area to keep it in herbaceous and shrubby growth to maintain the soft edge.

If legal and reasonable access can be gained to the eastern block, **and** if clearing work is to be done in the adjacent portion of Stand 5, regenerate all or a portion of the young forest in Stand 6 simultaneously. Similar to the intent in Stand 5, this would allow for the perpetuation of the benefits that young forests offer for wildlife, which are inherently ephemeral (generally 15 years or less). Prior to cutting, treat any invasive plants present.

Stand 7

Management Recommendations:

Continue to manage these areas as needed to ensure their appropriate function. Install some paired nest boxes in places to allow for bluebird nesting. Ensure that these are at least 50 ft. from densely growing vegetation to limit the likelihood that the boxes will be inhabited by house wren. The paired boxes should be approximately 10-15 ft. apart from each other and can allow the use of one box by species like tree swallow and bluebirds in the other. If this is done, regular maintenance is required to ensure proper function.

If plantings are needed along parking areas or in other places choose native species that can provide sources of nectar, pollen, and mast.

A.3.4 Found Land

Stand 1

Management Recommendations:

Create several small (1-1.5-acre) patch cuts to release desirable regeneration and diversify the stand's structure. Because desirable regeneration is relatively abundant and the overstory trees are of desirable species and fair to good quality, this operation is likely to be financially feasible, especially if combined with the work in Stand 1. Focus patches on locations where less desirable or declining overstory trees are overtopping vigorous regeneration of desirable species. Between patches conduct a thinning to enhance

growing conditions for retained trees. Retain trees of a variety of species, particularly oaks, hickories, tulip poplar, white pine, yellow birch, and healthy hemlock. By creating some gaps within which all trees are removed and releasing some poles, trees of all size classes will be released and able to grow faster, significantly improving the structural complexity, resilience, and habitat value of this stand. Retain trees with potential for wildlife use including any actively use cavity trees and future potential cavity trees. Limit damage to existing chestnut sprouts.

Future Management:

A similar treatment should be performed in 15 to 20 years. By creating small gaps on a rotating schedule, a mosaic of habitat conditions can be maintained on the landscape.

Stand 2

Management Recommendations:

The management within this stand should mirror that within Stand 1, although the results will be slightly different due to the differing soils and landform. Use group selection to create canopy gaps above desirable regeneration where it exists including tree regeneration and blueberry/huckleberry. Increasing sunlight to the low growing shrubby species can increase flowering, fruiting, and density which enhances a variety of conditions for pollinators and wildlife. Focus group selections in areas with higher percentages of poor quality or declining trees as well. Retain large diameter red and white oak that appear to still be growing well in addition to hickory, white pine, sugar maple, and healthy hemlock. Well-formed, vigorously growing poletimber-sized trees of any species should be retained.

Future Management:

Entries to increase age class diversity and release existing regeneration should occur approximately every 15 to 20 years in this stand. Following a strict schedule is not necessary, and the additional structural complexity that can be created by varying the amount of time between treatments will likely have a positive impact on the stand's wildlife habitat value.

A.3.5 Hazen Park

Stand 1

Management Recommendations:

Although this stand would benefit from the creation of some canopy gaps, a crop tree release, or a thinning, the difficulty of access and presence of invasive plants make active management here both impractical and undesirable. However, invasive plants should be treated in this stand. Currently, invasive plants, particularly barberry, are established at moderate densities throughout the stand and are already having an impact on tree regeneration and understory diversity. Treating the invasives in this stand before the infestation becomes more severe should be a priority.

Future Management:

- This stand should be monitored and invasives treated on a regular basis.
- Cover the open well next to the trail

Stand 2

Management Recommendations:

Much like Stand 1, the difficulty of access and prevalence of invasive species makes active management that includes the cutting of trees to influence growth rates and tree composition/structure of this stand both impractical and undesirable. However, invasives here should be treated to limit their populations and the associated negative impacts they have on biodiversity and long-term sustainability of the stand. Invasives are dense in some parts of this stand but largely absent from some others which have notable wetland vegetation, so preventing their spread should be a priority.

Future Management:

- This stand should be monitored and invasives treated as needed.
- Continue to maintain trail infrastructure including bridging

Stand 3

Management Recommendations:

Although this stand is overstocked (for optimal growth and vigor for this forest type) and could generally use either a thinning or group selection treatment, the narrowness of the parcel, small acreage of the stand, terrain, presence of invasives along edges and in gaps, and proximity to houses makes active management that includes the cutting of trees in this stand impractical and potentially counter-productive. Invasives should be treated in this stand to allow native understory vegetation and tree regeneration to capitalize on the canopy gaps that are likely to be created over time as trees break, blow over, or die.

Future Management:

- This stand should be monitored and invasives treated on a regular basis.
- Plant softwoods where site conditions (i.e., appropriate soils and abundance of sunlight) will allow
- Remove dumped materials
- Clear trail through western block of this stand if maintaining the connection to Nod Road is desired
- Some additional bridging may be useful to keep trail users out of wet pockets on trail

Stand 4

Management Recommendations:

This stand has been largely unmanaged in the past. Active management in the future is impractical and perhaps counter-productive given the stand's size and proximity to invasive plant populations. However, invasives within the stand and along edges should be treated to prevent their becoming more densely established and to allow native vegetation a chance to occupy available growing sites.

Future Management:

- This stand should be monitored and invasives treated on a regular basis.
- To maintain a softwood component in the stand, monitor hemlock health and underplant in canopy gaps if needed with softwoods

Stand 5

Management Recommendations:

The meadow portion of this stand should continue to be mowed annually to maintain it as meadow and prevent it from becoming forest. The crabapples in this stand should also be pruned to improve their production as the crabapples themselves are a valuable form of soft mast for wildlife. Invasives should be treated in this stand to prevent them from completely taking over. Where feasible, large shrubby invasive plants should be removed and replaced with desirable native alternatives using a phased approach over time so that the cover they provide is not eliminated all at once. If plantings are to be done, features to include are nectar, pollen, and mast production as well as dense growing habit to continue to provide cover.

Regular mowing will help with this. Mowing should be done after flowering is complete in the late fall or in late winter before flowers begin to open. Mowing done early in the season in 2023 resulted in some rutting from equipment so timing of mowing with appropriate ground conditions is important. If feasible, work with adjacent owners to stagger timing of mowing to allow for multiple age classes of vegetation in meadow and shrubby conditions. If equipment can handle mowing woody plants, some of the shrubby areas should be mowed to reset their succession and keep the area as young shrubs/meadow.

One mature Norway maple, an invasive tree often planted as an ornamental, was noted in the western block of this stand, along the west side of Hazen Drive. Cut and remove this tree so that it does not provide a source of seed that can infest the rest of the property.

Future Management:

- This stand should be mowed yearly, ideally after flowering is complete in the fall or before flowering begins in late winter.
- This stand should be monitored and invasives treated on a regular basis. Replace invasives with native alternatives as feasible

A.3.6 Huckleberry Hill

Stand 1

Management Recommendations:

The goals for the management of this stand are to continue maintaining a mixed species forest with a high degree of diversity, continue to improve wildlife habitat and structural complexity, and maintain trail function. To accomplish these goals, single tree and group selection focusing on gap expansion should be used. With this system, individual trees are removed where doing so can increase growing space for retained trees, and/or to remove trees at high risk for falling out of the stand before the next potential entry. High risk trees are those that are showing signs of decline, rot, poor form (usually in the form of V-forks which are prone to split), or have some other kind of physical damage. The increase in growing space is intended to increase growth rates and vigor, maintain live crown, and in turn resilience of retained trees to potential stressors.

Where group selection is used, most or all trees in areas of ¼-acre up to 2 acres are removed, creating the light and seedbed conditions required for desired tree species including the various oaks, hickories, and white pine to regenerate. During the last treatment, the gaps created with small group selections

successfully regenerated with a diverse mix of native vegetation. Groups should be anchored on pockets of desirable regeneration or poor overstory health whenever possible to maximize their impact, as well as expanding on gaps created during previous treatments. Retain most large trees with full crowns. Select, mark, and map some trees that will be left as legacy trees to be retained to their biological lifespan. Retain snags and cavity trees. Cut some poor-quality trees and with the intent of keeping them on site where they are felled to increase the amount of large woody material on the ground to enhance that structural feature which is somewhat lacking in this stand and throughout most of Avon's properties.

In 8-10 years, 5-10% (approximately 5-10 acres) of the stand should be treated with group selection. This will continue to diversify the structure of the stand, release existing regeneration, and encourage the presence of another size and age class of trees. Where diverse mixes of regeneration exist, attempt to help ensure they can become a viable part of the future forest by removing some of the competing vegetation. Where black birch saplings and pole-timber-sized trees are found to be overtopping more diverse regeneration, cut some of the black birch to release the understory. Although black birch is a native tree species, their populations are increasing in the state over time and will likely continue to do so. This treatment is meant to maintain and enhance diversity by taking advantage of desirable regeneration already present.

The northern portion of this stand has contained invasive plants for some time. Efforts to treat invasives prior to the management project in 2015-2017 did not occur. Develop mapping that indicates the boundaries of the main infestations. Prior to tree cutting in any future management activity, treat invasive plants to limit their spread and to give native species a chance to occupy the site when/if canopy gaps that allow sunlight to reach the forest floor are created.

Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps every 15-20 years to continue diversifying the stand's structure and continue the transition to an uneven-aged structure which is likely to be highly resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor progress of current cohort of seedlings that established following the last treatment
- Install some temporary deer fencing in areas where deer browse appears to be an issue. Fencing can help show if deer browse impacts limit growth rates and/or diversity of regeneration. If this is to be done within view of any of the official trails in the stand, install signage to explain what the fencing is and why it is there.

Stand 2

Management Recommendations:

The goals for the management of this stand continue to be similar to those for Stand 1, therefore gap creation and expansion using group selection and single tree selection is warranted given the success of these treatment types in the past. Expand existing gaps to increase the amount of sunlight available to seedlings that regenerated after the most recent treatment. White pine and oak regeneration, which is the most common regeneration in this stand, should be favored and released where it exists. Retain most healthy large-crowned trees with a focus of retaining the pine, especially the pine near the yellow trail to maintain a mostly closed canopy.

Locate and treat any invasive plants in this stand.

The next treatment should occur in about 2027 a few years prior to the recommended treatments in Stands 3 and 4 to remain consistent with the timing of previous treatments in each area. Retain vigorous trees of good form of a variety of species and size classes to continue growing and to provide a seed source for the future focusing on oaks (especially red and white oak), hickory, and white pine.

Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps every 15-20 years to continue diversifying the stand's structure and continue the transition to an uneven-aged structure which is highly likely to be resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor condition of pitch pine in the stand
- Underplant with other softwoods as needed and where conditions warrant (i.e., in areas with sufficient amounts of sunlight and physical growing space) if pitch pine continue to decline
- Monitor for invasive plants and treat them as needed to ensure they don't become established.

Stand 3

Management Recommendations:

The treatment that was marked in this stand shortly before the writing of the last plan was completed in 2009-2011. No management activities have occurred since then. Like Stands 1 and 2, management within this stand should be focused on regenerating desirable species and increasing the stand's structural complexity. Continue to use group and single tree selection concurrently with the next round of management in Stands 1, 2, and 4. Group selections should be anchored on pockets of desirable regeneration or areas with poor overstory health to maximize their effect. Expand existing gaps where desirable regeneration is already present within a gap.

Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps of 1 acre or more every 10-20 years to continue diversifying the stand's structure and continue the transition to an uneven-aged structure which is highly resilient to climate change and disturbance in addition to providing excellent, varied wildlife habitat.
- Monitor for invasive plants and treat as needed to help ensure they don't become established

Stand 4

Management Recommendations:

The treatment that was marked in this stand shortly before the writing of the last plan was cut in 2009-2011. No management activities have occurred since then. Like Stands 1, 2, and 3, management within this stand should be focused on continuing to regenerate a diverse mix of desirable species and increasing the stand's structural complexity. Continue to use group and single tree selection to further the stated goals for this stand. Expand existing gaps where doing so can release desirable, diverse regeneration. Group selections should otherwise be anchored on pockets of desirable regeneration or poor overstory

health to maximize their effect. Where diverse regeneration created by the last management project is being overtopped by pure stands of sapling and small poletimber-sized black birch, cut the competing birch to release the more diverse regeneration. The larger scale single tree and group selections should be done concurrently with the next round of management in Stand 3. Retain healthy large, crowned trees of a variety of species (but especially oak, hickory, pine, yellow birch, and tulip). Retain snags and cavity trees where doing so does not create hazards for property users. Continue to recruit large downed woody material by cutting and leaving some large, poorly formed trees.

Future Management:

- Future management of this stand should aim to continue diversifying its structure and release additional regeneration. 5-10% of the stand should be put into gaps every 15-20 years to continue diversifying the stand's structure and continue the transition to an uneven-aged structure which is highly resilient to climate change and disturbance in addition to providing excellent, varied wild-life habitat.
- Monitor beech status where BLD is worst and ensure that invasive plants do not begin to occupy growing space vacated by beech if they continue to decline

Stand 5

Management Recommendations:

Treat invasive plants near the landing.

Most of this area was treated in 2003 with the southern portion of Stand 1 and Stand 2. It was scheduled to receive a crown thinning and group shelterwood in 2015 with the southern portion of Stand 1 and Stand 2, but that did not get done. Many of the ash trees have died and although the canopy is mostly closed at this point, that appears to be somewhat limiting the continued spread of the invasive plants present. No other action is recommended during this plan period.

Future Management:

- This stand should be treated every 20 years or so to maintain favorable conditions for tree growth, to remove dying and unhealthy trees and to stimulate or release desirable regeneration.
- Treat invasive plants in roads and adjacent to trails

Stand 6

Management Recommendations:

This area has not been actively managed during the time that the Town of Avon has been managing this property. There is a high density of high quality, healthy white pine and oak with good live crown ratios. Allow this area to continue to develop on its own with little to no manipulation except invasive plant treatment.

