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WEARE – POOR FARM
FOREST MANAGEMENT PLAN

1 PLAN PURPOSE AND DESIGN

The purpose of this forest management plan is to provide the Town of Weare and the resource manager with a comprehensive description of the property and proposed management activities. It is meant to be a "User's Guide" that reflects Weare's objectives and will remain flexible as changes in the property condition or objectives change through time. A 10-year management schedule can be found at the end of this plan and used as a quick reference to the timing and areas with scheduled management.

Management planning on the Weare ownership is a threefold system including a master plan, forest management plans, and pre-harvest planning. The master plan covers broad property descriptions, ownership objectives, and management strategies. Forest management plans, such as this one, are the second piece of this threefold system. They cover specific property descriptions and management activities intended to span a 10-year period. Forest management plans are stand-alone documents. The third part of this system involves pre-harvest plans, detailing even more specific management concerns and objectives particular to individual harvests. As their name indicates, pre-harvest plans are prepared prior to a scheduled harvest.

The Poor Farm Forest is situated on Poor Farm Road and Balch Road in the town of Weare. The Town Poor Farm was established here in 1838 and was successfully run until its abandonment in 1917.

Since farming ended here, the land has become reforested and is now managed as part of the Weare Town Forest.

In some areas that remained open longer, pine plantations were established during the Great Depression.

Little active forest management has occurred outside of some thinning within the pine stands.

2 PROPERTY LOCATION AND BRIEF DESCRIPTION

Poor Farm Forest is a contiguous tract on 157.8 acres[1] including almost 9 acres of the Poor Farm Marsh. It is owned by the Town of Weare and managed by the Weare Conservation Commission. It is located in the southwestern section of Weare on the Poor Farm Road, just east of the intersection with Old Francestown Road. Poor Farm Road bisects the tract into an eastern and a western half. The unmaintained section of Balch Road bisects the portion of the tract located west of Poor Farm Road into northern and southern sections. The tract includes Map 410 Lots 165.1, 166, and 81 and is designated as Town Forest Land.

The Poor Farm was established in 1838 to provide living arrangements for the needy. It was a successful working farm with crops, hayland, and pasture until its abandonment in 1917. The abundant stone walls, cellar holes and stone foundations, and wells are all the physical artifacts that remain on the land. The current forest conditions offer many clues to interpret the history of the land use as a working farm.

The forest type is typical of the area, dominated by a mix of white pine, hemlock, red oak and red maple with other hardwoods, mainly American beech and black birch. The forest is roughly 60 to 90 years old, with a younger age-class coming in portions of the understory. The terrain is variable, but generally includes moderate to gentle slope with north-south running hills and ridges with wetlands in between. There is a well defined north-south running drumlin just west of the Poor Farm Marsh. A drumlin is a whale-shaped landform formed from glacial till as glaciers receded to the north. They typically form parallel to the flow of ice, and are highest at the end closest to the source of ice.

A well maintained trail system provides access to the interior of the forest. A Trail Guide brochure describing the history and natural features of the Poor Farm is available to the public.

Woodlot History

Poor Farm Forest has a rich history. According to the “Weare Poor Farm Trails" brochure produced by the Conservation Commission, the Poor Farm was acquired by the town in 1838. The map associated with the brochure shows a main house foundation, barn foundation, and wagon shed and ice house foundation. A hand-dug drainage ditch helped to drain water from fields behind the barn and sheds on the east side of Poor Farm Road. The Poor Farm Cemetery sits in the northwest corner of the tract, on the south side of Balch Road.

1 Mapped acres, 7/2011

The Poor Farm Cemetery is located on Balch Road and was established in 1838 (left picture). Several grave stones can be found there, though little information was chiseled into the stones, mainly names (right picture).

Several wells were found on the Poor Farm, but are not identified on the trail map brochure. In one location, about 500 feet west of the main house, three dug stone wells are situated within feet of each other. The surrounding area is flat, with much of the stones removed, likely used for crops or hay production. It is uncommon to find 2, much less 3, wells in such close proximity to each other. Additional wells are located much closer to the main farm house. The Weare Heritage Commission has recommended a 25' buffer around all cultural and historic resources found on the Poor Farm. This buffer is described in greater detail on page 24 of this document.

Several wells are located on the Poor Farm. In one area, about 500 feet west of the main house, 3 wells were dug in close proximity to each other, only feet apart. The left picture shows a flat rock that was placed over one of these wells. The right picture shows two cap rocks over wells that are only 5 feet apart, and third well is located here also, but does not show up in the picture.

The agricultural history of the forest is vividly apparent by the presence of miles of stone walls. These walls delineated pasture areas, likely for sheep during the sheep craze of the early

1800's, then for dairy and beef cows. Piles of stone can be found interior to the walls, and were created when rock was removed to improve pasture, hay and crop land quality. A fair amount of forested wetland and open wetland can be found within the Poor Farm Forest, but apparently this didn't dampen the productivity of the farm, because according to the brochure the town considered taxing the farm's profits in 1840.

Over 5 miles of stone walls exist on the Poor Farm tract. The upper left picture shows a wide stone wall made of mostly round stone picked from adjacent hay and crop land. This particular field was cleanly picked of stone and the stone was piled in the corner of the field rather than hauling it away, resulting in a huge island of stone connected to the wall. Wire fence can still be found in the forest. The upper right picture shows a 4-strand fence, likely used for pasturing sheep. The main house foundation sits just off Poor Farm Road near the intersection with Balch Road. It is shown in the lower right photograph. A hand-dug channel was used to drain fields across the road from the main house, near the barn. Today, the channel remains and still periodically drains water from this area. It is difficult to see, but is shown in the lower right picture.

After the farm was abandoned in 1917, the open pasture and crop land was left to reforest. Pine often is the first forest type to occupy abandoned agricultural land, especially old pasture land, as the cattle or sheep typically browsed any hardwood that came into the field and left the pine

alone. Abandoned crop land quite commonly was planted with either white or red pine or a mix of spruce, but natural pine succession occurred as well. Several pine plantations were planted during the Great Depression and one later during the 1960's.

Little active timber management has occurred on the Poor Farm Forest, outside of some thinning in areas of white pine. In addition to the thinning that removed a small amount of pine commercially, timber stand improvement work was completed involving girdling poor quality or diseased pine by both axe (left picture) and chain saw (right picture).

Evidence of some fairly large-scale natural disturbances can be found on the forest, primarily a large area that was blown down, perhaps some 50 years ago. In this case, it is a fairly level area with wet soils on the west side of Poor Farm Road. Some of the trees that blew over can still be seen, with large hillocks where the root ball was pulled up out of the ground. These down logs and root balls became host to yellow birch seedlings.

In this picture, a yellow birch tree grows on top of the root ball of a blown over tree in the Poor Farm Forest. These root balls and down logs as they decompose provide moist, nutrient rich, elevated areas out of competition from forest floor vegetation. These "nurse logs" are often colonized by yellow birch, a species adapted to take advantage of these specific conditions.

The Poor Farm Forest has been managed by the Weare Conservation Commission since 1979. Areas of pine have been thinned, both commercially and non-commercially, but no large-scale timber harvest has occurred. Recreational trails have been established, and total about 2 miles. The trails have been maintained by the Weare Boy Scouts.

3 LANDOWNER GOALS AND OBJECTIVES

As stated in Weare's forest master plan, goals and objectives of management on the Town of Weare forestlands are:

1. The first goal of stewardship is to maintain the diversity of plant and animal life in the Town Forests so as to sustain ecological processes.
2. The second objective is to maintain a healthy and vigorous forest that can sustainably yield forest products.
3. Hunting, fishing, hiking, botanical observation, and wildlife observation are important functions of the Town Forests. The properties will be managed to maintain and enhance these recreational opportunities.
4. Maintain Tree Farm status

4 GEOLOGIC ATTRIBUTES

Topography and Aspect

The Poor Farm Forest ranges from 640 to 780 feet in elevation. The ground is in generally

gentle to moderate slope, but has some steeper ridges than run in a general north-south direction, with wetlands in the low depressions between these ridges. As mentioned above, the most prominent topographical feature is a north-south running drumlin on the west side of the Poor Farm Marsh.

Brooks, Ponds, and Wetlands

Two major streams flow through the Poor Farm Forest, part of the Piscataquog River Watershed. A feeder to Buxton Brook runs along the western boundary, and feeds into a large wetland system south of the Poor Farm. The Currier Brook feeds into the Poor Farm Marsh, on the eastern side of the tract, and then joins the same wetland feature fed by Buxton Brook. These streams eventually feed south into the Piscaquog River.

There are no ponds on the forest, but several wetlands features can be found from small forested wetland, to shrubby marsh-like wetlands, to the large Poor Farm Marsh with a fair amount of open water totaling over 13.5 acres of mapped wetland features.

The Poor Farm Marsh, fed by Currier Brook, is located east of Poor Farm Road. Approximately one third of the total marsh areas is located within the Poor Farm Forest boundary. The marsh is dominated by cattails and lilies (top left photo). Multiple forested wetlands exist west of Poor Farm Road. These wetlands have standing water in the depressions typically with wetland associated trees growing on small hummocks located throughout the wetland systems (right photo). Wetlands are important components to wildlife habitat providing food, shelter and adding greatly to the diversity of the surrounding forest.

Recommended Actions to Improve and Manage the Wetland and Water Resource of the Poor

Farm Forest[2]:

Riparian and Stream Ecosystems:

- Establish riparian management zones along streams, rivers, ponds, and lakes. These are not intended as no-harvest zones. Forest management systems, such as single-tree or small-group selections cuts, that retain relatively continuous forest cover in riparian areas (65-70 percent canopy cover) can help maintain biodiversity by protecting water quality, providing shade, supplying downed woody material and litter, and maintaining riparian wildlife habitat conditions.
- No-cut zones of 16 to 100 feet are recommended by several management guides on river or pond shores containing wet seeps, shallow or poorly drained soils, or area with slopes greater than 8 percent. Limited single-tree cutting can occur on other sites within this zone, with cabling from outside the zone suggested.
- Consider management at the watershed-level as an approach to avoiding stream channel degradation from excessive runoff.
- Road construction, stream crossings, skid trails, log landings, and all phases of timber-harvesting operations should conform to Best Management Practices

Springs and seeps:

- Avoid leaving slash in woodland seeps, springs, or associate wildlife trails.
- To the extent feasible, avoid interruption groundwater flow above or below seeps and above springs. When seeps and springs can't be avoided, minimize flow interruption by strictly adhering to appropriate Best Management Practices for water crossings.
- Where feasible, use woodland seeps and springs as nuclei for uncut patches to retain snags, cavity trees, and other site-specific features.

Soils

The upland soils were derived from glacial till and are primarily moderately well drained stony fine sandy loam soils. The dominant soil type is Tunbridge-Lyman-Monadnock Complex, a well-drained soil suited for best growth of less nutrient demanding species such as white birch and red oak. More nutrient rich soils with higher moisture content are also found on the tract, but in lesser amounts. These soils support best growth of high quality hardwood, especially sugar maple, white ash, yellow birch, as well as red oak and include areas of Becket stony fine sandy loam, Marlow loam, Marlow stony loam and Marlow loam, and Peru stony loam. A small amount of Pillsbury stony loam exists mainly in the lowland wetland systems, supporting best growth of softwoods such as balsam fir and spruce. Other wetland soils include Borohemists, ponded.