Future Management:

- Monitor and treat invasive plant populations to reduce their presence in the stand over time
- Monitor the area and continue to collect information about the stand to see how it changes over time with limited human intervention

Stand 7

Management Recommendations:

Treat invasive plants.

Access with equipment to this stand is difficult and complicated due to the distance to established landing areas, the rocky and wet soils, and the drainages. Due to the prevalence of invasive plants and difficulty of access, only treat invasive plants during this plan period and otherwise allow this area to continue to develop.

Future Management:

- Monitor hemlock health. If health appears to be declining and sufficient amounts of physical growing space and sunlight exist, underplant with softwoods to maintain viable softwood component
- Monitor and treat invasive plants when and where feasible.

Stand 8

Management Recommendations:

Treat invasive plants. This is especially important for the roads and trails within which stiltgrass is growing. Stiltgrass seed can be transported on shoes or tires so recreational uses and forest management equipment can unintentionally result in further spread of this plant.

This area provides valuable wildlife habitat, provides aesthetic backdrops from surrounding areas and land uses, protects the water quality within the Hawley Brook watershed (which eventually empties into the Farmington River) and generally enhances the diversity of Huckleberry Hill. Some trees could be removed from the edges when conducting management operations in adjacent stands to create canopy gaps to release existing regeneration or encourage the establishment of a new cohort of regeneration to enhance structural complexity and age class diversity within the stand. Most of this area should be managed passively with limited tree cutting to keep a mostly closed canopy above the brook. This can also help limit how prolifically the barberry in the stand produces seed though frankly it may not be relevant given how densely they are growing in places.

Future Management:

- Monitor for invasive plant spread. Attempt to shrink populations over time.
- Monitor hemlock health along watercourses in this stand especially Hawley Brook. If HWA and scale appear to be resulting in reduction in vigor/live crown ratios, attempt to treat the trees to reduce negative impacts to water quality and habitat value
- Monitor health of shagbark hickory trees. If high tree densities appear to be resulting in reductions of vigor, conduct a crop tree release on the east, south, and west sides to allow sunlight to reach the crowns and the main trunks of the trees. This is especially relevant when there are groups of shagbarks growing together near water as the likelihood that they can be used by bats increases with those conditions exist.

Stand 9

Management Recommendations:

Allow this area to continue to develop and provide valuable hydrologic and habitat functions.

Future Management:

- Keep this area as a semi-open wetland. Monitor and cut groups of trees in the interior if the area begins to reforest. This would be best accomplished during frozen winter conditions. Felled trees can be left on site to add to the structure in the area and provide perches and basking areas for birds and other wildlife.
- The Phragmites in the southern portion of the stand grows very densely, but it is unlikely that the area will be able to be successfully treated to reduce populations in a meaningful way. If at all feasible, attempt to limit the spread of phragmites to maintain the semi-open character and native species diversity present in the central and northern portions of the stand.

Stand 10

Management Recommendations:

Monitor these areas for invasive plants and treat them if noted before they can become established.

Maintain a mostly closed canopy surrounding the pools to help maintain shade. Despite the water that trees adjacent to the pools likely suck out of the ground during the growing season, it is generally agreed that maintaining shade is important for the continued function of the pools. When conducting forest management operations in adjacent stands, use the best management practices as laid out in *Forestry Habitat Management Guidelines for Vernal Pool Wildlife* (Calhoun, A.J.K., and P. deMaynadier. 2004).

The eastern portion of this stand is near significant residential development and should be monitored to make sure it remains intact and functional.

Future Management:

Monitor the areas to ensure continued function.

Stand 11

Management Recommendations:

Monitor the area for impacts from beaver. Given the location of this stand, it may be a suitable area within which allowing beaver to modify the hydrology and vegetation on this part of Hawley Brook is acceptable. One of the potential risks if water begins to back up in this area is the further loss of access over Hawley Brook where the bridge blew out in 2017 or 2018. The beaver activity is currently very close to that crossing.

There was a viewing area along the southern portion of this area that has fallen apart and is no longer functional. Depending on how widespread the beaver activity becomes, constructing another viewing area could be explored as an educational and wildlife viewing opportunity. If this is to happen, it would be a good idea to simultaneously re-install a bridge spanning Hawley Brook just east of the old location of the structure if it is determined that that is a suitable location for replacement.

Future Management:

Keeping native vegetation in this stand – particularly the cattail – is important but will be very difficult to actively manage. This area should mostly just be monitored and observed.

Stand 12

Management Recommendations:

Treat the mile-a-minute and develop a monitoring and re-treatment program to ensure it is eliminated.

Continue to manage for active recreation. Install a functional kiosk and mark the trailhead at the southeastern boundary of the stand.

If any plantings are needed, plant native species that can provide sources of nectar, pollen, mast, and cover. Examples include shadbush, hazelnut, highbush blueberry, highbush cranberry, inkberry, nannyberry, dogwoods, etc.

Future Management:

- This area will continue to be used for active recreation and parking.
- Monitor the mile-a-minute population and re-treat as needed

Appendix A.4 – General Recommendations

General Recommendations

With any activity undertaken on these properties, attempt to:

2. Improve forest health and species diversity.
3. Improve vertical and horizontal structural diversity and complexity, including retaining snags and cavity trees where doing so is not counter-productive to the goal of the activity or creates a safety hazard for property users.
4. Ensure water quality and soil stability.
5. Maintain accessibility, or in places where it is desired, increase accessibility.
6. Limit spread of invasive plant species. Treat populations of invasives in and adjacent to the area where trees are to be cut prior to forest management activities.
7. Coordinate management philosophies and activities with neighbors to amplify the activities' impact, build community, and strengthen each participant's commitment to sustainable, adaptive management.

Forest Health and Productivity

- Encourage desirable regeneration of target species in all managed areas.
- Attempt to limit populations of invasive plant species. Remove invasive plants where feasible. Some pockets of invasives are dense enough to provide functional understory habitat. Treat these areas with a staggered approach to avoid eliminating a particular habitat type all at once and replace with native species where conditions allow.
- Keep abreast of information regarding invasive insects, especially the spongy moth, hemlock woolly adelgid, hemlock scale, beech bark disease, beech leaf disease, emerald ash borer, and Asian long-horned beetle. Work with relevant state, school, or other organizations that offer help with managing these issues.
- Attempt to perpetuate and expand the softwood component of these forests by using treatments to increase the vigor of retained trees and to successfully regenerate softwood where and when feasible.
- Conducting treatments that require the use of machinery simultaneously will make the non-commercial treatments more feasible by reducing the cost incurred by transporting equipment to and from the site multiple times for non-commercial treatments.
- Borer-killed ash that do not have wildlife cavities and are not large enough to foreseeably become high-quality wildlife trees can either be removed and used as firewood on-site, left to remain standing where safety is not an issue, or felled and left on the forest floor as a source of coarse woody material (CWM). Ash trees that are not infested with emerald ash borer should be retained; in places like these properties where ash mortality is almost complete, any ash that are not infested or killed have the potential to be resistant to emerald ash borer and should be retained as a potential seed source.

Wildlife

- Use gap creation to encourage dense growth of tree regeneration and desirable non-tree understory vegetation (i.e., blueberry, huckleberry, maple leaf viburnum, etc.)

- Attempt to recruit some large trees scattered throughout the property, even if these trees are not “wolf trees” to increase structural diversity. These large trees could become “legacy trees” and be allowed to mature and die naturally.
- Whenever possible, avoid cutting trees during the songbird breeding season (i.e., early April-early August) if it makes sense given operational concerns and goals of the treatment. Bat protections may also need to be considered which could also impact operation windows.
- During or after forest management activities that involve cutting trees, consider piling tops of some felled trees to increase value for wildlife. Pile tops near edges of openings where they exist and do not create more than 2-3 piles/acre. See Appendix B for NRCS recommended brush pile construction methods.
- Maintain softwood cover wherever possible, and use treatments to improve the vigor of retained trees. Softwoods are underrepresented on the landscape and provide habitat that many species require for one or more major life activities, so perpetuating the softwood component of these forests is important
- Follow BMPs and other specific documents such as Forestry Habitat Management Guidelines for Vernal Pool Wildlife (Calhoun, 2004)

Recreation and Boundaries

- Mark and maintain all boundaries.
- Continue to maintain woods roads, trails, trailheads, kiosks, and other accesses and limit erosion.
- Determine if there are any additional trails or trail connections that can allow for greater access but not have a significant negative impact on the vegetation or wildlife on the property

Education and Research

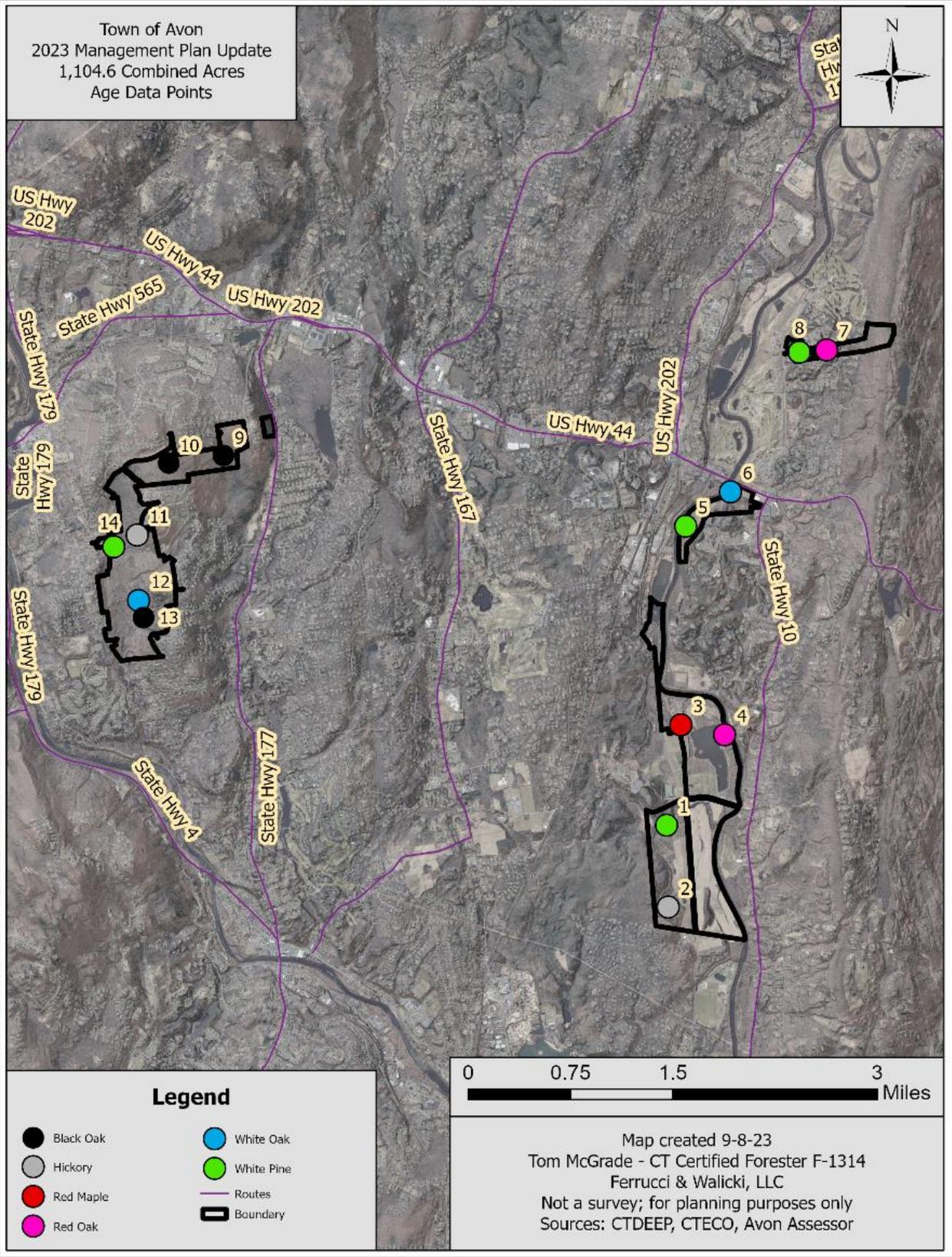
- Coordinate with colleges and universities, such as University of Connecticut, or organizations such as the Connecticut Agricultural Experiment Station (CAES) to increase knowledge of the property and assess the efficacy of proposed stewardship activities. Where feasible conduct experimental treatments to maintain or enhance forest health and productivity.

APPENDIX B – TREE AGES

Plot Number	Property	Species	DBH (inches)	Age*	Number Rings	core Length (inches)	Length of first Ten (")	Rings/Inch entire core (avg)	Rings/Inch ten years (10/")	# Rings in outer Inch of growth
1	Fisher Farms	Large White Pine	25	~62 ND	58	10.5	3.5	5.52380952	2.85714286	10
2	Fisher Farms	Dominant Hickory	20	~85	80	10.25	1.5	7.80487805	6.66666667	8
3	Fisher Meadows	Red Maple	20	~81	76	11.5	1.75	6.60869565	5.71428571	8
4	Fisher Meadows	Red Oak	17	~108	103	9.75	1.25	10.5641026	11.4285714	18
5	Alsop Meadows	White Pine	35	~90 ND	80	11	0.875	7.2272727	11.4285714	9
6	Alsop Meadows	White Oak	17	~133	128	9.25	0.5	13.8378378	20	15
7	Hazen Park	Red Oak	22	~104	98	11.75	0.75	8.34042553	13.3333333	11
8	Hazen Park	White Pine	19	ND	112	13	0.6	8.61538462	16.6666667	8
9	Found Land	Black Oak	14	~100/ND	94	9.125	0.75	10.3013699	13.3333333	15
10	Found Land	Black Oak	13	~83/ND	78	6.75	0.925	11.5555556	10.8108108	17
11	Huckleberry Hill	Hickory	14	~87	82	7.1625	0.875	11.4485166	11.4285714	8
12	Huckleberry Hill	White Oak	15	~104	99	7.75	0.25	12.7741935	40	9
13	Huckleberry Hill	Black Oak	18	~+96ND	91	8.5	0.25	10.7058824	40	18
14	Huckleberry Hill	White Pine	25	~ND	64	10.5	ND	6.0952381		9

**"ND" = Cannot Be Determined, Missed center with 18" increment borer. The number of rings per core is provided for these cases.