Recommended Actions to Improve and Manage the Soil Resource of the Poor Farm Forest[3]:

Forest soils, forest floor and Site Productivity:

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2 Riparian and Stream Ecosystem management recommendations from the publication Biodiversity in the Forests of Maine; Flatebro, Gro, Foss, Carol, and Pelletier, Steven, 1999, UMCE Bulletin #7147

3 Soil management recommendations from the publication Biodiversity in the Forests of Maine; Flatebro, Gro, Foss, Carol, and Pelletier, Steven, 1999, UMCE Bulletin #7147

- Avoid whole-tree removal, particularly on low-fertility sites (i.e., shallow to bedrock soils, coarse sands, wetlands, and area with high water tables), unless replacement of nutrients and organic matter is considered
- Conduct harvest operations during the season of the year that is most appropriate for the site. Operating on snow or frozen ground, whenever possible, minimizes effects of the soils and forest floor.
- Choose harvest equipment to suit the site and minimize disturbance. For example, in dry conditions, and in some wet conditions, consider using tracked vehicles to reduce rutting.
- Minimize skid-trail width using techniques such as bumper trees when appropriate.
- Establish skid trails that follow land contours where possible rather than directed straight uphill.
- When possible, conduct whole-tree harvests of hardwoods during dormant leaf-off season to retain nutrients on site.
- Avoid or minimize practices that disturb the forest floor, remove the organic soil or cover it with mineral soils, except as necessary to accomplish silvicultural goals and to regenerate certain tree species.

5 NATURAL COMMUNITIES[4]

As written in the book *Natural Communities of New Hampshire* by Daniel Sperduto and William Nichols, “Natural communities are recurring assemblages of plants and animals found in particular physical environments. New Hampshire has a fascinating and complex variety of natural communities, from tidal marshes to alpine meadows, river banks to mountain forests, and streams to lakes. Each type of natural community has a unique set of environmental conditions that support certain species adapted to those conditions.”

“Just as individual organisms can be classified into species, plant assemblages can be classified into natural community types. Classifying natural communities is a useful way of viewing the landscape because it allows us to distill the broad range of complex interactions between species and their environments into a limited number of units that share certain key features.”

“Natural community types are usually defined in terms of plants because they are easy to study, often compose the physical structure to which most other organisms respond, and are sensitive indicators of physical and biological factors that influence many types of organism.”

“The need to classify natural communities is fundamentally pragmatic: People need a way to sort out, understand, and communicate about nature’s complexity on order to be good stewards.”

Determining natural community types can be a challenge because it is uncommon to find land that has not been influenced by human intervention. Past agricultural and silvicultural practices often change the plant communities that you would find on any given acre naturally.

4 All information on Natural Communities referenced from the publication: Natural Communities of New Hampshire, Daniel Sperduto and William Nichols, New Hampshire Natural Heritage Bureau and TNC 2004.

Identifying natural communities then becomes a process of understanding the past management activities, the physical conditions of the site, and the plant communities currently found there and determining to the best of our ability what community would occupy that site without human intervention. The natural community types found on Weare forestland has been identified on a broad level to the best of our ability. A more comprehensive and detailed study by an ecologist would be required to determine natural community types on a more fine-grained and certain basis.

The dominant natural community type found on the Poor Farm Forest is hemlock-beech-oak-pine forest. Hemlock-beech-oak-pine is a common, broadly defined community occupying glacial till and terrace soils of low to mid elevations in central and southern New Hampshire. Hemlock and beech tend to be the late successional species present. But where this community has been disturbed, either through natural disturbance regimes or timber harvesting, this community tends to be dominated by early to mid-successional species including red oak, white pine, red maple and black or paper birch. This community tends to fall on the less nutrient rich soils, dominated by Tunbridge-Lyman-Monadnock Complex. On the richer sites, the community type tends towards sugar maple-beech-yellow birch forest, a common hardwood forest type in New Hampshire. Sugar maple and beech are the late successional species, with yellow birch tending to dominate disturbed areas.

A third natural community exists on the Poor Farm Forest on the ridge in the southwestern corner of the tract, dominated by hemlock and white pine. This is the Hemlock-Pine natural community, where the association between these two species is known to have longevity, with 200+ year old pine and hemlock sharing the same site. Understory tree and shrub growth is generally sparse, giving this forest type a open feel with large overstory trees. have an ass has a longevity

Rare Species and Unique Natural Communities

An in-depth flora and fauna survey was not within the scope of this plan. There were no endangered plants or animals knowingly encountered while collecting the data for this plan. The Natural Heritage Bureau was contacted for a search of their data records involving rare species/exemplary natural communities within the entire Weare Town Forest(s) ownership. The only record of significance is a Black gum-red maple basin swamp on the Eastman Forest. If rare and species exist, they would likely be associated with the fen wetland system, and special concern should be given to protect this system from disturbance.

6 WILDLIFE HABITAT CONDITIONS

Wildlife require shelter, food, water, and space. The Poor Farm Forest provides a variety of

habitats for wildlife, but is dominated by a mix of hemlock-pine-hardwood forest and hemlock-pine forest, with a fair amount of forested wetlands and open wetland. Food is available in many forms. Browse exists, primarily in the form of hardwood seedlings, mainly beech and red maple. Hard mast (nuts and seeds) are fairly abundant as acorns, beech nuts, and white pine cones. Soft mast is more limited, with some Rubus sp. scattered in open areas, wild blueberry, and winterberry in shrubby wetlands. Water is fairly abundant, with two streams and several wetlands scattered throughout.

A fair amount of bear sign was noted on the tract during the summer 2011 inventory including scat and bear claw marks on beech trees. Deer sign, mainly tracks and scat, were noted on the tract, though not in high levels. Browse pressure on the hardwood regeneration is at a moderate to high level in some areas.

Open space is lacking on the Poor Farm Forest, and is only found on the edges of the Poor Farm Marsh. Wetlands also provide an important source of food. They tend to be one of the first places to "green up" in the spring, providing a much needed source of herbaceous browse early in the year. They also tend to produce vast amounts of browse and mast almost year round, as some mast producing shrubs retain their fruit long into the winter.

Bear sign was noted near the Poor Farm Marsh during the summer 2011 forest inventory process. Bear claw marks can be seen in the left photo on an American beech. Bear climb beech trees to feed on the beech nuts in the tree crown. These claw marks are a year or two old. Bear scat, seen in the right photo, is proof of much more recent use by bear. This photo was also taken near the Poor Farm Marsh, where it is likely the bear was feeding on wetland vegetation.

Large snag trees and down logs found in the forest also provide important wildlife habitat. As these snags and down logs decay, they provide host for numerous insects, invertebrates, small

mammals, amphibians, birds and larger mammals. As many as 40 different types of songbirds use standing dead trees with cavities as part of their habitat requirements. Down logs are a crucial part of amphibian habitat as they provide cool moist, shady conditions necessary for their survival. Because of their importance as habitat components, snags and down logs will be managed for throughout the property.

The white pine trunk shown in the left photograph has numerous cavities excavated by woodpeckers in search of insects and grubs living in the decaying interior wood. These cavities frequently serve as nesting sites for other small songbirds. The large, dead read oak tree in the lower photograph was likely growing in the open when the surrounding land was pasture, or perhaps hayland. It has since died, and now serves an important wildlife habitat function.

The New Hampshire Wildlife Action Plan includes mapping of significant wildlife habitats as they occur throughout the state and provides strategies for the management of wildlife that occur on these habitats, especially as they relate to threatened and endangered species, but also including information on common wildlife species. According to their delineation, a variety of habitat types can be found on Poor Farm Forest and on adjacent lands. Hemlock-Hardwood-Pine dominates the site, with a large area of Appalachian-oak-pine in the north. The Poor Farm Marsh is mapped as well. A summary of these habitat types and the wildlife species found there is in Appendix D in the Master Plan.

Recommended actions to improve and manage the wildlife habitat of Poor Farm Forest[5]:

Snags, cavity trees, and down logs:

5 Wildlife habitat management recommendations from the publication Biodiversity in the Forests of Maine; Flatebro, Gro, Foss, Carol, and Pelletier, Steven, 1999, UMCE Bulletin #7147

- Avoid damaging existing downed woody material during harvesting, especially large (16"+) hollow logs and stumps.
- Leave downed woody material on site after harvest operations when possible.
- Leave several sound downed logs well distributed on the site, where possible. Especially important are logs >12 inches dbh and > 6 feet long. Hollow butt sections of felled trees are also good choices.
- Create additional snag trees by girdling large cull pine where possible. Attempt to retain or create a minimum of 4 secure cavity or snag trees per acre, with one exceeding 24" dbh and three exceeding 14" dbh. In areas lacking cavity trees, retain love trees of these diameters with defects likely to lead to cavity formation.
- Retain as many live trees with existing cavities and large unmerchantable trees as possible.
- When possible, avoid disturbing cavity trees, snags, and upturned trees roots from April to July to avoid disrupting nesting birds and denning mammals.
- Retain trees with cavities standing dead trees, downed logs, large trees, and large super canopy trees in the riparian management zone to the greatest extent possible.

Habitat Connectivity:

- Avoid harvests that isolate streams, ponds, vernal pools, deer wintering areas, or other sensitive habitats
- Maintain the matrix of the landscape in relatively mature, well-stocked stands. Where even-aged management is practiced, consider the cumulative effects of multiple cuts and include wider habitat connectors as necessary.
- Consider opportunities for coordinating habitat connectivity with other, on-going land-management efforts that maintain linear forested ecosystems, such as hiking trial corridors and natural buffer strips retained to protect water quality. This may require expanding the physical size of the connector habitat and increasing structural values to fulfill multiple management goals. Also consider the potential for effects that may arise because of incompatible uses (e.g., heavily-used ATV or snowmobile routes around and through deer yards).

Deer Wintering Areas:

- Identify dense stands of mature softwood as potential DWAs, particularly in riparian ecosystems.
- Whenever possible, schedule harvests in DWAs are during December through April.
- Protect advance conifer regeneration during timber-harvesting operations.
- When conducting harvests in coniferous forest adjacent to watercourses, maintain an unbroken conifer canopy along shorelines to protect riparian travel corridors.
- When planning harvests within any DWA, (strive to) maintain a closed-canopy coniferous overstory over at least 50 percent of the area at any given time. Avoid constructing major haul roads within DWAs.

Vernal Pools:

- Identify and mark vernal pool edges in spring when they are filled with water to prevent damage during harvests conducted when pools are difficult to detect
- Avoid any physical disturbance of the vernal pool depression.
- Keep the depression free of slash, tree tops, and sediment form forestry operations.
- Maintain a shaded forest floor, without ruts, bare soil, or sources of sediment that also provides deep litter and woody debris around the pool. Avoid disturbing the organic layer or drainage patterns within the pool watershed.

- Whenever possible, conduct harvests when the ground is frozen or snow covered.

7 RECREATIONAL and EDUCATIONAL OPPORTUNITIES

Recreation

The Poor Farm Forest provides an excellent recreational and educational resource. A guided hiking trail and educational feature map exists and is available to the public.

The trails on Poor Farm Forest are in general in good condition, but could be improved in select areas, especially concerning soil erosion and "trail braiding" around wet spots. Several bridges have been installed over small stream crossings and wet areas. *Best Management Practices* provide trail construction and maintenance guidelines that will help prevent soil erosion. Excellent signage exists outlining proper trail use and respect of the land benefits the condition of the trails and surrounding forest, as well as provide educational opportunities. Regular upkeep of signs and trail maintenance is important as it demonstrates integrity of the leadership and clubs involved.

A trail system is in place at Poor Farm, with yellow blazes marking its location through the woods. A trail map with a short history of the tract and identification of cultural and historic features was created and is available through the Weare Conservation Commission. Trail blazes and monumentation are shown in adjacent photos.