Town of Avon - Tree cores 2023
18" increment borer used
Collected on 8/31/23



APPENDIX C - 10-YEAR IMPLEMENTATION PLAN

The following is a recommended schedule for implementing the recommendations found within this Management Plan. Dates of specific activities, including timber harvests, should be considered somewhat flexible due to potential seasonal conditions, market fluctuations, or budget constraints. All Invasives Control work should be moved as far forward in the proposed schedule as budgets permit.

2024-2033

Invasive Treatments	All Properties
Trail Maintenance	All Properties
Boundary Maintenance	All Properties
Mowing of Maintained Meadows and Recreational Fields	Alsop, Fisher Meadows, Hazen
Maintain Community Garden	Alsop Meadows
Maintain Ornamental Plantings on Field's Western Edge	Alsop Meadows
Monitor Hemlock Along River	Alsop Meadows (Stand 2)
Attempt to Locate Sensitive Plant Species	Alsop Meadows
Continue to Work with Sub Edge Farm	Fisher Farms
Remove and Replace Invasive plants with Native Alternatives	Fisher Farms (Stands 1, 3, 8)
Maintain Unmowed Buffer along Shoreline	Fisher Farms (Stand 8)
Monitor Beaver Activity	Huckleberry Hill (Stand 11)

2024-2025

Plant Monarch Waystation With Monarch Friendly Species

Alsop Meadows

Map and Treat Invasive Plants

Huckleberry Hill (Northern Portion of Stand 1)

Treat Mile-a-Minute (Continued Monitoring Following Initial Treatment. Treat Again if Needed)

Huckleberry Hill (Stand 12)

Inspect bridge over Tillotson Road

Fisher Farms

Treat Vines

Fisher Meadows

2025-2026

Phase in Native Pollinator Plantings

Hazen Park (Stand 5)

Treat Stiltgrass

Huckleberry Hill (Stand 8)

Rebuild Viewing Area in Southern Portion and Service Bridge Over Hawley Brook

Huckleberry Hill (Stand 11)

Install Kiosk at Southeastern Trail Access Point

Huckleberry Hill (Stand 12)

Install Wood Duck Boxes

Fisher Farms (Stand 4)

Treat Vines

Fisher Meadows

2026-2027

Phase in Native Pollinator Plantings

Hazen Park (Stand 5)

Gap Expansion, Single Tree, Group Selection

Huckleberry Hill (Stand 3-4)

Release Regeneration Overtopped by Black Birch

Huckleberry Hill (Stand 4)

Selection Methods on Stand 8 Border with Stands 3 & 4

Huckleberry Hill (Stand 8 edge)

2027-2028

Crop Tree Release

Alsop Meadows (Stand 1)

Patch Cuts

Alsop Meadows (Stand 1-2)

Maintain Young Forest Edge on Border with Stands 5 & 6	Alsop Meadows (Stand 2)
Thin Around Vigorous Pitch Pine	Alsop Meadows (Stand 3)
Crop Tree Release	Alsop Meadows (Stand 3)
Phase in Native Pollinator Plantings	Hazen Park (Stand 5)
Thinning of Hardwoods	Fisher Meadows (Stand 3)
Release Cedars and Apples in Northeastern Portion of Stand	Fisher Meadows (Stand 4)

2028-2029

Single Tree and Group Selection	Fisher Farms (Stands 1-2)
Soften Edge	Fisher Farms (Stand 4)
Phase in Native Pollinator Plantings	Hazen Park (Stand 5)

2029-2030

Phase in Native Pollinator Plantings	Hazen Park (Stand 5)
Patch Cuts	Found Land (Stand 1)
Group Selection	Found Land (Stand 2)

2030-2031

Monitor Treatment Areas	Where Applicable
Single Tree and Group Selection	Huckleberry Hill (Stand 1)
Selection Methods on Stand 8 Border with Stand 1	Huckleberry Hill

2031-2032

Single Tree and Group Selection (If not completed in previous year)	Huckleberry Hill (Stand 1)
---	----------------------------

Selection Methods on Stand 8 Border with Stand 1

Huckleberry Hill

2032-2033

Monitor Treatment Areas

Where Applicable

Begin Planning Next 10 Year Management Plan

APPENDIX D - FORESTRY TERMS & TREATMENTS

Basal Area: The area measured in square feet of the cross section of a tree or trees at DBH

Board foot: Wood used for lumber that measures 12" x 12" x 1" (MBF = 1000 board feet)

Bucking: Cutting a tree or log into usable sections for specific products.

Canopy: Where the leaves and upper branches of a tree are located

Cord: Cut and stacked wood measuring 8' x 4' x 4' (includes bark and the air in between logs)

DBH: ("Diameter at Breast Height") diameter of a tree 4.5 feet above the ground

Drainage: Ability of soil to shed excess water

Habitat: The food, water, cover, and living space wildlife needs for survival

Hardwood: Broad-leaved trees that usually shed their leaves in the fall

Intermittent Stream: A small stream that does not flow year-round

Landing: (a.k.a. log landing, yarding area, header) A centralized location to which trees or logs are transported where they are bucked into sections for transport to a sawmill for processing

Microtopography: Changes in elevation on a small scale; dips and bumps in the land

Over mature: Trees that have reached biological old age and have begun to decline in vigor

Overstory: Upper canopy of tree tops

Pole or Poletimber: Trees having a DBH of 6 to 12 inches

Regeneration: New young trees

Sapling: Trees greater than 4.5 feet tall and having a DBH of 1 to 5 inches

Sawtimber or Sawlog: Trees having a DBH greater than 12 inches

Seedling: Tree regeneration less than 4.5 feet tall

Silviculture: The art, science, and practice of growing trees and maintaining a forest

Skid Trail or Road: Corridor through the woods over which logs or trees or transported to a landing

Snag: a dead standing tree

Stand: Separate and distinct natural community

Understory: Vegetation layer below the upper canopy of treetops

Water Bar: Ditches or logs place at an angle to the slope to divert water from its downhill path

APPENDIX E – REGENERATION DATA

The data presented in the following tables show the quantitative and qualitative tree regeneration information that was collected during the inventory. Where a number is shown, those data were collected in the “nested” plots at each inventory point. A 1/1000th acre plot was used to measure seedlings and a 1/100th acre plot (both measured from the inventory point’s center) was used for saplings. Trees with an “X” indicate that those species were present, but were not picked up in the quantitative measurements because they were outside the plot distances, but are relevant nonetheless. The narrative descriptions for each stand in this plan noted tree regeneration where it was present.

Alsop Meadows

Seedlings

Stand	1	2	3
American Elm		571	
Apple	500		
Black Birch	500	X	500
Black Cherry	500	142	X
Hawthorne		X	
Hickory			
Ironwood		142	
Musclewood	X	X	
Norway Spruce	X		X
Sassafras		142	
Sugar Maple	6000	4857	2000
White Ash	2500	142	1000
White Pine		X	
Total	10000	5996	3500

Saplings

Stand	1	2	3
American Elm		X	
Black Birch	14		X
Black Cherry			
Black Oak			100
Dogwood	X		
Eastern Hemlock		71	
Eastern Red Cedar			X
Hawthorne			
Hickory		14	
Ironwood	50		
Musclewood		14	
Norway Spruce	X	X	
Red Maple	X	X	
Sassafras			
Sugar Maple	200	28	X
White Ash			
White Pine	X	X	X
Yellow Birch		X	
Total	250	141	100

Fisher Farm

Seedlings

Stand	1	2
American Elm	X	
Beech	320	140
Black Birch	160	X
Black Oak		X
Hickory	X	
Musclewood	100	
Red Maple	180	40
Sugar Maple		
White Oak	X	20
White Pine	340	120
Yellow Birch	60	
Total	1160	320

Saplings

Stand	1	2
Beech	400	1400
Black Birch	133	200
Black Cherry	66	
Black Oak	533	
Hickory	66	
Red Maple	933	
Red Oak	533	
Sugar Maple	200	
White Oak	1266	
White Pine	X	
Total	4130	1600

Fisher Meadow

Seedlings

Stand	American Elm	Black Oak	Hickory	Holly	Sugar Maple	White Ash	Total
1	125				125	125	375
2			750				750
3		X		X		X	0

Saplings

Stand	American Elm	Black Oak	Apple	Dogwood	Hawthorne	Hickory	Holly	Musclewood	Red Maple	Sugar Maple	Total
1	100					X		25	25	25	187
2	25		25		X	25					75
3							X		150		150

Found Land

Seedlings

Stand	1	2
American Chestnut		600
Black Birch	333	1333
Black Oak		1333
Hickory		66
Paper Birch		X
Red Maple	X	200
Red Oak	333	200
Sassafras		66
Sugar Maple		X
White Ash		66
White Oak		266
White Pine	333	X
Total	999	4130

Saplings

Stand	1	2
American Chestnut		26
Black Birch	166	166
Black Oak		13
Hickory		60
Red Maple	66	266
Red Oak	X	
Sassafras		13
Sugar Maple		6
White Oak		53
White Pine		20
Total	232	623

Hazen Park

Seedlings

Stands	American Elm	Apple	Beech	Black Cherry	Hickory	Ironwood	Musclewood	Striped Maple	Sugar Maple	White Ash	Total
1			333		333						666
2		1500							7000	500	9000
3	X		125				X	125		125	500
4				1000	X	X			4000	500	5500

Saplings

Stands	Beech	Black Birch	Black Cherry	Eastern Hemlock	Grey Birch	Hickory	Musclewood	Red Maple	Sassafras	Sugar Maple	Total
1	33						66			66	165
2		150								100	250
3	25		12			37	X	37		25	323
4	X									175	200

Huckleberry Hill Recreation Area

Seedlings

Stand	American Chestnut	Beech	Black Birch	Black Cherry	Black Oak	Hickory	Ironwood	Musclewood	Red Maple	Red Oak	Sassafras	Sugar Maple	White Ash	White Oak	White Pine	Yellow Birch	Yellow Poplar	Totals
1	71		1642	71	4071	500			1142	1142			357	928	285	71	285	10565
2					1000								400	1200	200			1000
3									667	583	167			583	200		333	1800
4	83	167	333	500	417	167						1600		X	200		333	4000
5																	X	1800
6					250	X			X					500				750
7													1500					1500
8						100	100	100	500	200			1100					2100

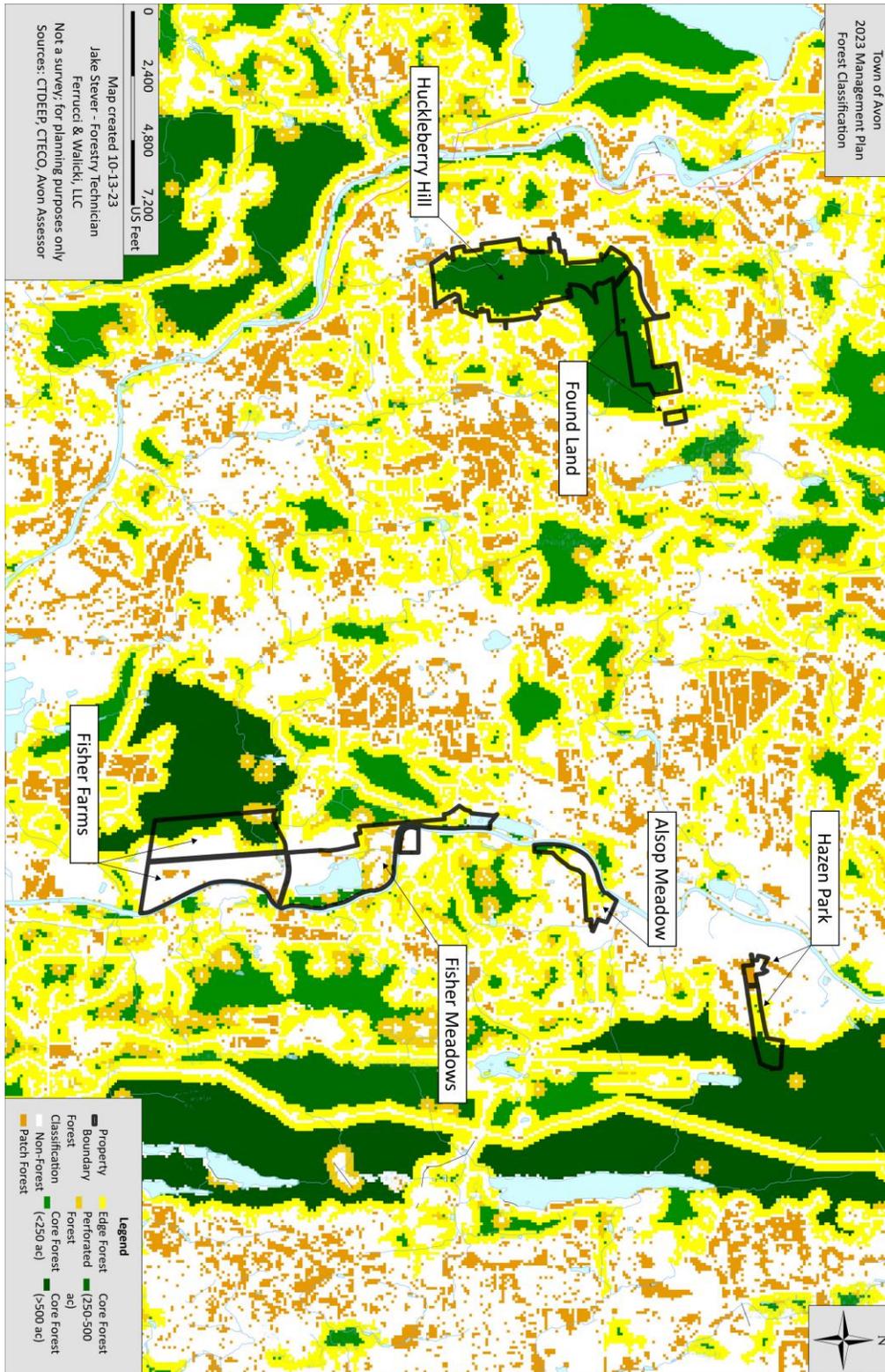
Saplings

Stand	American Chestnut	American Elm	Beech	Black Birch	Black Oak	Eastern Hemlock	Hickory	Ironwood	Musclewood	Red Maple	Red Oak	Sassafras	Serviceberry	Sugar Maple	White Ash	White Oak	White Pine	Yellow Birch	Yellow Poplar	Totals
1				107			14	14	36	36	7			14		50	50	64		393
2	133			167				33		100						33	500			967
3				80			20	20	60	140				20		20	180		20	580
4	17		8	283	17			17	67	317		8		20		33	125	8		900
5				20										180						200
6								50		25				50						175
7								100	150					150						400
8						10	60	30	20	10				140	10		10	20		330