Recommended Actions to Improve and Manage the Recreational Resource of the Poor Farm Forest:

- **Improve existing signage.**
  - Post a Welcome sign to the land that identifies the owner and what is allowed or encouraged on the land. This is not the best place to detail what is not allowed.
  - Post signs at all property corners and at intervals along the boundary identifying

the landowner.
    - Improve informational signage about use of trails, explaining what is allowed and what is not allowed. For example:
        - Stay on the trail
        - Carry in and Carry out
        - Avoid trails if conditions are muddy
- **Clearly identify what trails are open to motorized and non-motorized use**
    - Post a map of the trails and allowed uses.
- **Locate and maintain trails to prevent erosion**[6]
- **Locate trails** so they avoid sensitive areas or valuable wildlife habitat such as vernal pools and deer wintering areas.
- **Create additional foot traffic trails** for hiking and snowshoeing to more remote areas of the forest and to vista sites
- **Create vistas** overlooking views and significant or interesting natural features of the forest

Education

Educational opportunities are limitless on the Poor Farm Forest. Forest management operations provide educational opportunities in the form of public workshops to see timber harvesting in action or school field trips focused on management of renewable natural resources or to learn more about what land ownership and management can be about. Interpretive signs put in place during forest management operations can be a helpful educational resource that aid in public relations and understanding of land management. The Hillsborough County forester is an excellent resource for public education needs and is usually willing to participate in workshops or provide educational resources. There are many creative ways to educate; opportunities are not limited to those listed here.

Suggested opportunities to utilize the public education potential of Poor Farm Forest:

- **Encourage local schools/clubs/etc**. to utilize this valuable resource.
- Prior to, during, or after any forest management activities, **promote and present workshops** inviting the public to come learn about management activities on Poor Farm Forest.
- Create and **post educational signage** about Poor Famr Forest and management philosophy and activities.
- Create additional **interpretive trails** with signs about management and natural features

8 FOREST CONDITIONS

6 Two good resources include: *Lightly on the Land*, *The SCA Trail-Building and Maintenance Manual* by Robert C. Birkby and Best Management For Erosion Control During Trail Maintenance and Construction by New Hampshire Department of Resources and Economic Development, Division of Parks and Recreation, Bureau of Trails

Forest Types
The following forest type designations are used in the forest type map:

COVER TYPES
H ≥ 50% dominant & co-dominant trees are hardwood
S ≥ 50% dominant & co-dominant trees are softwood
HS = Mixed species but dominated by hardwood
SH = Mixed species but dominated by softwood
(in some instances a dominant species, such as WP or HE may be included in the cover type)
SIZE CLASS
1 = Seedlings or regeneration - 90% of stems < 3" DBH
2 = Saplings or small poles 3" - 8" DBH
3 = Large poles and or small sawtimber 9" - 12" DBH
4 = Sawtimber 13" and larger
CROWN CLOSURE/DENSITY
A = 75-100% crown closure of co-dominant or dominant trees
B = 50-74% crown closure of co-dominant or dominant trees
C = 0-49% crown closure of co-dominant or dominant trees

An inventory was conducted in June, 2011 consisting of 50 sample points, providing 1 plot for every 4 acres of forestland. Data was collected as outlined in the Weare master plan.

Age and Age Class Distribution

As with most forests in New England, the Poor Farm Forest is largely even-aged, with the bulk of the trees getting their start after the abandonment of agriculture here early last century. That said, different species and individuals within the same species grow faster and mature at different rates than others. White pine, a fast growing tree, can get to quite a large size, compared to a hemlock of the same age. White birch, another fast growing tree, doesn't get as large as white pine and in addition, matures at an earlier age. Variability exists within an evenage forest, providing opportunity to manage for multiple age classes and diversify the forest structure, providing better wildlife habitat, continuous forest cover, and relatively less intensive silvicultural management. In general, Poor Farm Forest is dominated by 90-110 year old white pine, hemlock and red oak in the overstory. Younger trees, often clusters of pole-sized hardwood species, can be found in pockets where past harvesting or natural disturbances, such as blow down, created openings.

Growth Rates

An in-depth study of tree growth is beyond the scope of this plan. While not statistically sound, some growth observations can be made by counting tree rings on old stumps and taking increment cores of some trees. Although volume growth is very difficult to accurately calculate using this method, some rules-of-thumb do apply. A tree's growth is directly related to the substrate on

which it is located. Wet, ledgy, and dry areas do not promote rapid growth of trees. Lower elevation and cool moist but well drained areas support better tree growth as the soils are deeper and more fertile. The average managed woodlot in New Hampshire grows at a rate of 2 to 4 percent per year. This corresponds to volume increases of approximately 0.5 cords or 250 board feet per acre per year. Given the site conditions and the current density of the forest, it is likely that tree growth of the Poor Farm Forest falls within this range.

Tree Quality and Tree Health

Overall tree quality on the Poor Farm Forest is average. White pine dominates the timber volume on the tract, totaling about 1/2 of the total sawtimber volume, but is of variable quality. About 1/2 of the pine sawtimber is low grade. Red oak sawtimber volume follows white pine, totaling about 1/3 of the total sawtimber volume. The quality is generally good, but with a fair amount of "spider heart" at the base of large oaks. The rest of the sawtimber volume is fairly evenly spread between beech, black birch, red maple, sugar maple, white and yellow birch, and hemlock. Pine by far represents the greatest overall volume on the forest, with almost 1/2 of the total volume.

The dark seam at the base of this large red oak (left photo) on the Poor Farm Forest is an indicator of "spider heart"- a defect that degrades the quality of sawtimber. It is a radial separation of the wood fibers, typically occurring in overmature trees or trees on a poor site. Red rot, a rot disease common to white pine, typically enters the tree through old branch stubs (lower photo). Both diseases are fairly common on the Poor Farm Forest, and signals the need for a timber sale for both improvement and salvage goals.

Health problems on Poor Farm Forest are typical for the region and forest type. Beech bark disease is found throughout the forest and is caused by a fungus that is disseminated on the wind

and enters beech trees through tiny holes in the bark made by the beech scale insect to deposit its eggs. The scale insects overwinter in crevices in the beech bark underneath a waxy coating they excrete for this purpose. The beech bark fungus causes cankers that eventually girdle and kill the tree.

Several diseases affecting pine are present, and are also common throughout the landscape. These include the presence of red rot, a decay fungus, and a minor amount of white pine blister rust. White pine blister rust is an interesting disease that requires two separate hosts to complete its life cycle, white pine and currants. At one point in New England there were regulations on planting and growing currants because of the impact this disease has on white pine, a very valuable timber tree. The wood itself is not the highest in value on a unit by unit basis, but the sheer volume white pine produces puts it at high priority for timber resource, especially in areas like southern New Hampshire where it grows so well. These three diseases are common, and are regularly removed during timber sales.

Forest Management Approach

Management on the Poor Farm Forest will utilize a combination of silvicultural techniques that typically are separated into two general categories, even-age and unevenaged management. Evenaged management methods include clearcut, seed tree, shelterwood, overstory removal and patch cut applications and may be used to regenerate a new stand when deemed necessary. Unevenaged management methods generally include single tree and group selection used to regenerate small areas resulting in uneven age classes in a given stand. Often though, applied techniques fall somewhere in between these two text-book defined categories. One may define a large group opening (unevenage management) as a small clear-cut (evenage management). Improvement thinnings often fall somewhere in between as well, depending on the intended results and the actual results. A thinning may result in improved growth of the overstory trees, an even-aged treatment. A thinning may also provide similar conditions as single tree selection, an unevenaged technique, and result in regeneration of shade-tolerant species. Crop tree release, a practice where designated “crop trees” are released from shade of competing trees on typically 2 to 3 sides, falls somewhere in between as well. Given the variability of site quality and stocking, even within a defined stand, unless evenaged management is specifically called for, management typically will fall in the unevenage category.

Further discussion of unevenage management is required. Traditionally, the intent of unevenage management is to attain forest stocking conditions that mimic a specific diameter/age distribution. But, practicably speaking, unevenage management is often carried out as a simpler

form of multiple-age management resulting in the introduction of a new age-class on a portion of a stand each harvest entry. Given the even-aged condition of the majority of land in New England, encouraging multiple age classes is a more attainable, practicable goal and in effect, desirable goal. To clarify discussion of management technique on Weare lands, the term multiple-age management will replace traditional uneven-aged management, but will utilize the same techniques including single tree and group selection.

Applied Silviculture

Below are the generalized silvicultural systems and methods that will be broadly applied to the natural forest communities found on Poor Farm Forest and the forest stands within. The methods and their corresponding cutting cycles, rotation ages and target diameters are described and will serve as management guidelines for application in the field.

Hemlock/Hardwood Silviculture

The hemlock and hardwood community on Poor Farm Forest will be largely managed using a multiple-age system. Methods of multiple-age management will involve a combination of singletree and group selection silviculture and will mimic singletree and canopy gap disturbances. These silvicultural methods are used to create and/or maintain a multi-aged stand of largely mid-tolerant and shade tolerant species. Residual stand basal area densities following cuts will range between 60-90 square ft/acre for the hardwood and 110-200 square ft/acre for areas dominated by hemlock. Where mixed types exist, basal area densities will average between the two types. Depending on a number of considerations, the cutting cycles using this multiple-age system will be between 15 and 20 years. Target diameters of the hemlock and hardwood components are listed below. However because of the variability of sites both diameters and age goals may or may not be reached. Target diameters are as follows:

White Pine	18-24	Beech	14-18
Hemlock	16-20	Aspen	12-14
White Ash	16-22	Sugar Maple	16-22
Black Cherry	14-18	Red Oak	16-24
White Birch	12-16	Red Maple	14-18
Yellow Birch	16-22		

White Pine Silviculture

White pine is common, but does not dominate in the Poor Farm Forest. White pine trees generally produce a seed crop every 7 to 10 years during a period commonly known as a “cone

year". The 100-200 seeds produced by each cone are delicately small and remain viable for a short period after dispersal, approximately a year. Because the pine seed is so small, it does not have the stored energy necessary to grow through the forest duff layer, particularly under shady conditions. This means exposed mineral soil, ideally in deep well-drained sandy loams, and heat are required for successful seed germination. Keeping this in mind, these conditions need to be present during the seeds year of viability. To create these requirements, the silvicultural method most appropriate for pine, or most softwood regeneration for that matter, is evenage. Silvicultural techniques that are best applied where opportunity exists are patch, shelterwood and seed tree cuts. These techniques provide the stand dynamics required for pine regeneration that include space, heat, light, uniform canopy level, tight geotropic structure, hence an evenage structure. Timing of treatments is most effective during the snow-less season, where maximum soil scarification is attained.

Another variable in obtaining sufficient pine regeneration is the overall ability of the soil to grow hardwood trees. A soil with a high site index for hardwoods is best suited to grow hardwood. In these soils there is a high level of available nutrients that will undoubtedly permit a layer of hardwood regeneration so thick that whatever pine is established will be overgrown readily. This hardwood competition is often seen on the nutrient poor sites as well, but these soils that are better suited for pine. On these sites precommercial weeding of the hardwoods is required for the pine continuance. This hardwood competition is due to the fact that once pine seed germinates it has a slow growth rate for approximately 5 years before more rapid growth begins. Site wise, sandy soils, well-drained and low cation exchange provide excellent pine sites. Timing, silvicultural technique and soil type is critical to promote the continuity of the pine resource.

Red Oak Silviculture

The art and science of growing red oak is equally as tricky as for pine, due to regeneration challenges. Good seed years for oak are more frequent than that of pine, being 3-5 years. However, two major obstacles affect the germination success of the acorn. As a highly coveted food resource by much wildlife, the acorn is heavily consumed; if the wildlife does not find the acorn, insects like the acorn grub do. According to USDA Forest Service studies, up to 500 acorns are required to produce one seedling, but generally 1% of acorns become available for regenerating northern red oak successfully. Thus, the availability of viable acorns is naturally scarce.