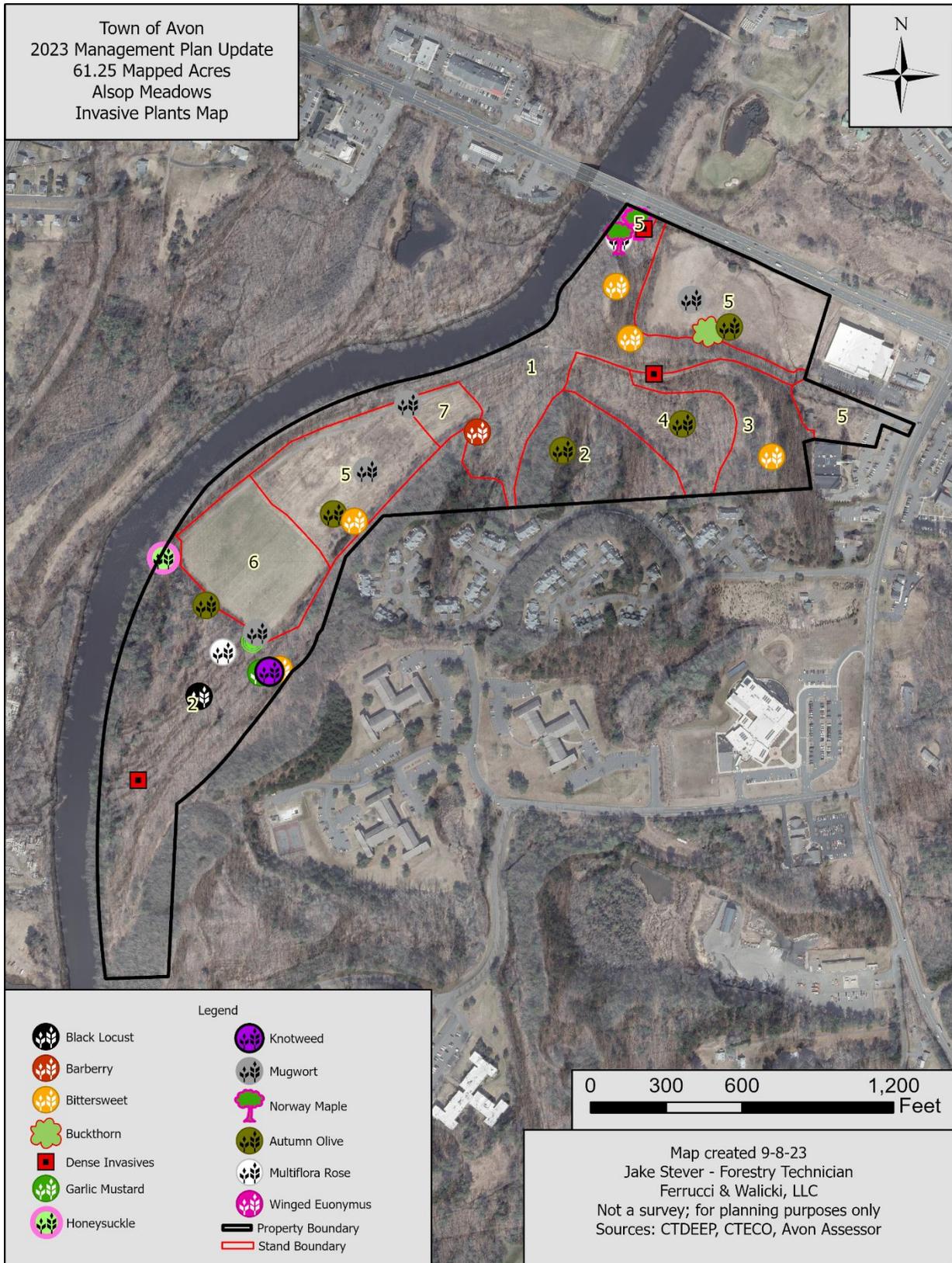
APPENDIX F – MAPS

The maps in Appendix F are intended to be indications of general conditions on each property. There are likely to be additional occurrences of specific features in any of the maps, but these can be used as guidance for some of the issues being described by the map. The maps are organized first by general features that are shown at a Town level and then individually on a property-by-property basis.

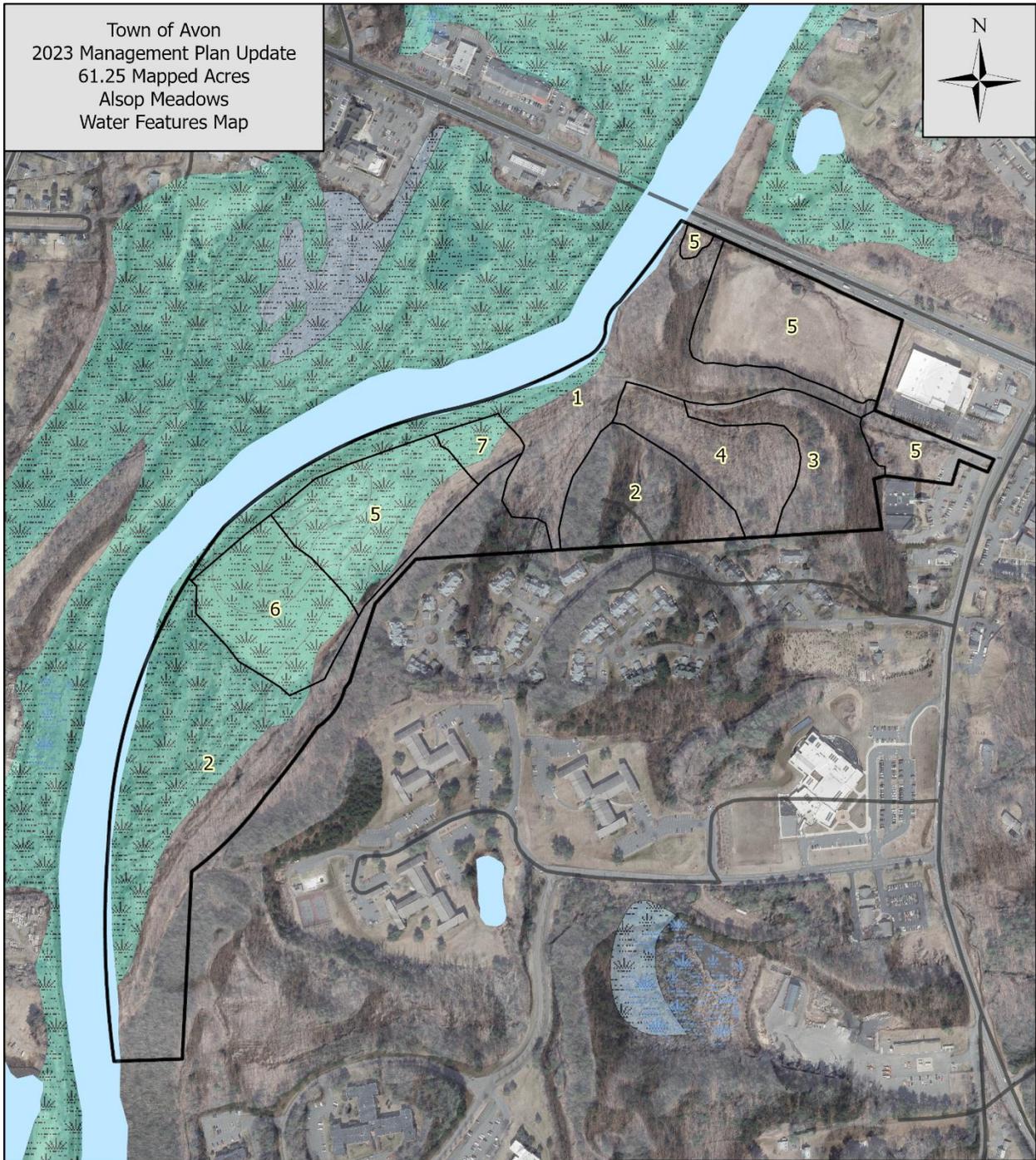
Appendix F.1 – Forest Classification Map



Appendix F.2 – Alsop Meadows Maps

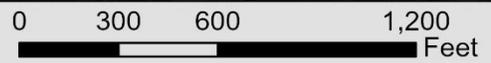


Town of Avon
 2023 Management Plan Update
 61.25 Mapped Acres
 Alsop Meadows
 Water Features Map



Legend

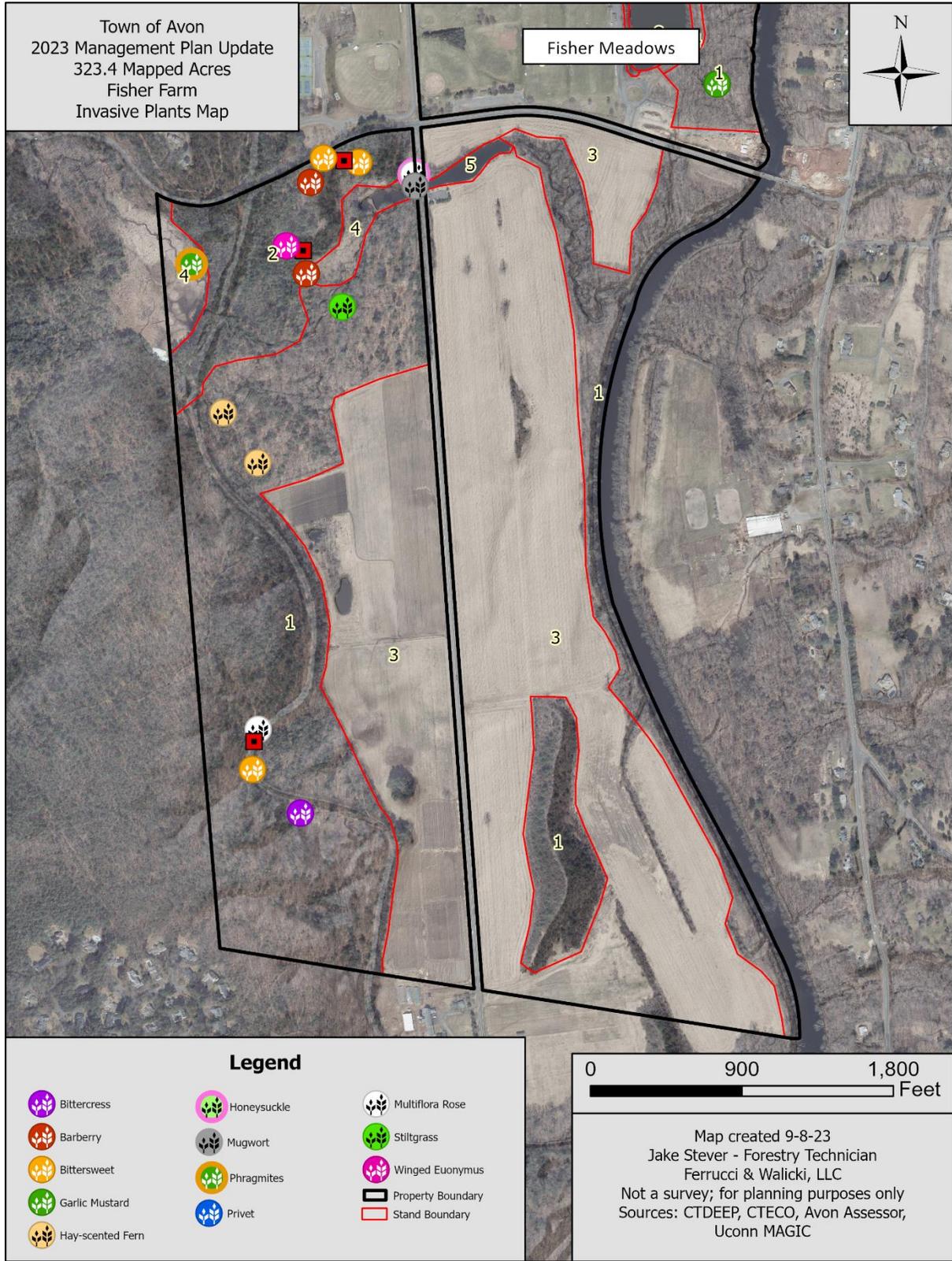
- Property Boundary
- Stand Boundary
- Roads
- Stream
- Water Feature
- Marsh
- Wetland Soils