To successfully germinate, the acorn prefers exposed mineral soil, ideally in well-drained, deep loams. Scarifying the duff layer during logging operations in the snowless seasons best does this. Oak's overall survival is most importantly related to light intensity levels. For the

seedlings/saplings to photosynthesize optimally it requires 30% light intensity in the open. Under a closed forest canopy light intensities are less ten 10%. Therefore, heat and space is critical. Once the seed germinates rapid and vigorous taproot development occurs. This root growth contributes to another challenge of oak management, where it causes very slow initial shoot development and competition for light from other species is very common. Thus, to achieve lasting regeneration success of oak, weeding of interfering species is often a requirement. The success of regenerating oak is highly dependent on the combination of the availability of viable seed, soil scarification, adequate light levels, implementation of weeding applications and seed distribution by wildlife.

Overall, the oak silvicultural system will be multiple-age. Methods of this system to best achieve the requirements of oak will involve mainly singletree and group selection silviculture. These methods will be used for both regeneration and thinning applications. Cutting cycles of oak dominant types will be between 15-25 years with crop tree diameters of 16-22 inches. During thinning and release applications it is important to maintain minimal direct light exposure to oak boles. Maturing and mature oak stems have large reserves of sensitive hidden buds that respond easily to increased light levels, resulting in epicormic branching and severe quality loss. During these cutting entries, releasing crop trees on eastern and northern sides, while maintaining heavier shade conditions on the south and west sides will ensure less opportunity for epicormic branching.

Access

Road access to the Poor Farm Forest is good, the tract is bisected into east and west halves by town maintained Poor Farm Road. The western half is again bisected by Balch road, an unmaintained town road. Balch Road is generally passable, but would need improvement work for trucking.

About 8 acres of forest are secluded on the east side of Poor Farm Marsh, requiring a ROW or landowner permission to access from Old Francestown Road.

Poor Farm Forest has good access, bisected by town maintained Poor Farm Road, shown at left. Balch Road, an unmaintained town road, bisects the western half of the tract and would need a fair amount of improvement to be used for trucking (right photo.

Operability

The on this tract in general does not restrict operability, though wet ground from multiple wetlands, generally running in a north-south direction, will restrict what areas can be operated and will require well thought-out job layout. The wetland areas generally are not productive timber growing sites and should be avoided during operations. Some areas near streams or adjacent to wetlands, or low points where the soils tend to be wet need special protection. Winter harvesting on frozen ground with good snow cover will provide the best protection for the soils found here. But, given the unreliability of winter conditions, operations may occur during the summer in dry periods as long as wet areas are avoided or tracked with equipment that minimizes impacts, including a cut-to length system that creates a mat of slash to drive over, therefore protecting wet ground from rutting and mitigating negative impacts.

Property Boundary

The Poor Farm Forest boundary is in variable condition and includes about 3.8 miles of maintainable boundary line, including those stretches along town roads. A combination of stonewalls, corner monumentation and painted blazes make up the boundary. In places the blazes are becoming difficult to see. The entire boundary should be blazed and painted as soon as possible. It is recommended that the boundary be monumented with Town of Weare signs, especially at corners, roads, and trails.

The boundary lines at Poor Farm Forest are in variable condition. A fair amount follows old stone walls and barbed wire fence, but the blazes are becoming difficult to see and should be repainted.

Protection of Historic and Cultural Resources

The Poor Farm Forest has a myriad of historic and cultural resources mentioned above in the property description. Many of these important resources are shown on the Trail Guide brochure describing the history and natural features of the Poor Farm and available on the Town of Weare Conservation Commission website (http://www.weare.nh.gov/WCC/images/PoorFarmMap.pdf).

The historic features easily visible include many of the stone walls, foundations, and wells built on the Poor Farm, as well as the Poor Farm Cemetery. As mentioned above the Poor Farm was acquired by the town in 1838, but likely some of these features were already in place at the time of purchase.

The protection of these historic features is important to the Town of Weare and the State of New Hampshire because they help illustrate our cultural heritage and are as such, non-renewable. The Weare Heritage Commission has recommended a 25' buffer around all existing cultural and historic resources, in this case including but not limited to the cemetery, stone walls, foundations, and well sites. All attempts should be made to avoid ground disturbance within this 25' buffer. If impacts are unavoidable, the Heritage Commission asks that every effort be made to minimize the impact and that a photograph be taken of the area to be affected to document pre-disturbed

conditions. Copies of the photographs should be provided to the Weare Heritage Commission.

FOREST DATA

Stand 1 BE-RO-HE 34A 28.6 acres


Stand Structure


Forest Canopy


Forest Floor

GENERAL ATTRIBUTES

Natural Community Type:	Hemlock-beech-oak-pine forest
Past Management History:	No recent management
Approximate Age of Dominant Trees:	70-90 years old
Stand Health:	Fair to good
Insects/Damage/Disease:	Presence of beech bark disease, spider heart in oak

SITE CONDITIONS

Determined by:	Soils map & field observation
Tree vigor:	Moderate
Soils:	Tunbridge-Lyman-Monadnock Complex; Marlow stony loam
Drainage:	Well-drained to somewhat poorly drained
Terrain:	Moderate to gentle slopes
Aspect:	Variable

Snags Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"	4.1			4.1
12-18"	4.0			4.0
>18"				
Grand Total	**8.1**			**8.1**

Table 1.1: Standing dead trees per acre by size and decay class.

Down Logs Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"		6.4		6.4
12-18"	2.8		1.6	4.4
Grand Total	**2.8**	**6.4**	**1.6**	**10.8**

Table 1.2: Down logs per acre by size and decay class.

WILDLIFE HABITAT

Forest type:	Mixed hemlock-red oak-hardwoods
Vertical diversity:	Medium
Vegetative diversity:	Medium
Hard mast:	Acorns, beech nuts, birch seed
Soft mast:	None
Special habitat features:	Fair sized contiguous mixed forest; eastern section adjacent to Poor Farm marsh
Snag trees:	Fair amount small diameter, need more above 18" diameter
Down logs:	Good size distribution but small number
Special wildlife practices:	Create more large snags and down logs, preferably with cavity potential; maintain healthy beech and oak for mast; maintain buffer where adjacent to marsh

RECREATION

Recreational features:	Hiking trail system
Recreational infrastructure:	Trail blazes, interpretative trail, map
Aesthetic resources:	"Deep woods" feel; large beech trees
Public access:	Open, no wheeled vehicles

SILVICULTURE

Structural and Silvicultural Attributes

Broad Forest Type:	HS34A
Size Class:	Large sawtimber
Stand Structure:	Becoming multiple-aged
Crown Closure:	95%
Total Basal Area Per Acre:	126
Total Merchantable Basal Area Per Acre:	107
Total Acceptable Basal Area Per Acre:	47
Trees Per Acre:	512
Quadratic Mean Stand Diameter:	6.7
Percent AGS Sawtimber:	65.6%
Basal Area of AGS Sawlogs:	22

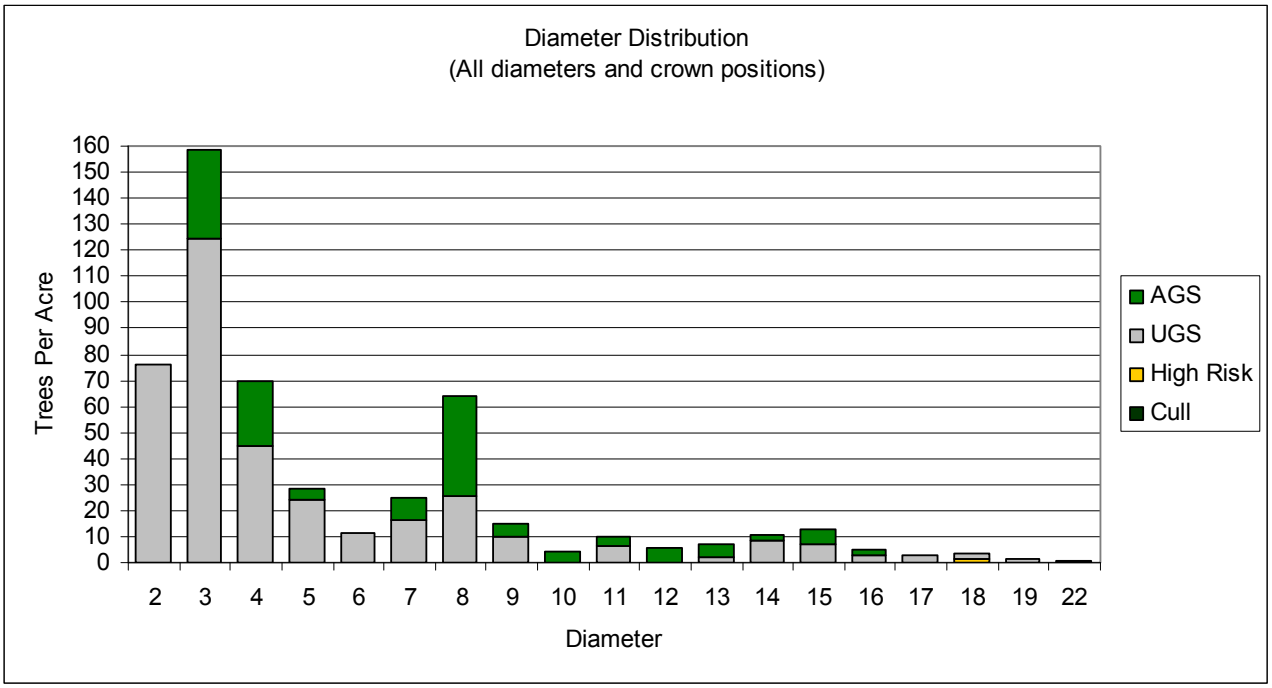
Timber Quality: Fair-variable

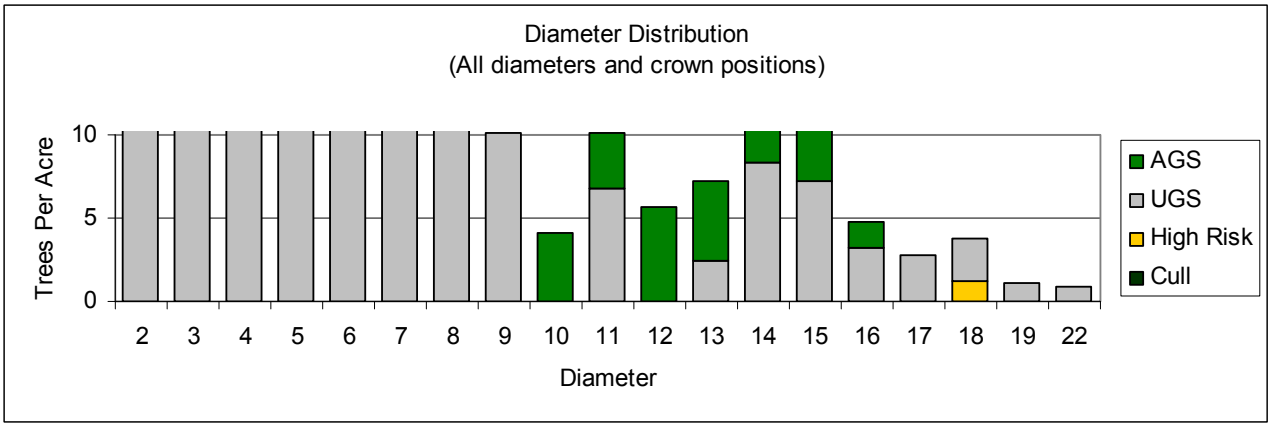
Forest Composition and volume

Species	% TPA	Sawlog (bf)	Pallet/Tie (bf)	Pulp (cd)	Growing Stock (cd)	Legacy (cd)	Total Volume in Cords	High Risk	AGS Saw	% AGS Saw
American Beech	35.6%	213	185	9	0.0	0.0	10.6	0.0	104	26%
Black Birch	15.4%	0	0	2	0.0	0.0	2.1	0.0	0	0%
Red Maple	1.5%	0	0	1	0.0	0.0	1.3	0.0	0	0%
Red Oak	33.2%	1,195	637	5	2.1	0.0	10.4	108.6	1,325	72%
White Birch	3.6%	0	0	1	0.0	0.0	0.5	0.0	0	0%
Total Hardwood Per Acre:	*89.1%*	*1,408*	*822*	*18*	*2.1*	*0.0*	*24.9*	*108.6*	*1,429*	64%
Hemlock	10.9%	100	0	3	0.0	0.0	3.3	0.0	100	100%
Total Softwood Per Acre:	*10.9%*	*100*	*0*	*3*	*0.0*	*0.0*	*3.3*	*0.0*	*100*	100%
Total Volume Per Acre:	100.0%	1,508	822	21	2	0	28	109	1,529	66%
Stand Volume:		43,125	23,517	603	60	0	807	3,106	43,724	