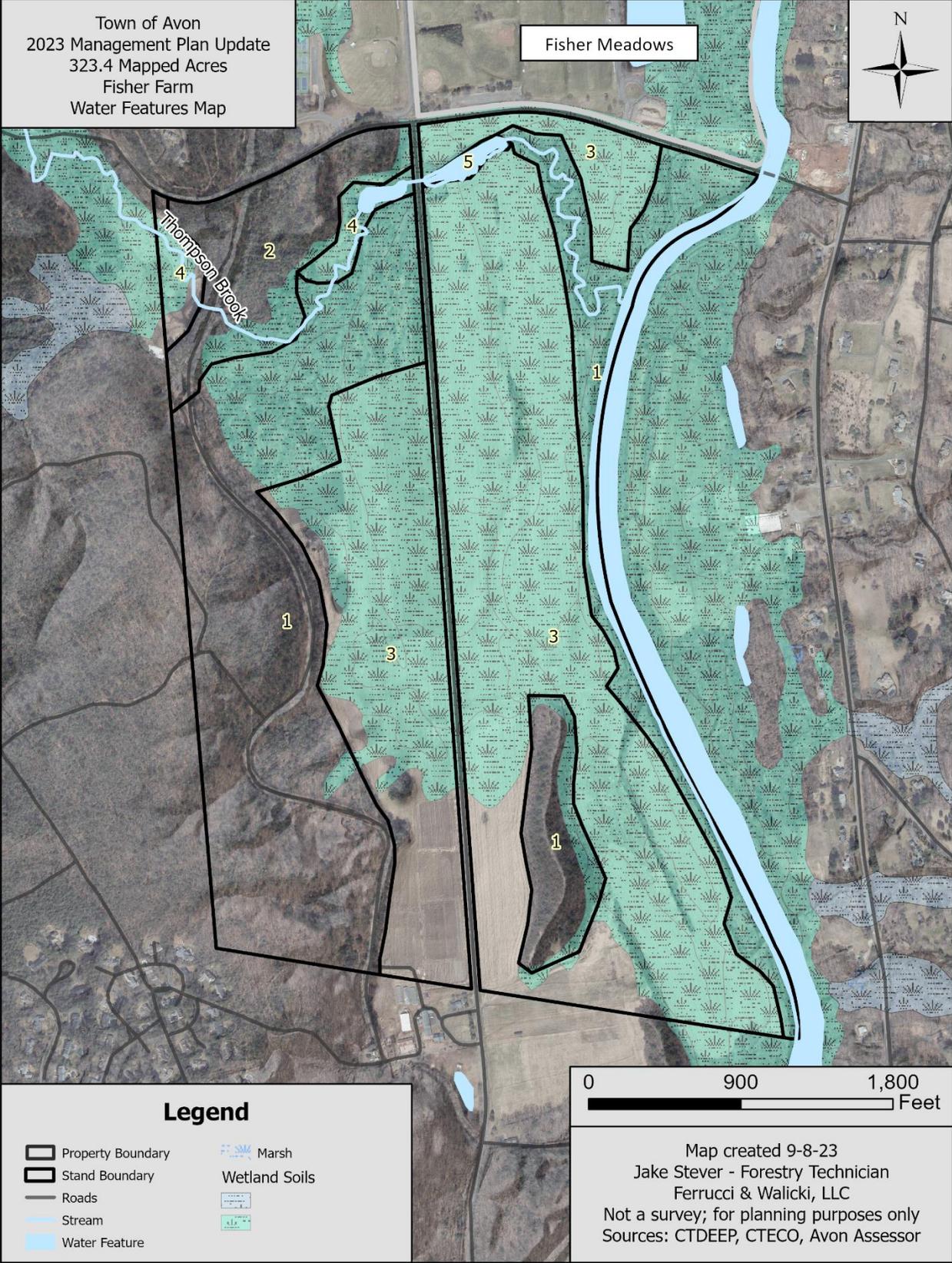


Map created 9-8-23
 Jake Stever - Forestry Technician
 Ferrucci & Walicki, LLC
 Not a survey; for planning purposes only
 Sources: CTDEEP, CTECO, Avon Assessor

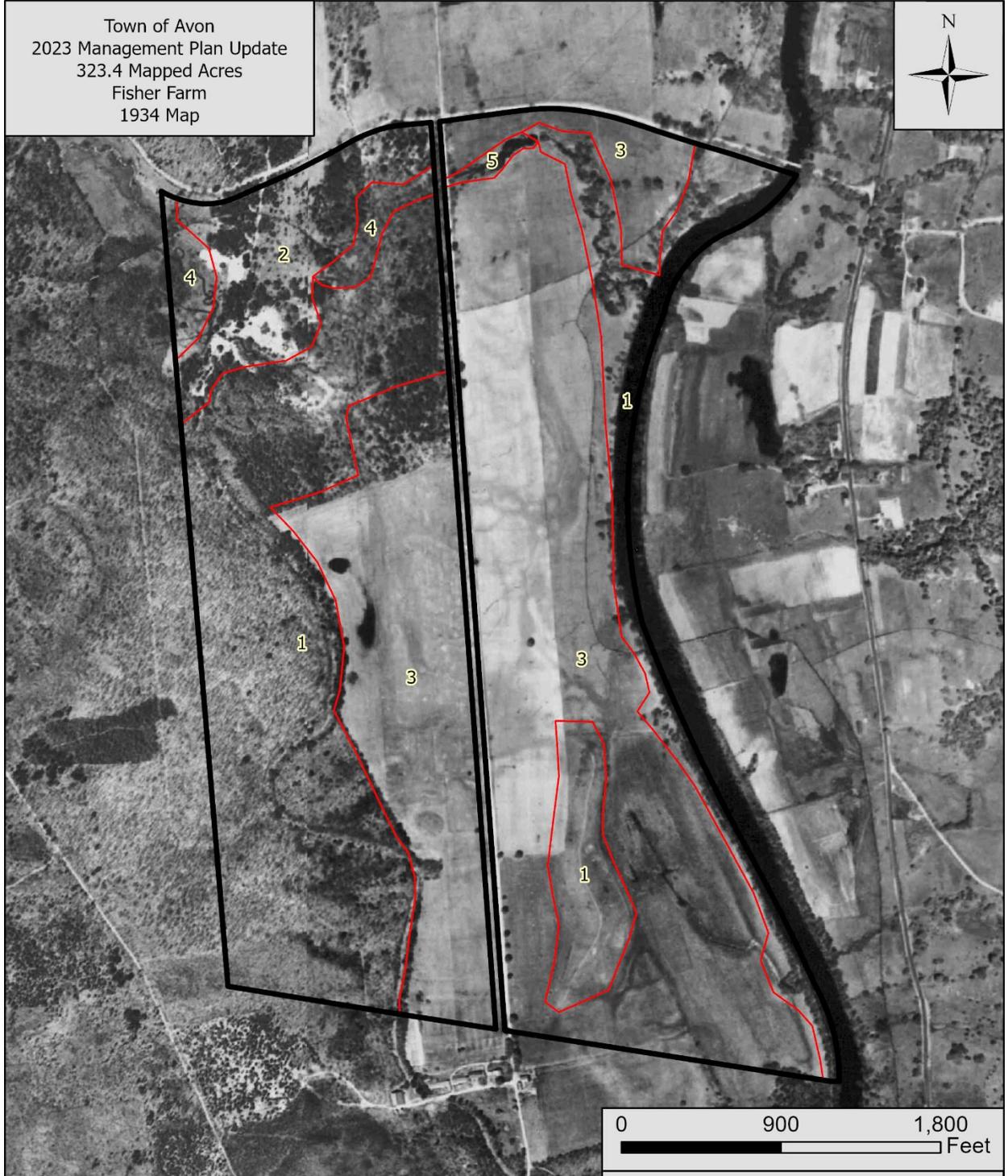


Appendix F.3 – Fisher Farms Maps





Town of Avon
2023 Management Plan Update
323.4 Mapped Acres
Fisher Farm
1934 Map

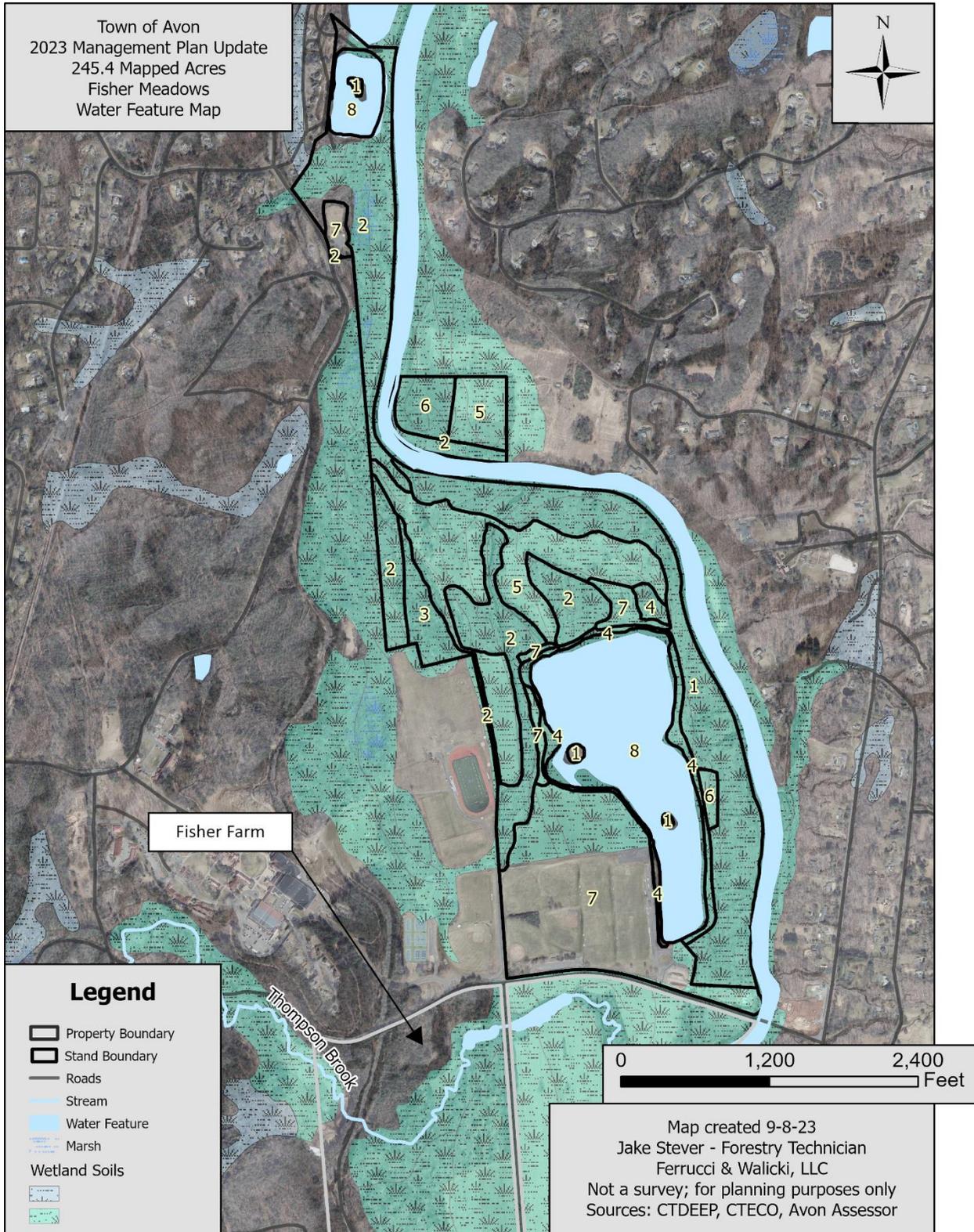


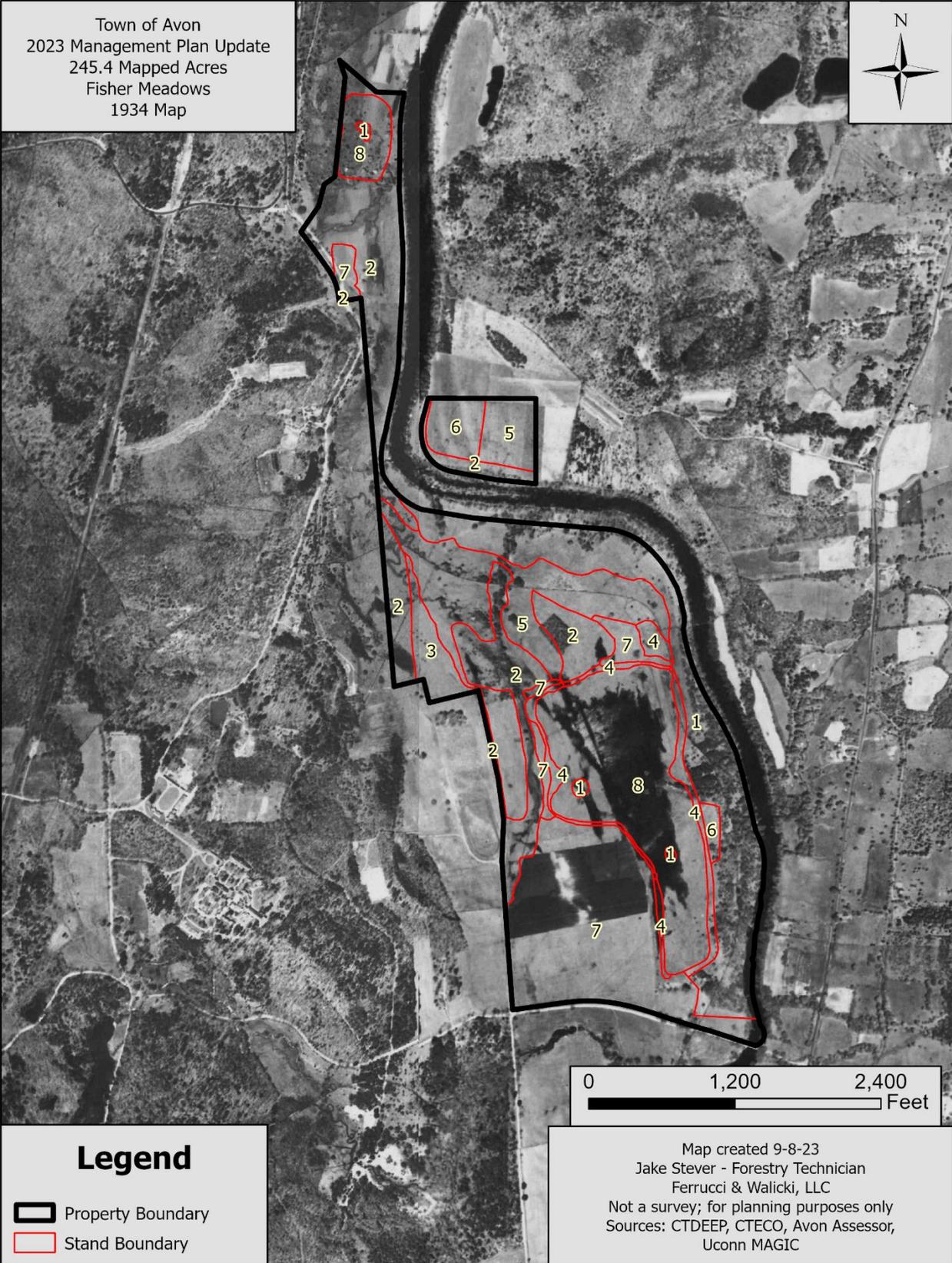
Legend
Property Boundary
Stand Boundary

Map created 9-8-23
Jake Stever - Forestry Technician
Ferrucci & Walicki, LLC
Not a survey; for planning purposes only
Sources: CTDEEP, CTECO, Avon Assessor,
Uconn MAGIC

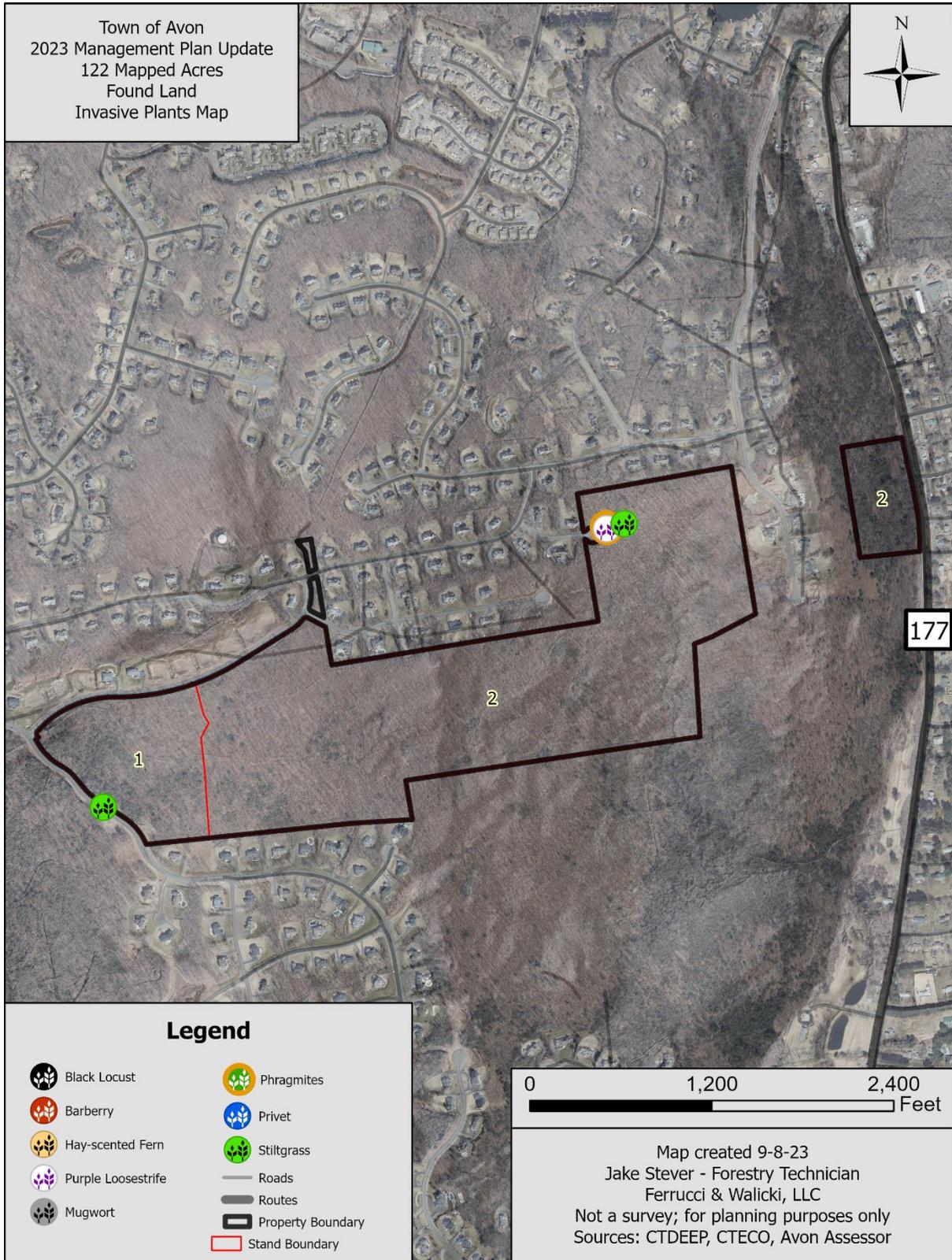
Appendix F.4 – Fisher Meadows Maps

Invasive plant map not included because they are everywhere growing densely



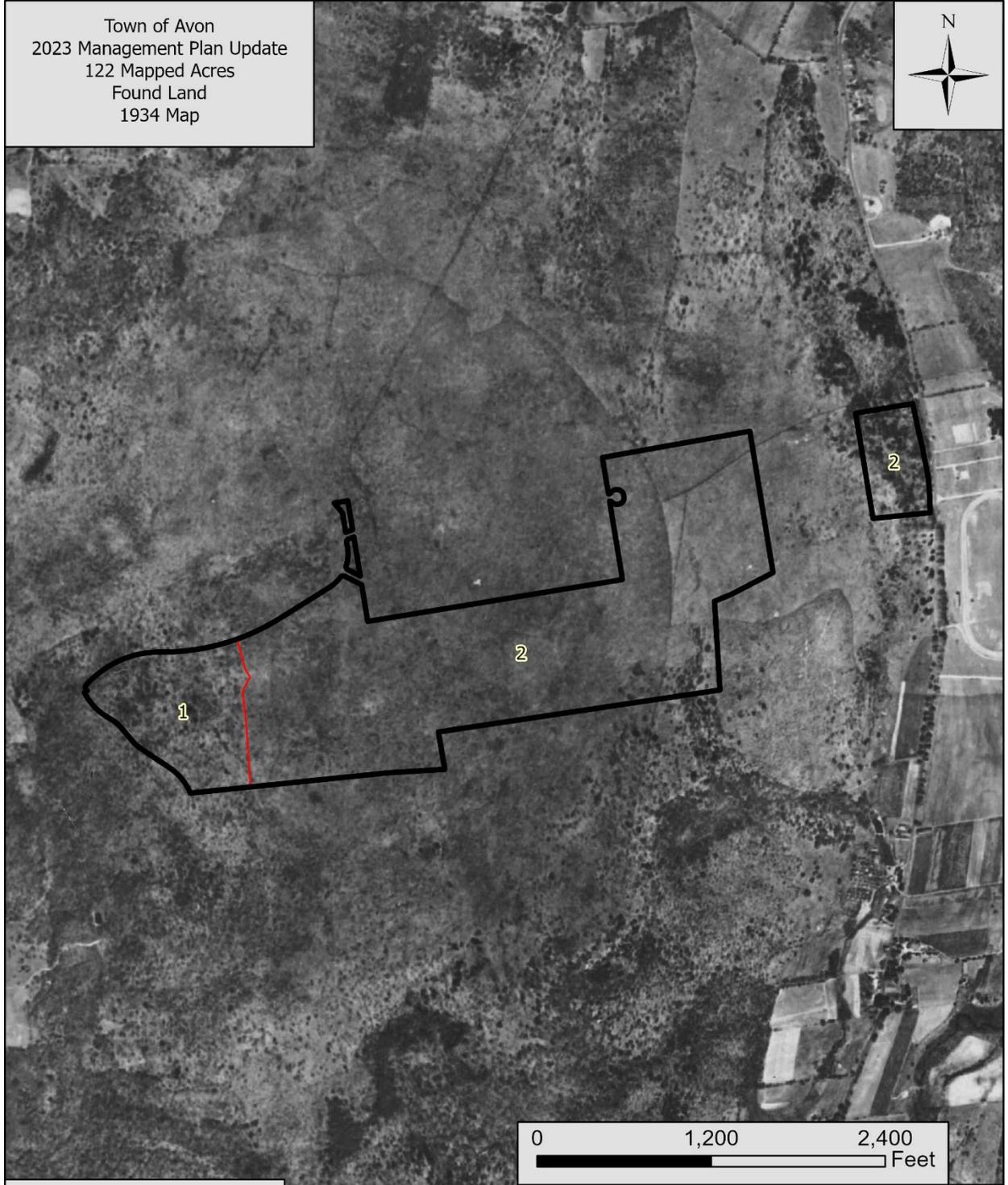


Appendix F.5 – Found Land Maps





Town of Avon
2023 Management Plan Update
122 Mapped Acres
Found Land
1934 Map

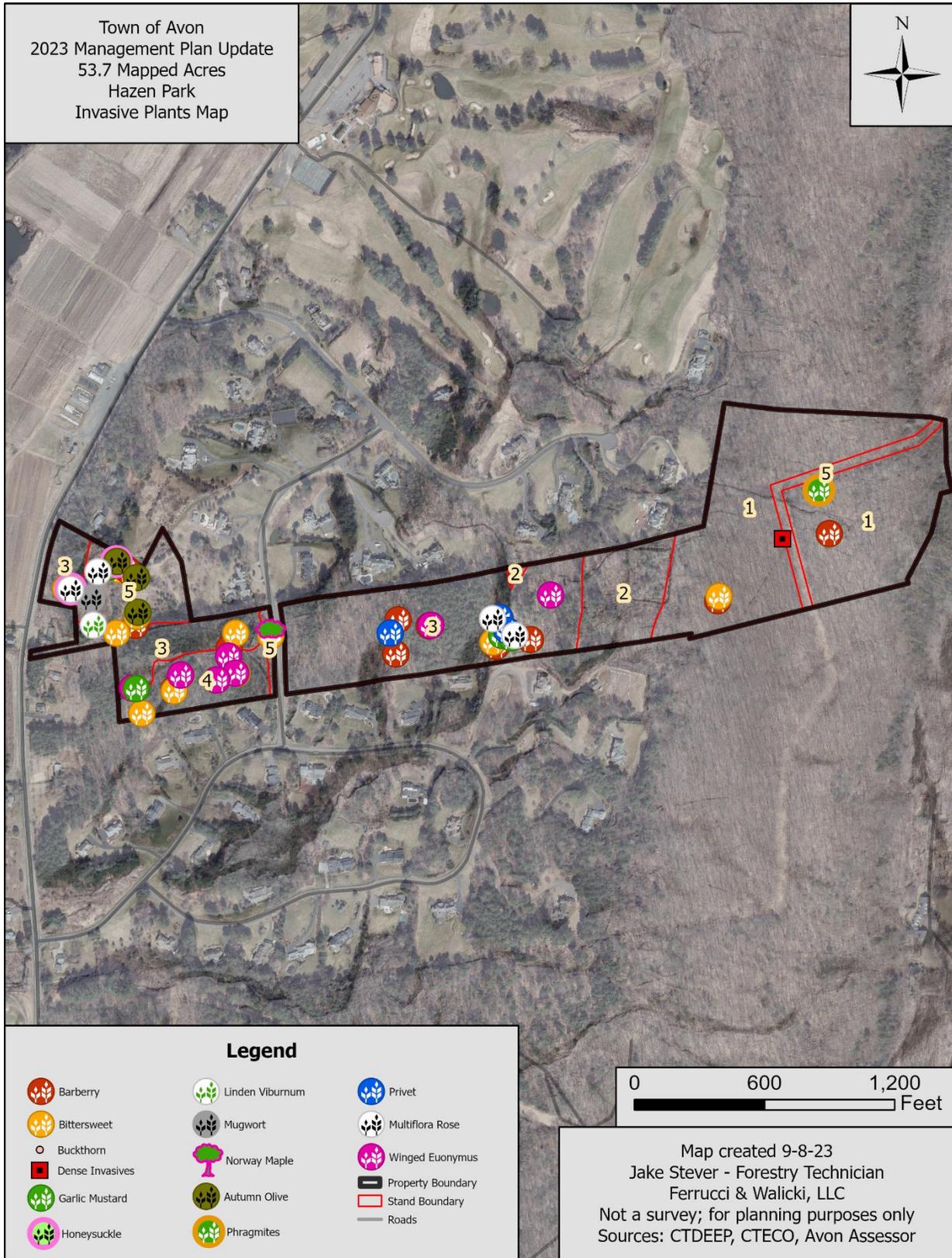


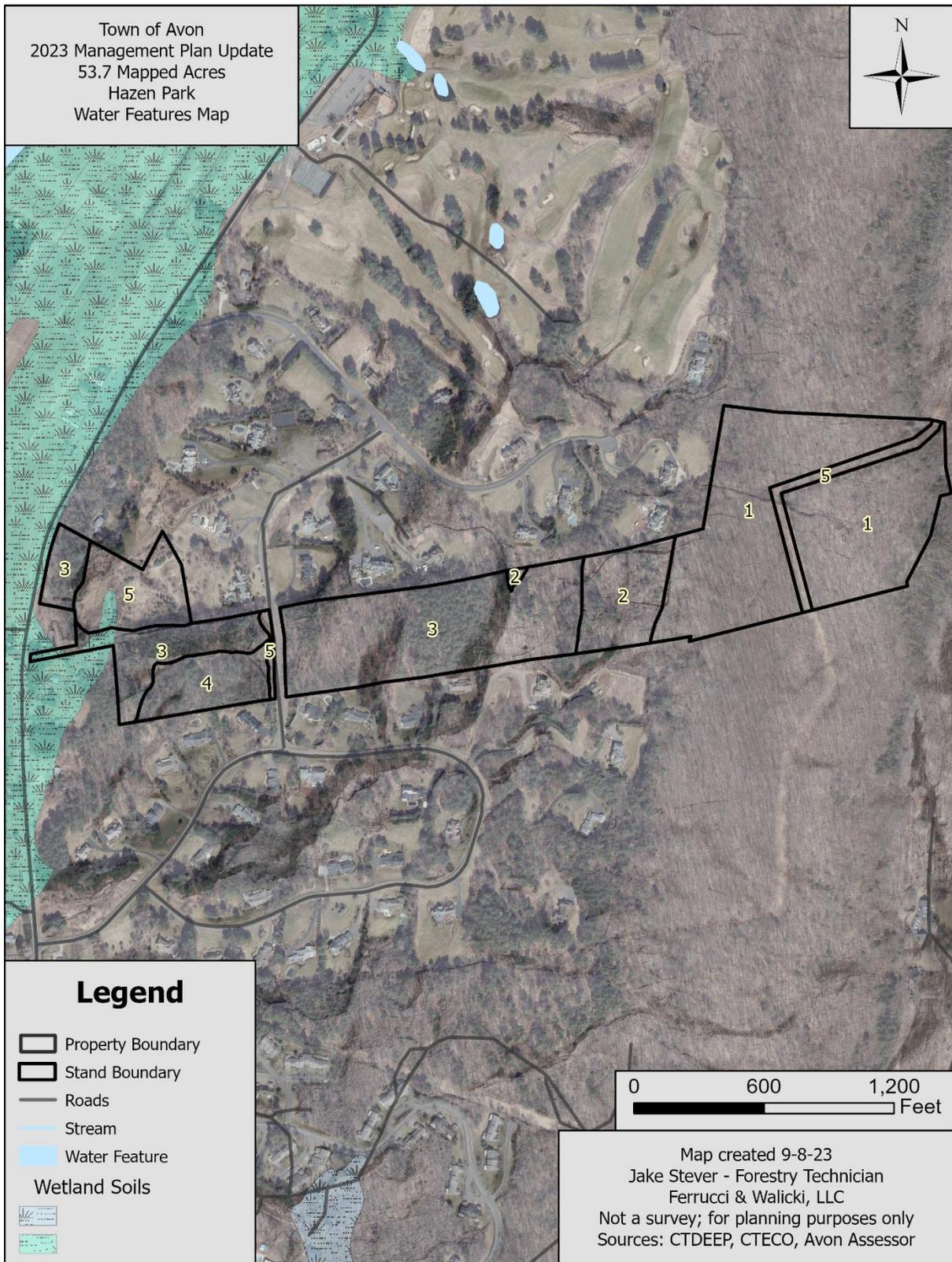
Legend
[Black outline] Property Boundary
[Red outline] Stand Boundary



Map created 9-8-23
Jake Stever - Forestry Technician
Ferrucci & Walicki, LLC
Not a survey; for planning purposes only
Sources: CTDEEP, CTECO, Avon Assessor, Uconn MAGIC

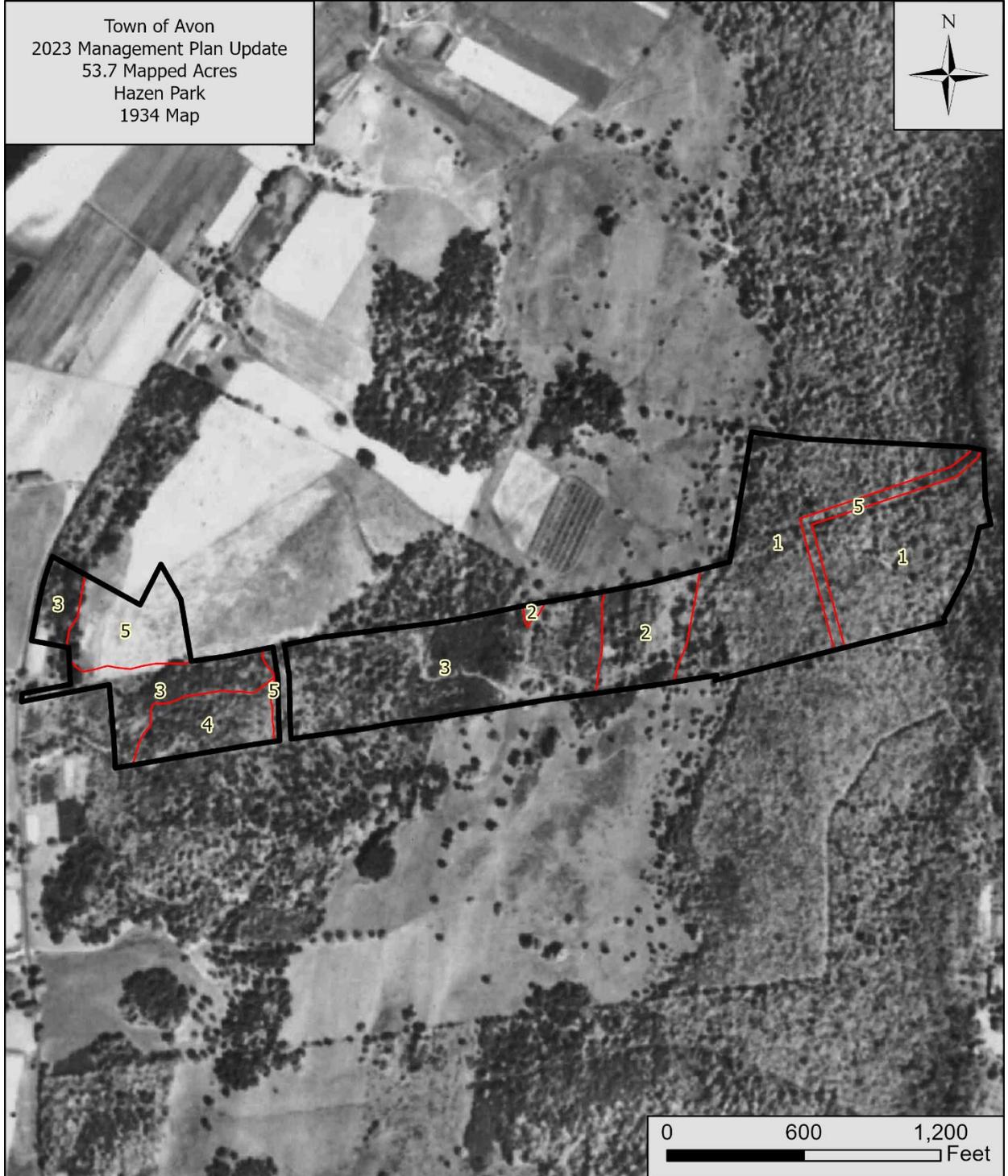
Appendix F.6 – Hazen Park Maps





Note the lack of mapped water features in portions of Stands 2 and 3. Though they exist on the ground the wetland soils are not mapped as such in DEEP databases.