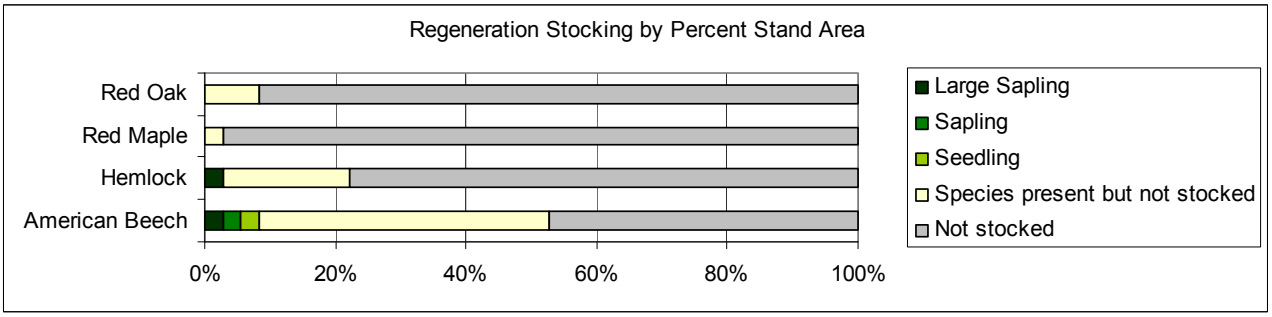
Table 1.3: Stand volume by species and product per acre values.

Graph 1.1a and 1.1b: Diameter distribution showing trees per acre on the Y axis, diameter class on the X axis and tree condition. Includes trees in all canopy positions down to 2 inches in diameter. 1.1b provides a close-up of the breakdown in the larger diameter classes.

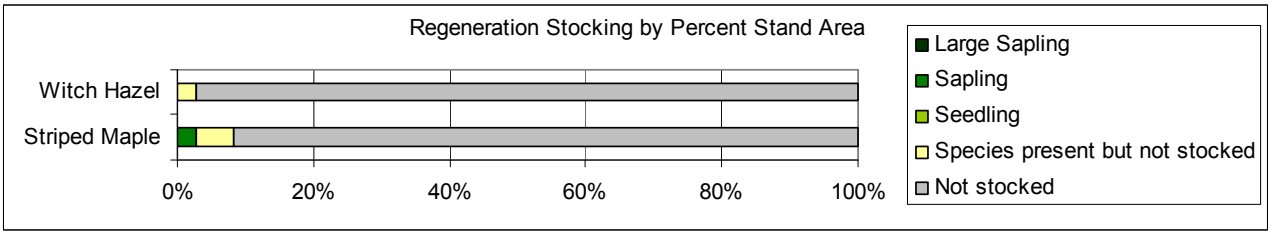




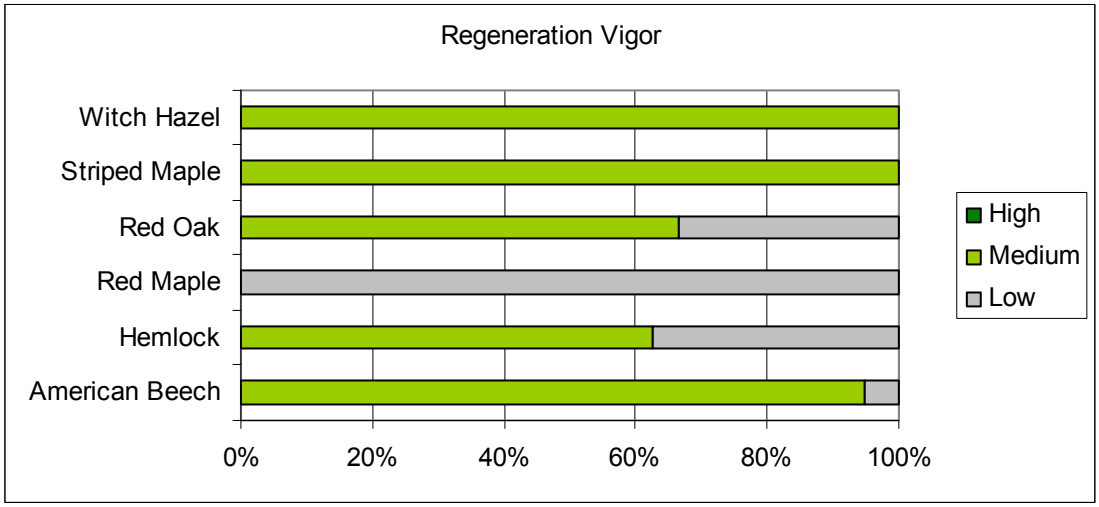
Graph 1.2: Regeneration stocking by percent of stand, species and stocking class. The species is considered "stocked" if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



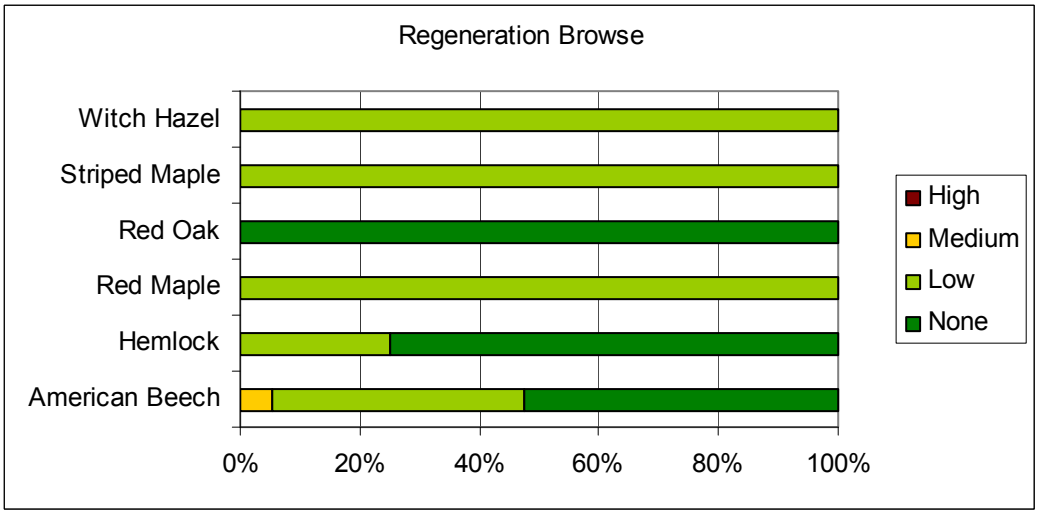
Graph 1.3: Shrub and competing species regeneration stocking by percent of stand, species and stocking class. The species is considered "stocked" if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



Graph 1.4: Vigor of all regeneration and shrub species.



Graph 1.5: Browse level of all regeneration and shrub species.



Silvicultural Objectives

Management system:	Convert to Multiple-aged
Harvest Entry:	15-20 years
Products:	Hemlock pulp and hardwood sawlogs, pulpwood, cordwood
Desired Composition:	Favor Red oak and healthy beech
Crop tree target diameter:	BE 22" HE 18" RO 20"

Operational Considerations

Operability:	Operable; avoid wetlands
Seasonal limitations:	Best summer or winter; avoid wet spring and fall conditions
Terrain:	Generally good
Access and landing area:	West of Poor Farm Road: Good access, need to establish landing site. East of Poor Farm Marsh: Need ROW over neighboring lands for access
Access distance:	Up to 1/4 mile
General maintenance:	Maintenance on Balch road necessary- drainage, smoothing; establish landing
Brook-wetland crossings/buffer requirements:	None required

STAND SUMMARY AND 10-YEAR MANAGEMENT SCHEDULE

Stand 1 includes a mix of beech, red oak, black birch and hemlock. It occupies two non-contiguous areas of the Poor Farm, including the section north of Balch Road and the secluded section east of the Poor Farm Marsh. This secluded section has no access and will require crossing neighboring private lands for access. This stand has a significant beech population, with a fair amount of relatively healthy beech, though beech bark disease is certainly present. It also has a decent stocking a fairly good quality and health red oak. Both of these species are especially valuable for wildlife because of the copious amount of mast produced during seed years. A fair amount of bear sign can be found in this stand.

This land was primarily used as pasture until around 1917 when the Poor Farm was abandoned. This area was allowed to reforest naturally, with no plantations. The soils tend to be moderately well-drained stony loams of medium nutrient levels, meaning they support best growth of oaks, pines and birch rather than more nutrient demanding hardwood species such as sugar maple and white ash.

Almost all of the sawtimber volume in the stand is red oak, with small amounts of hemlock and beech. While the oak is only 33% of the trees per acre, it represents about 3/4 of the sawtimber volume. About 5% of the oak sawtimber is in a “high risk” state, either in trees that are nearing or at maturity or are showing signs of heart rot, locally known as “spider heart”.

The stocking ranges from overstocked to fully stocked, with a few scattered more open pockets mainly due to windfall. There is a fair stocking of pole-sized mid-to-low canopy trees,

dominated by hemlock and beech but with a few pockets of birch as well.

Regeneration is fairly sparse, and heavily dominated by beech, with an occasional red oak, red maple, or hemlock seedling. Unlike other forests in the area, browse levels of the regeneration here are tolerable.

The eastern section of the stand borders Poor Farm Marsh, providing important travel corridor, shelter, browse, and mast production for many wildlife species along this wetland edge. Refer to page 9 for management recommendations to protect this valuable wetland edge system.

The long-term goal of management in this stand is to develop several age classes of quality sawtimber trees of species well suited to the site, beech and red oak, and to a lesser extent black birch. The age classes will exist primarily as pockets of similarly aged trees mixed throughout the stand. This multiple-age composition will provide a diversity of forest structure beneficial to wildlife and will provide opportunity for a mix of silvicultural operations. The current species composition reflects the natural species mix and likely will not significantly change over time.

Silviculture: The focus of management here will be to harvest mature, diseased, and poor quality overstory trees in groups, patches and singly to release pockets of existing regeneration and understory stock and to create regeneration where none exists. Protect and manage for retaining a healthy beech population for wildlife and diversity. The group and patch openings will range from a few trees to possibly over an acre in size if necessary to release regeneration or where a large pocket of poor quality overstory trees exist.

In addition, crop tree release in between the groups and patches to release desirable crop trees on at least 2 to preferably three sides. If releasing oak for crop trees, attempt to leave bole shade on the south and west side to prevent epicormic sprouting.

Stand 1a: 2014
Stand 1b: 2015 (if access is gained)

Reduce basal area to approximately 90 to 100 square feet through:

- **Crop tree release** on the best quality and vigor stems. Strive to release 15-20 crop trees on at least 2 sides per acre. Release healthy beech where possible.
- **Group selection and Patch Cut** release pockets of pole-sized hardwood and existing regeneration. Also use group selection and patch cuts to remove pockets of poor quality stems and encourage regeneration. Capture value in high risk red oak.
- **Time harvest** with a red oak seed year.