Town of Avon
2023 Management Plan Update
53.7 Mapped Acres
Hazen Park
1934 Map



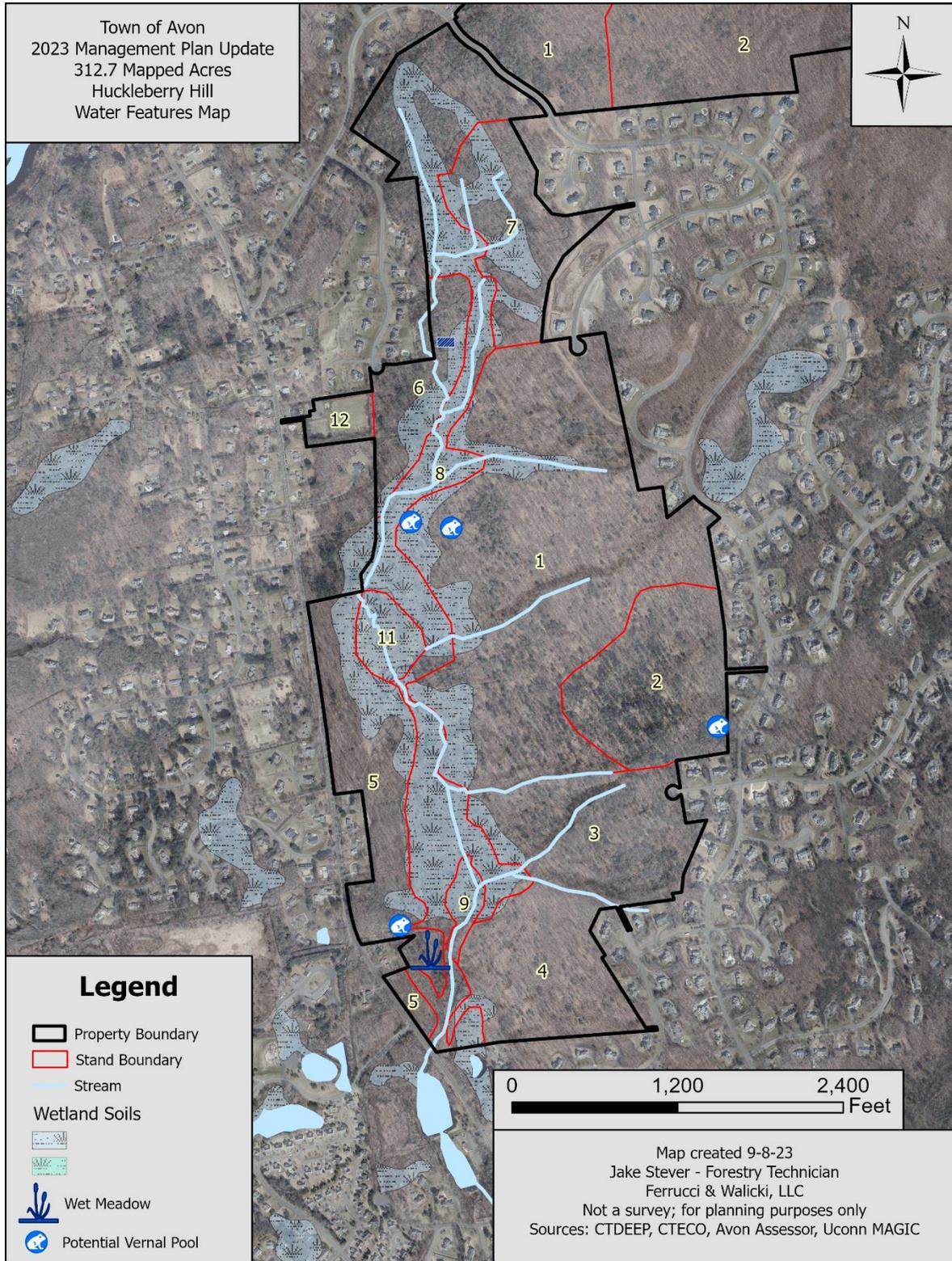
Legend

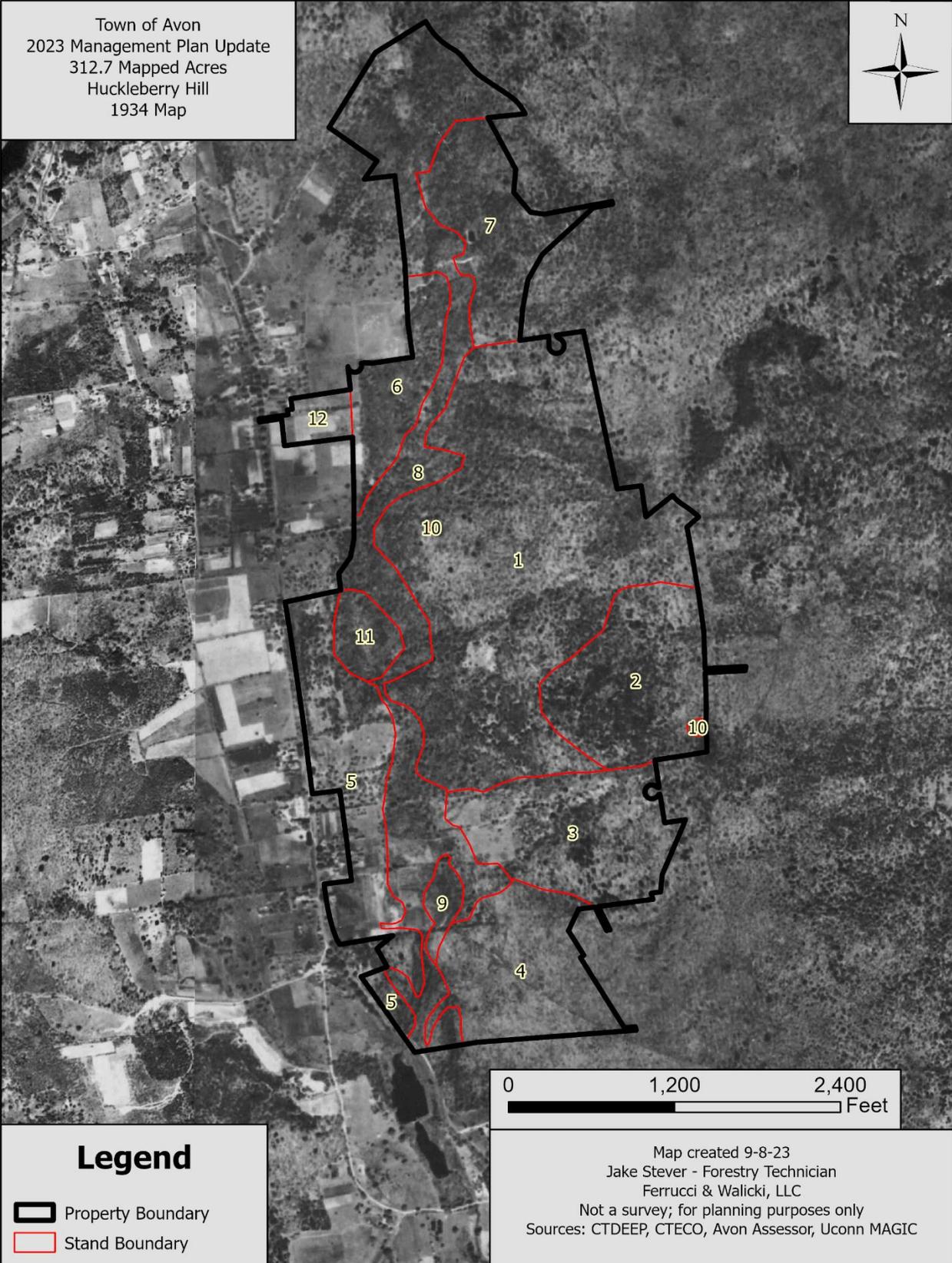
-  Property Boundary
-  Stand Boundary

Map created 9-8-23
Jake Stever - Forestry Technician
Ferrucci & Walicki, LLC
Not a survey; for planning purposes only
Sources: CTDEEP, CTECO, Avon Assessor,
Uconn MAGIC

Appendix F.7 – Huckleberry Hill Recreation Area Maps

Invasive plant map for Huckleberry Hill found in Section 2.5.6 of this plan





GLOSSARY

acceptable growing stock (AGS)

Trees that are vigorous and now or in the future are capable of producing a sawlog that is at least 8 feet long

aspect

The general direction in which land slopes

basal area

A commonly used measure of forest density or stocking. It is measured as the cross-sectional area of a tree in square feet at 4.5 feet above ground.