Cultural Resources: Maintain 25' buffer around historic features described on page 24.

Wildlife: Wildlife habitat here will become more diverse as a multiple age structure is developed. The significant amount of beech in this stand provides an excellent source of food during mast (seed) years. Any treatments that promote hardwood regeneration will likely benefit deer, moose and rabbits by providing better browse opportunities. Multiple age classes help to ensure there is always a level of browse for wildlife. Specific wildlife habitat improvements will include retaining hard mast producing hardwoods; retaining beech trees with evidence of bear use; creating hardwood browse especially in areas with low-valued or poor vigor trees; creating standing snag trees by girdling some large white pine with no commercial value; creating down woody debris by felling and leaving some large white pine on the forest floor.
Leave a wildlife travel corridor along Poor Farm Marsh with at least 65-70% canopy cover.

- Create additional down logs by felling up to 5 trees > 18" in diameter per acre.
- Maintain existing snags and large down logs.
- Maintain healthy beech population for mast.
- **Follow wetland and wildlife management recommendations** on page 9 and 14

respectively.

Stand 2 WP-RM-RO 34A 61.3 acres


Stand Structure


Forest Canopy


Forest Floor

GENERAL ATTRIBUTES

Natural Community Type:	Hemlock-beech-oak-pine
Past Management History:	No recent management
Approximate Age of Dominant Trees:	70-90 years old
Stand Health:	Variable, problems in red oak and pine
Insects/Damage/Disease:	Some red rot and white pine blister rust in pine; "spider heart" heart rot in older red oaks

SITE CONDITIONS

Determined by:	Soils map & field observation
Tree vigor:	Average
Soils:	Skerry stony fine sandy loam; Tunbridge-Lyman-Monadnock complex; Pillsbury stony loam; Marlow stony loam
Drainage:	Moderately well drained to well drained
Terrain:	Gradual to moderate slope
Aspect:	Variable

Snags Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"	3.2	14.6	2.6	20.4
12-18"		1.3	1.3	2.7
>18"		0.3		0.3
Grand Total	**3.2**	**16.2**	**4.0**	**23.4**

Table 2.1: Standing dead trees per acre by size and decay class.

Down Logs Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"		5.9		5.9
12-18"		2.6		2.6
Grand Total		**8.4**		**8.4**

Table 2.2: Standing down logs per acre by size and decay class.

WILDLIFE HABITAT

Forest type:	Mixed pine-hemlock-hardwood
Vertical diversity:	Medium
Vegetative diversity:	Medium
Hard mast:	Beech nuts, acorns, pine cone, birch seed
Soft mast:	Blueberry, minor amounts cherry
Special habitat features:	Mixed hardwood and softwood; scattered large diameter
Snag trees:	Fair amount medium and large diameter
Down logs:	Fair amount
Special wildlife practices:	Maintain stand for mast production and structure

RECREATION

Recreational features:	Hiking trail system
Recreational infrastructure:	Trail blazes, interpretative trail, map
Aesthetic resources:	Scattered large diameter trees along stonewalls; stonewalls; cellar holes; cemetery
Public access:	Open, no wheeled vehicles

SILVICULTURE

Structural and Silvicultural Attributes

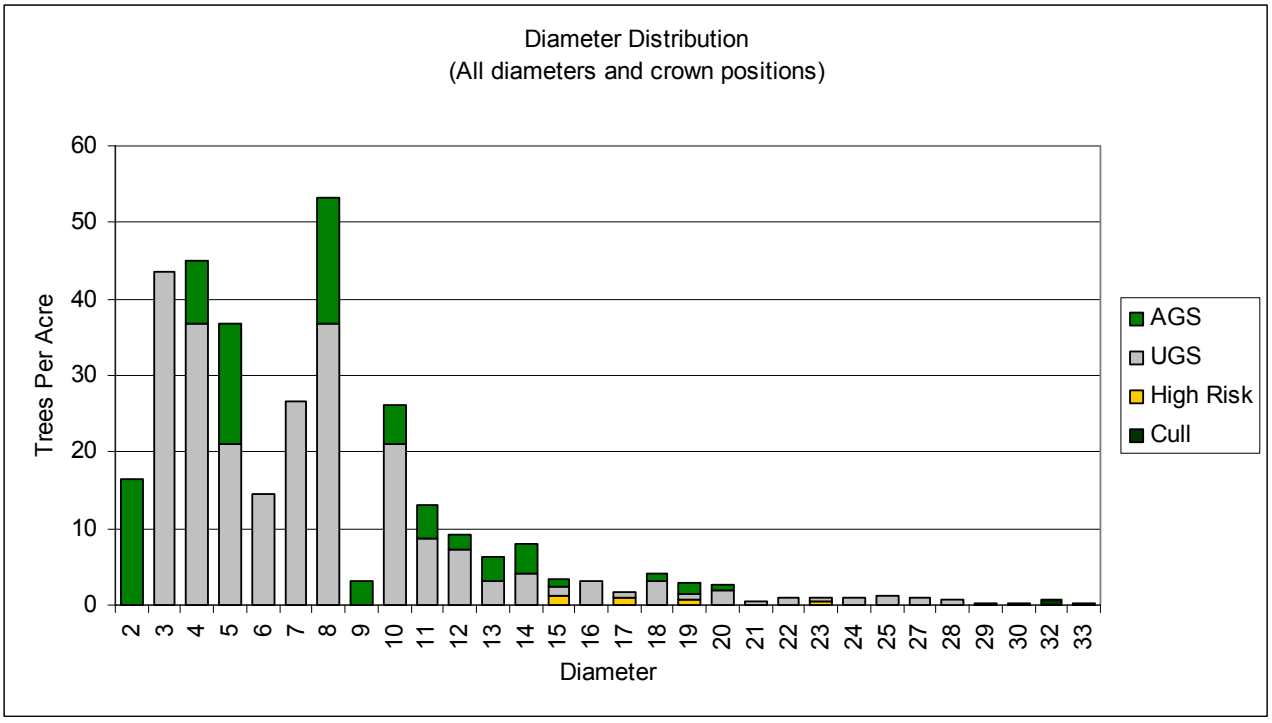
Broad Forest Type:	SH34A
Size Class:	Small to large sawtimber over sapling and pole size
Stand Structure:	Becoming multiple-aged
Crown Closure:	90%
Total Basal Area Per Acre:	146
Total Merchantable Basal Area Per Acre:	139
Total Acceptable Basal Area Per Acre:	32
Trees Per Acre:	328
Quadratic Mean Stand Diameter:	9.0
Percent AGS Sawtimber:	49.1%
Basal Area of AGS Sawlogs:	19
Timber Quality:	Variable- poor to good

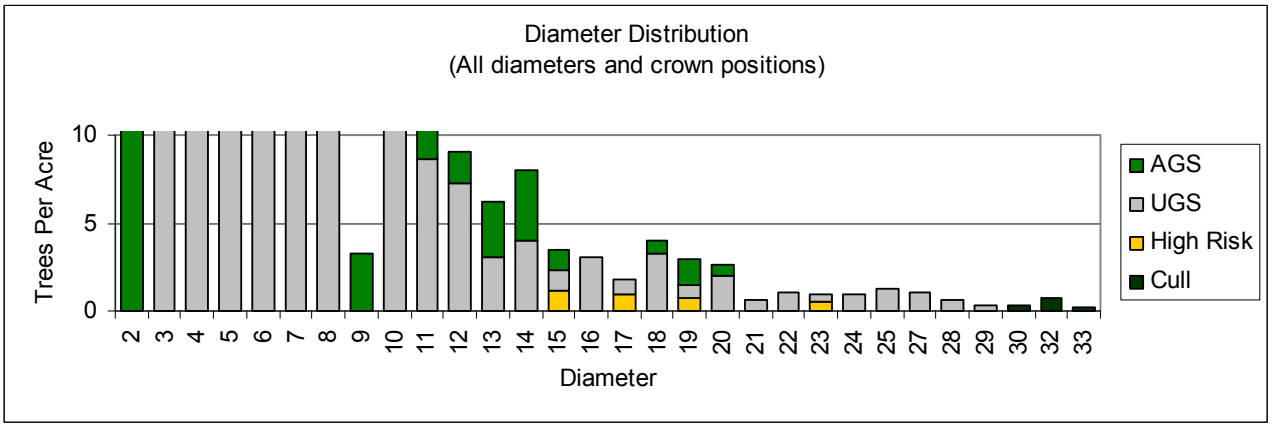
Forest Composition and volume

Species	% TPA	Sawlog (bf)	Pallet/Tie (bf)	Pulp (cd)	Growing Stock (cd)	Legacy (cd)	Total Volume in Cords	High Risk	AGS Saw	% AGS Saw
American Beech	2.2%	0	0	0.3	0.0	0.0	0.3	0.0	0	0%
Black Birch	7.0%	55	42	1.6	0.2	0.0	2.0	0.0	97	100%
Red Maple	35.6%	51	427	8.4	0.3	0.0	9.7	0.0	159	33%
Red Oak	12.4%	1,018	397	3.2	0.5	0.0	6.2	498.0	763	54%
Sugar Maple	1.3%	0	62	1.4	0.0	0.0	1.6	0.0	0	0%
White Ash	2.2%	0	0	0.2	0.3	0.0	0.5	0.0	0	0%
White Birch	9.1%	62	48	2.1	0.0	0.0	2.3	0.0	0	0%
Yellow Birch	0.7%	0	66	0.2	0.0	0.0	0.3	0.0	0	0%
Total Hardwood Per Acre:	*70.5%*	*1,186*	*1,042*	*17.3*	*1.4*	*0.0*	*22.8*	*498.0*	*1,019*	46%
Hemlock	4.5%	0	0	1.2	0.0	0.0	1.2	0.0	0	0%
White Pine	25.0%	196	226	12.0	0.0	0.0	13.2	0.0	283	67%
Total Softwood Per Acre:	*29.5%*	*196*	*226*	*13.1*	*0.0*	*0.0*	*14.4*	*0.0*	*283*	67%
Total Volume Per Acre:	100.0%	1,382	1,268	30	1	0	37	498	1,302	49%
Stand Volume:		84,708	77,706	1,865	84	0	2,278	30,528	79,791	

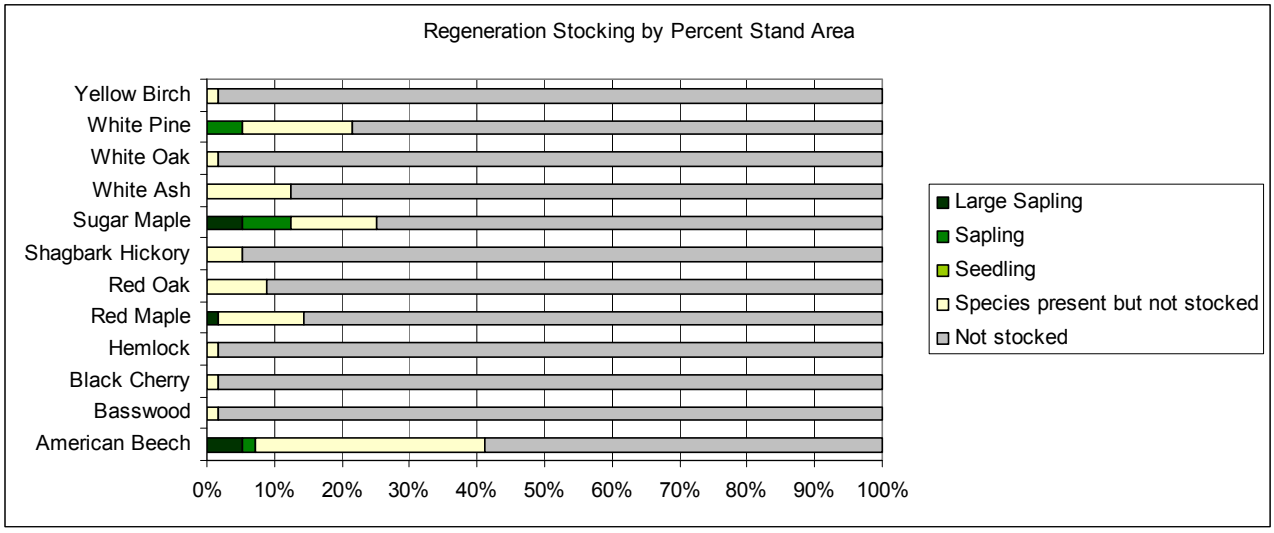
Table 2.3: Stand volume by species and product per acre values.

Graph 2.1a and 2.1b: Diameter distribution showing trees per acre on the Y axis, diameter class on the X axis and tree condition. Includes trees in all canopy positions down to 2 inches in diameter. 2.1b provides a close-up of the breakdown in the larger diameter classes.

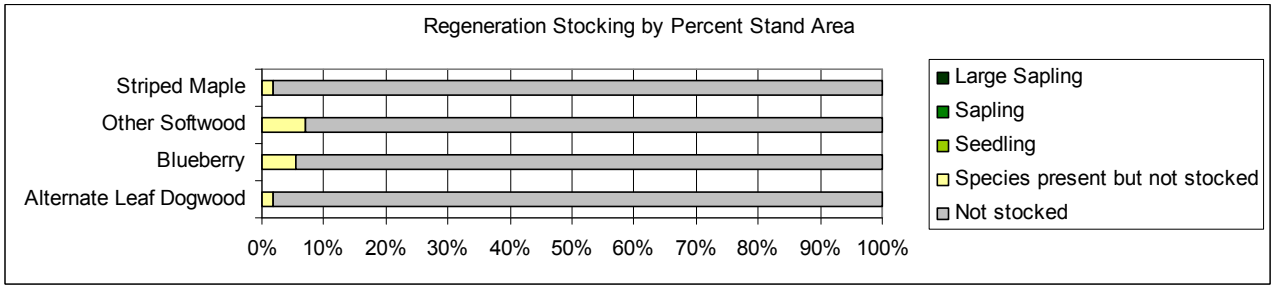




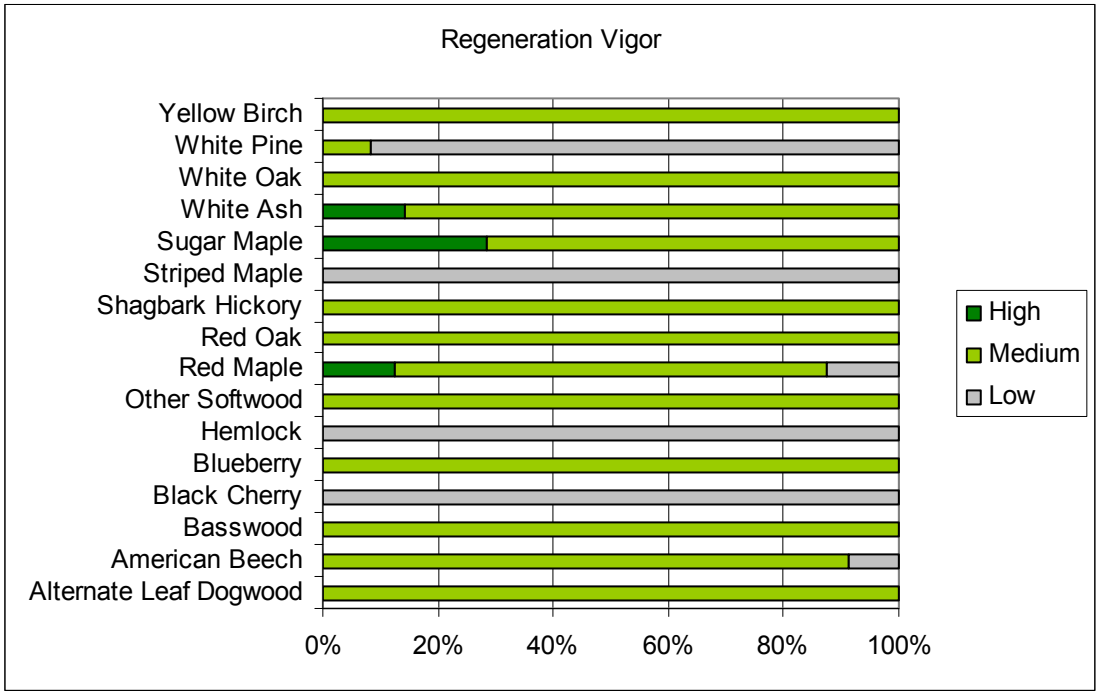
Graph 2.2: Regeneration stocking by percent of stand, species and stocking class. The species is considered “stocked” if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



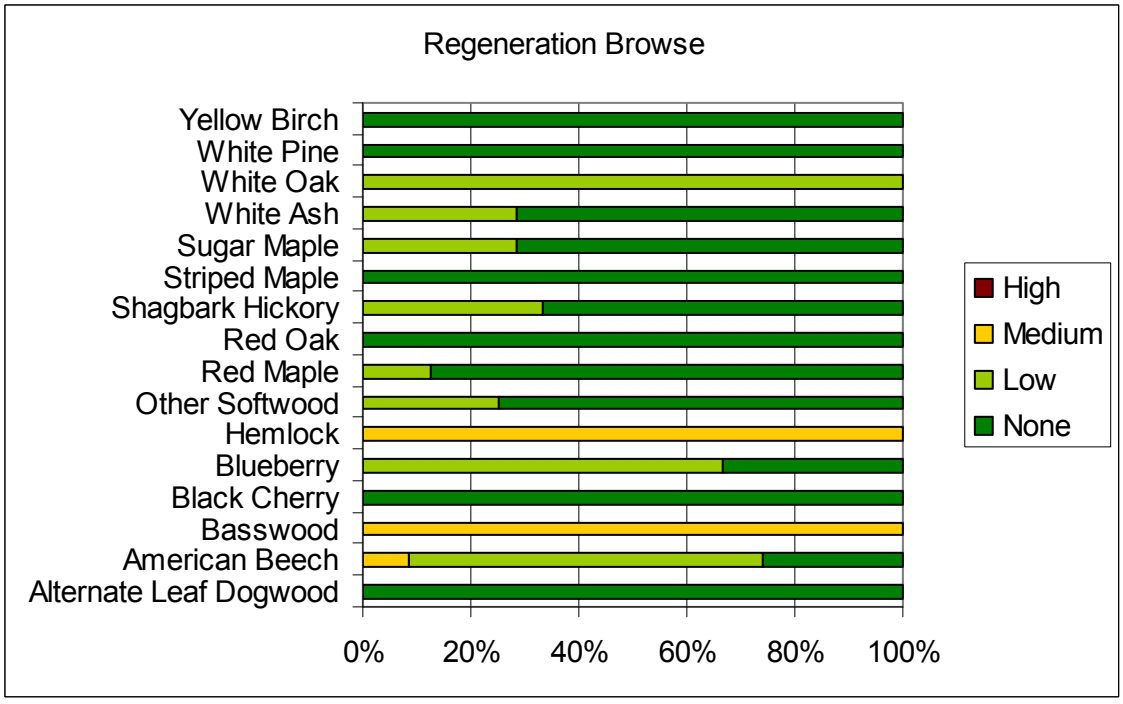
2.3: Shrub and competing species regeneration stocking by percent of stand, species and stocking class. The species is considered “stocked” if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



Graph 2.4: Vigor of all regeneration and shrub species.



Graph 2.5: Browse level of all regeneration and shrub species.



Silvicultural Objectives

Management system:	Convert to multiple age
Harvest Entry:	15 years
Products:	Pine pulp/chips and sawtimber; Hardwood sawtimber, chips, and firewood; Hemlock pulp
Desired Composition:	Maintain oak and pine
Crop tree target diameter:	WP 22” RO 20”

Operational Considerations

Operability:	Operable; avoid wetlands
Seasonal limitations:	Best summer or winter
Terrain:	Generally good
Access and landing area:	Good access from Poor Farm road, need to establish landing site. Balch road needs improvement if used.
Access distance:	Up to 1/2 mile
General maintenance:	Maintenance on Balch road necessary- drainage, smoothing; establish landing
Brook-wetland crossings/buffer requirements:	Several wetlands need to be avoided

STAND SUMMARY AND 10-YEAR MANAGEMENT SCHEDULE

Stand 2 is the largest stand on the tract, and includes the bulk of the land surrounding the old farm house on the west side of Poor Farm Road. Massive stone walls abound here, as well as multiple wells. This bulk of this stand was likely hay and crop land, with areas of pasture. Since the agricultural abandonment in 1917 the land has grown up to a mix of pine, hemlock oak, red maple, white and black birch. It includes several massive, old oak trees growing along the stone walls.

The soils here are similar to stand 1, with medium nutrient levels, meaning they support best growth of oaks, pines and birch rather than more nutrient demanding hardwood species such as sugar maple and white ash. They are moderately well drained with areas that are poorly drained. The wet areas are prone to blow down.

The sawtimber volume here is dominated by red oak, with only 12% of the trees per acre and over half the sawtimber volume. The quality is variable though, with about 54% of the sawtimber volume in acceptable growing stock, but with about 1/3 as high risk because of the common presence of "spider heart" in these mature or maturing trees. The pine is generally poor quality, with 25% of the trees per acre, but only 15% of the sawtimber volume.

The stocking ranges from overstocked to fully stocked, with a diversity of regeneration dominated by pine, red and sugar maple and beech but also including ash, oak and a scattering of birches, cherry, hickory, hemlock and basswood

The long-term goal of management in this stand is to develop several age classes of quality sawtimber trees of species well suited to the site, particularly red oak and white pine, and to a lesser extent black birch. The age classes will exist primarily as pockets of similarly aged trees mixed throughout the stand. This multiple-age composition will provide a diversity of forest structure beneficial to wildlife and will provide opportunity for a mix of silvicultural operations.

Silviculture: The focus of management here will be to harvest mature overstory trees, especially high risk oak, lower quality stems, remove poor quality/damaged/diseased midstory stems, and release existing regeneration. Additionally, where regeneration does not exist, attempt to create conditions conducive to regenerating red oak, while maintaining a healthy beech population. Crop tree release between these groups and patches to release desirable crop trees on at least 2 sides, focusing on quality oak. Attempt to time harvest with a red oak seed year.

Stand 2a: 2014
Stand 2b: 2015

Reduce basal area by 1/3 to approximately 100 square feet through:

- **Single tree selection** to salvage value on high risk red oak
- **Group selection** to release pockets of pole-sized hardwood and existing regeneration focusing on removing mature/diseased/damaged/low vigor overstory trees. Also use group selection to remove pockets of poor quality stems and encourage regeneration.
- **Crop tree release** on the best quality and vigor stems, focusing on healthy beech and red oak. Strive to release 15-20 crop trees on at least 2 sides per acre. Leave some crop trees as seed source for red oak.
- **Time harvest** with a red oak seed year.

Cultural Resources: Maintain 25' buffer around historic features described on page 24.

Wildlife: Wildlife habitat here will become more diverse as a multiple age structure is developed. The significant amount of beech in this stand provides an excellent source of food during mast (seed) years. Any treatments that promote hardwood regeneration will likely benefit deer, moose and rabbits by providing better browse opportunities. Multiple age classes help to ensure there is always a level of browse for wildlife. Specific wildlife habitat improvements will include retaining hard mast producing hardwoods; retaining beech trees with evidence of bear use; creating hardwood browse especially in areas with low-valued or poor vigor trees; creating standing snag trees by girdling some large white pine with no commercial value; creating down woody debris by felling and leaving some large white pine on the forest floor.