B-level

The stocking level considered optimal for sawtimber growth.

board foot

A measurement unit for lumber volume. One board foot is a piece of wood 1 foot long by 1 foot wide by 1 inch thick (Abbreviated b.f.)

breast height

Measurement at which diameter is generally measured for inventory and timber tally purposes. Breast height is measured at 4.5 feet above the ground. Where there is any slope, breast height is always measured from the highest part of the slope where the ground intersects the tree.

clearcut

An even-age silvicultural technique in which all the trees in an area are severed and – typically – removed. Silvicultural clearcuts generally remove all trees above 2 inches dbh. Commercial clearcuts or “high-grades” remove all the trees of value leaving poorer quality trees of a variety of diameters.

clearcut with reserves

A modified clearcut in which the majority of the trees in an area are cut, but some minimal trees are left standing. Typically reserve trees will allow to mature and will not be cut. This differs from a shelterwood or seed tree harvest in that residual trees following the initial regeneration cut are intended for removal.

clear log

A length of tree stem or cut log that has no horizontal (i.e., side) branches.

coppice

A sprout from roots or stumps. Or a practice of cutting a tree or group of trees to cause them to resprout from the stump or roots.

cord

A measurement unit for firewood. One cord of stacked wood measures 4 feet by 4 feet by 8 feet. 1 cord contains 85 cubic feet of solid wood. (Abbreviated cd)

crown

The top of the tree, including the live branches and the leaves.

cruise

An inventory of standing trees during which information about species, size and other characteristics is gathered.

cull

A tree of such poor quality that it is not suitable for sawtimber. Culls are sometimes sold for firewood.

dbh

Diameter of a tree outside the bark measured at breast height

den tree

A tree with a hollow or cavity large enough to potentially be used by wildlife (a.k.a. cavity tree)

epicormic

Term for the way in which some branches grow as a response to additional light. These are sprouts that extend from latent buds underneath the bark on the main trunk of the tree. This can sometimes be a sign of stress.

even-age management

Managing trees in such a way that it creates a single or two age classes in a stand.

forest stand improvement (FSI)

Improving a stand of trees, usually by pruning, cull-tree removal or pre-commercial thinning.

free-to-grow

A condition in which seedlings, saplings, or other smaller, younger vegetation has sufficient sunlight to allow them to continue to develop. This is achieved when there is little to no competing vegetation overtopping the smaller vegetation.

girdle

To attempt to kill a tree by cutting through the outer bark and cambium around its entire circumference.

hardwood

A deciduous, broadleaf tree. Angiosperm.

high-grade

A logging practice in which only the best trees are removed leaving poorer quality and/or damaged trees.

International Rule

A type of log (measuring) rule. The International Rule is the legal standard for measuring sawtimber in Connecticut.

live crown ratio

The ratio of live crown length to total tree height.

mast

Seeds and nuts produced by trees and shrubs. Mast is often discussed in terms of hard and soft and is crucial to providing food for wildlife.

mbf

One thousand board feet (of sawtimber) or "a thousand".

midstory

Level of strata of the forest layer from between 6-30 feet in height. Dense foliage in this stratum is important for nesting and cover for many forest breeding birds and other wildlife.

mixedwood

A forested area that contains both hardwood and softwood tree species in the main canopy. Typically a mixedwood stand contains between 25-75% softwood.

overstory

The portion of trees in a stand which form the upper canopy.

overstory removal

An even age silvicultural treatment type in which most or all of the overstory trees are removed in order to release established regeneration.

pingo scar

Small isolated wetlands in depressions, formed from collapsed frost mounds that were present after glacial retreat, during a much colder climatic period. Many function as vernal pools aiding amphibian breeding.

poletimber

Trees from 5 to 11 inches diameter at breast height (4.5 feet above ground). Also pole or pole tree.

regeneration

New trees, generally seedlings, saplings and sprouts. Regenerating a forest involves replacing existing trees with new ones.

release

To free a desirable tree from competition by cutting or otherwise killing one or more adjacent competing trees or shrubs.

sapling

A tree from 1 to 5 inches diameter.

sawlog

A log that is straight, large and sound enough to be sawn into boards. Sawlogs are usually at least 8 feet long and ten inches or larger in diameter.

sawtimber tree

A tree large enough to contain at least one sawlog. (Saw)timber trees are usually twelve inches or larger in diameter outside the bark at breast height.

seedling

A tree from newly germinated up to 1 inch diameter.

Selection System

A silvicultural system involving the removal of individual trees or groups of trees at regular intervals. This system tends to promote the development of uneven aged forests.

Shelterwood System

A silvicultural system whereby new trees are regenerated under the partial shelter of other trees. This system is one of the options available to regenerate a stand or part of a stand to create an even aged or two-aged forest. (The latter occurs when the overstory trees are not removed following the successful regeneration of trees in the understory).

silvicultural system

A planned program of silvicultural treatments during the entire life of a stand. The main focus is on the methods used to obtain desirable regeneration.

silviculture

The science and the art of growing and tending trees for a variety of purposes.

slash

The debris left after logging, pruning or thinning. Slash can include tree tops and unused or unusable portions of the main stems of trees.

softwood

A coniferous, frequently "evergreen" tree. A gymnosperm. Common examples include pine, hemlock, spruce, fir, cedar, and larch (though the latter is not evergreen).

stand type

A group or community of trees sufficiently uniform with respect to size, species composition, spatial arrangement, age or condition to be distinguished from other groups of trees.

stocking

An indication of the amount or density of trees in a stand.

strata

The different heights of vegetation in the forest. Typically divided into understory, midstory, overstory or superstory. The latter exists when a few trees are at least twice as tall as most trees in the stand.

stumpage

Standing trees, usually associated with volume information and intended for sale.

thinning

A cutting done in immature stands in order to maintain tree health and vigor, stimulate the growth of the trees that remain and increase the total yield of useful material from the stand.

tolerance

The relative ability of a tree species to survive and/or grow in shade.

unacceptable growing stock (UGS)

Trees which are either incapable of producing at least an 8-foot-long sawlog now or in the future due to defect, rot, branches, etc. or are in poor health, have significant decline/dieback, or are likely to succumb to insect or disease mortality in the near future.

understory

Vegetation in the lower levels or strata of the forest. Frequently is composed of tree seedlings and saplings, shrubs, herbaceous species and/or invasive plants. Dense low-growing vegetation and foliage is important for many species of wildlife which use this stratum of the forest for cover, nesting, and forage opportunities. Can be considered between ground level to 5 feet in height.

uneven-age management

Managing trees in such a way that it creates three or more age classes in a stand. The selection system is most often used to develop uneven-age stands.

wolf tree

A large, open-grown tree that was present in an area before it reverted to forest

APPENDIX G - RECOMMENDED READING

A Sierra Club Naturalist's Guide to Southern New England by Neil Jorgensen

This is the most comprehensive guide to the natural history of southern New England. This book teaches you how to read the landscape by introducing the natural communities of southern New England.

Audubon Field Guide to New England

An excellent reference for identifying most natural features in New England. This includes rocks, mammals, reptiles, amphibians, birds, trees, plants, and much more.

Connecticut Woodlands by the Connecticut Forest and Park Association: cfpa.org

This is the periodical and organization for anything to do with forests in Connecticut. It is published quarterly for CFPA members.

Forest Trees of the Northeast by Lassoie, Luzadis, and Grover

This book provides complete descriptions of most of the tree species of the northeastern US. It covers identification, habitat, range, life history, insect and diseases, management, and products.

New England's Landscape by Neil Jorgensen

Concise overview of the geology and vegetation of New England.

New England Forests Through Time by Foster and O'Keefe

A wonderful coffee table book that will interest even the most citified among us. Vivid pictures and flowing prose about the history of New England's forests.

Northern Woodlands magazine: northernwoodlands.com

This quarterly has anything and everything to do with nature, conservation, forestry, and wildlife in New England. A professional magazine of the caliber of National Geographic.

Reading the Forested Landscape by Tom Wessels

A total description of how every acre of New England's forests became the way they are. Read this book before any others on this list!

Sermons in Stone by Susan Allport

The author presents a fascinating history of New England's stonewalls – who built them, when, why, and how. Almost by mistake, she presents a unique look at New England's natural history.

The Face of Connecticut by Michael Bell

The complete story of Connecticut's geology, geography, and man's interaction with both.

The Trees in My Forest by Bernd Heinrich

This is a biological look at the forest. It is excellent for understanding how trees grow, how they interact with each other, and how they interact with the land.

Working with Your Woodland by Beattie, Thompson, and Levine

Anyone interested in taking an active role in forest management should read this book. It summarizes four years of forestry school into an easy to read book.

APPENDIX H - DOCUMENTS CONSULTED OR CITED

British Columbian Ministry of Forests, “Stand Level Biodiversity Web Based Training Course – Module 3A”, 2002, <http://www.for.gov.bc.ca/hfp/training/00001/module03/standstructure2.htm>, accessed on January 2, 2013.

Calhoun, A.J.K., and P. deMaynadier. 2004. *Forestry Habitat Management Guidelines for Vernal Pool Wildlife*. MCA Tech. Pap. No. 6, Metropolitan Conservation Alliance. Wildlife Conservation Society. 32 p.

D’Amato, Anthony, and Paul Catanzaro. Restoring Old-Growth Characteristics to New England’s and New York’s Forests. University of Massachusetts. December, 2022.

Fassnacht, Karin S., Dustin R. Bronson, Brian J. Palik, Anthony W. D’Amato, Craig G. Lorimer, Karl J. Martin. “Accelerating the Development of Old-growth Characteristics in Second-growth Northern Hardwoods.” USDA Forest Service. Northern Research Station. General Technical Report NRS-144. February 2015.

Fisher Meadows, Avon Connecticut - Environmental Review Team Report. October 1986. Eastern Connecticut Resource Conservation and Development Area, Inc., Brooklyn, Connecticut. Available online at https://ctert.org/pdfs/Avon_FisherMeadows_350.pdf

Gaige, Michael. “A Place for Wolf Trees.” Northern Woodlands Magazine. 25 February, 2011. 28-32. Print.

Griswold, Hayden L. Map of Connecticut, circa 1625, Indian trails, villages, sachemdoms. Compiled by Matthias Spiess. 1930. Published by National Society of the Colonial Dames of America in the State of Connecticut.

Hagenbuch, Steve, Katherine Manaras, Jim Shallow, Kristen Sharpless, and Michael Snyder. *Silviculture with Birds in Mind*. Huntington & Waterbury, VT: Audubon Vermont & VT FPR, 2011. Printed guide.

Harvard Forest. April 15, 2017. New Study Links Hemlock Decline to Shifts in Water Resources. <https://harvardforest.fas.harvard.edu/news/new-study-links-hemlock-decline-shifts-water-resources>. Accessed on 3/20/22.

Huckleberry Hill and Found Land, Avon Connecticut - Environmental Review Team Report. September 1986. Eastern Connecticut Resource Conservation and Development Area, Inc., Brooklyn, Connecticut. Available online at: https://ctert.org/pdfs/Avon_HuckleberryHill_352.pdf

Keeton, William S. “Managing For Old-Growth Structure in Northern Hardwood Forests.” https://masswoods.net/sites/masswoods.net/files/pdf-doc-ppt/Managing_OG_Structure_Keeton.pdf. Accessed on 10 November 2015.

Larsen, David. Gingrich Stocking Diagram for Upland Oak (Excel 2010 worksheet). The School of Natural Resources, University of Missouri. Updated February 2014. Accessed various dates in 2020-2022. <http://oak.snr.missouri.edu/silviculture/tools/gingrich.html>.

New England Forestry Foundation. Central and Transition Hardwoods Exemplary Forestry Standards and Metrics. 21 December, 2021. "Exemplary Forestry Heads South". <https://newenglandforestry.org/wp-content/uploads/2021/12/EFHardwoods-one-page-metrics-and-standards-Final-v3.pdf>

Plan of Conservation and Development - Town of Avon, Connecticut. December 2016 (adopted November 15, 2016). Prepared by the Town of Avon Planning and Zoning Commission. Available online at: <https://www.avonct.gov/planning-community-development/pages/2016-plan-of-conservation-and-development-effective-december-1>

Smith, D.M. *The Practice of Silviculture*. Eighth edition. John Wiley & Sons, New York. 1986

Tallamy, Douglas W. *Bringing Nature Home: How You can Sustain Wildlife with Native Plants (Updated and Expanded)*. 2nd Edition, 2009. Timber Press, Inc., Portland, OR.

Town of Avon Recreation Master Plan - 2008.