- Create additional down logs by felling up to 5 trees > 18" in diameter per acre.
- Maintain existing snags and large down logs.
- Maintain healthy beech population for mast.
- **Follow wetland and wildlife management recommendations** on page 9 and 14 respectively.

Stand 3 WP-RM 34A 24.6 acres


Stand Structure


Stand Structure


Forest Canopy

GENERAL ATTRIBUTES

Natural Community Type:	Sugar maple-beech-yellow birch forest
Past Management History:	No recent management; some TSI and commercial thinning approx. 20 years ago
Approximate Age of Dominant Trees:	70-90 years old
Stand Health:	Fair
Insects/Damage/Disease:	Some weevil, red rot, and white pine blister rust

SITE CONDITIONS

Determined by:	Soil map and onsite observation
Tree vigor:	Moderate
Soils:	Tunbridge-Lyman-Monadnock complex; Marlow loam
Drainage:	Moderately well drained
Terrain:	Flat to gentle slope
Aspect:	Variable

Snags Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"		4.6	22.2	26.8
12-18"		3.0	5.0	8.0
>18"	1.3			1.3
Grand Total	**1.3**	**7.6**	**27.1**	**36.0**

Table 3.1: Standing dead trees per acre by size and decay class.

Down Logs Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"	16.5	4.6		21.1
12-18"	4.1		3.6	7.8
Grand Total	**20.6**	**4.6**	**3.6**	**28.9**

Table 3.2: Standing down logs per acre by size and decay class.

WILDLIFE HABITAT

Forest type:	Pine-hardwoods
Vertical diversity:	Medium
Vegetative diversity:	Medium
Hard mast:	Pine seed; acorns, birch seed, beech nuts
Soft mast:	Black cherry
Special habitat features:	Some large pine nesting and perch sites; adjacent to both several small wetlands and to Poor Farm Marsh
Snag trees:	Fair amount
Down logs:	Fair amount
Special wildlife practices:	Maintain wetland buffer system; maintain some tall pine for perch and nest sites

RECREATION

Recreational features:	Hiking trail system; access to Poor Farm Marsh
Recreational infrastructure:	Trail blazes, interpretative trail, map
Aesthetic resources:	Stone walls; Poor Farm Marsh
Public access:	Open, no wheeled vehicles

SILVICULTURE

Structural and Silvicultural Attributes

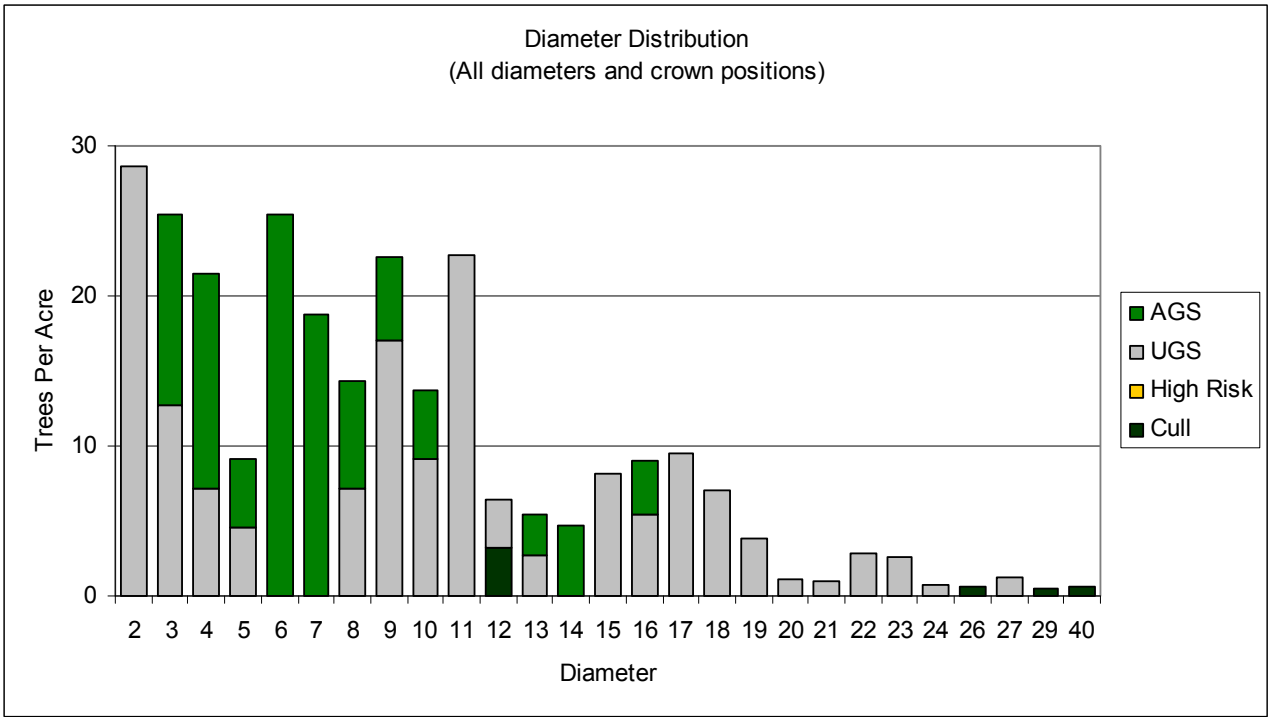
Broad Forest Type:	SH34A
Size Class:	Small to large sawtimber
Stand Structure:	Evenaged
Crown Closure:	90%
Total Basal Area Per Acre:	163
Total Merchantable Basal Area Per Acre:	159
Total Acceptable Basal Area Per Acre:	33
Trees Per Acre:	268
Quadratic Mean Stand Diameter:	10.5
Percent AGS Sawtimber:	32.7%
Basal Area of AGS Sawlogs:	13
Timber Quality:	Variable; pine poor to fair

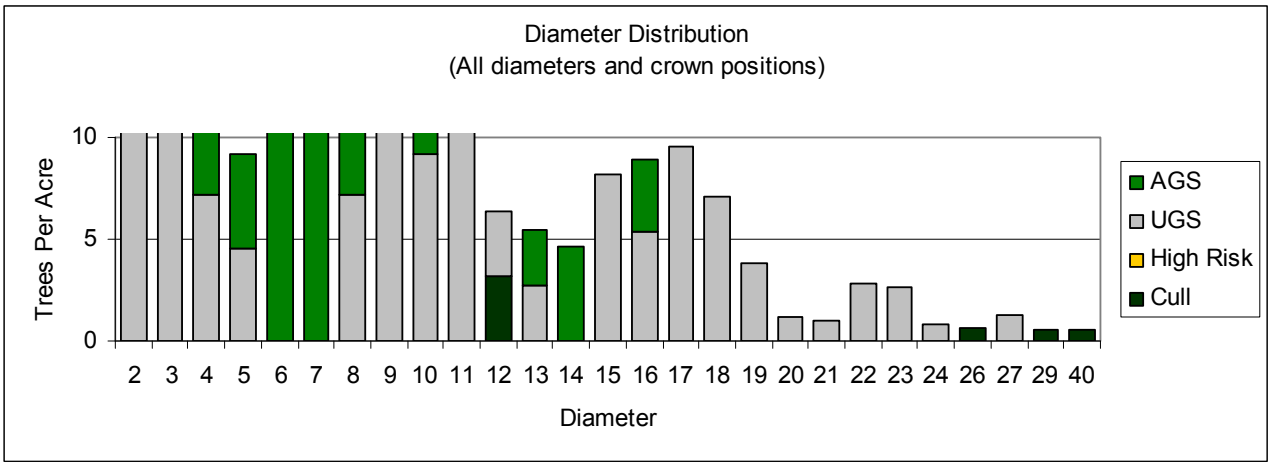
Forest Composition and volume

Species	% TPA	Sawlog (bf)	Pallet/Tie (bf)	Pulp (cd)	Growing Stock (cd)	Legacy (cd)	Total Volume in Cords	High Risk	AGS Saw	% AGS Saw
American Beech	1.3%	115	0	0.4	0.0	0.0	0.6	0.0	115	100%
Black Cherry	3.1%	0	0	0.7	0.0	0.0	0.7	0.0	0	0%
Red Maple	23.8%	0	112	2.9	0.8	0.0	3.9	0.0	0	0%
Red Oak	2.0%	0	215	1.9	0.0	0.0	2.3	0.0	0	0%
Sugar Maple	5.1%	0	0	0.3	0.2	0.0	0.4	0.0	0	0%
White Ash	7.0%	0	0	0.3	0.2	0.0	0.5	0.0	0	0%
White Birch	3.9%	0	0	0.6	0.0	0.0	0.6	0.0	0	0%
Total Hardwood Per Acre:	*46.2%*	*115*	*327*	*7.0*	*1.2*	*0.0*	*9.0*	*0.0*	*115*	26%
Hemlock	4.6%	0	0	0.6	0.0	0.0	0.8	0.0	0	0%
White Pine	49.3%	733	2,196	33.8	0.0	0.0	39.3	0.0	988	34%
Total Softwood Per Acre:	*53.8%*	*733*	*2,196*	*34.4*	*0.0*	*0.0*	*40.0*	*0.0*	*988*	34%
Total Volume Per Acre:	100.0%	848	2,523	41	1	0	49	0	1,103	33%
Stand Volume:		20,859	62,074	1,020	28	0	1,205	0	27,134	

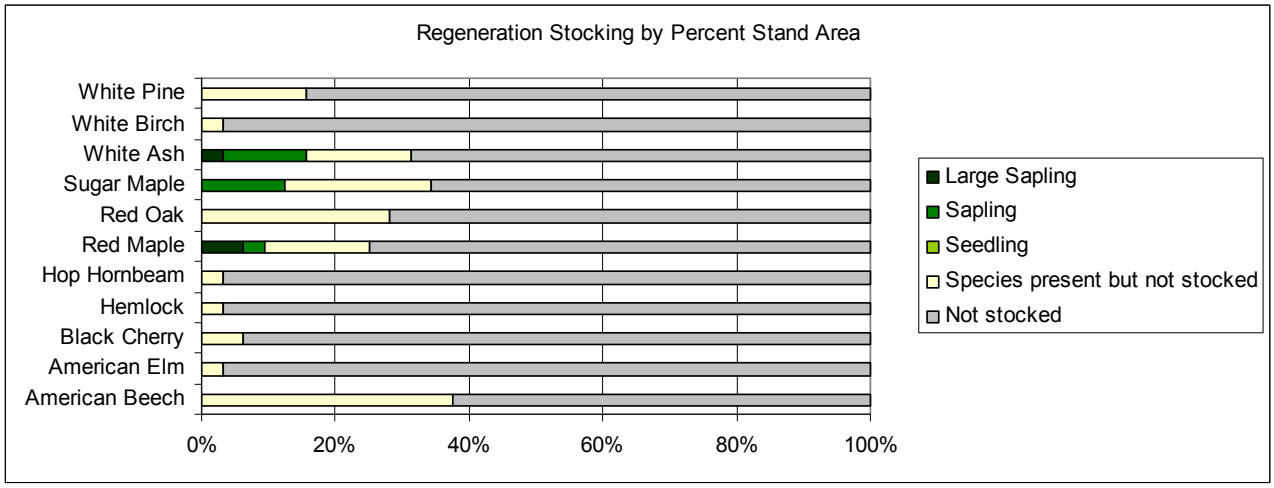
Table 3.3: Stand volume by species and product per acre values.

Graph 3.1a and 3.1b: Diameter distribution showing trees per acre on the Y axis, diameter class on the X axis and tree condition. Includes trees in all canopy positions down to 2 inches in diameter. 3.1b provides a close-up of the breakdown in the larger diameter classes.

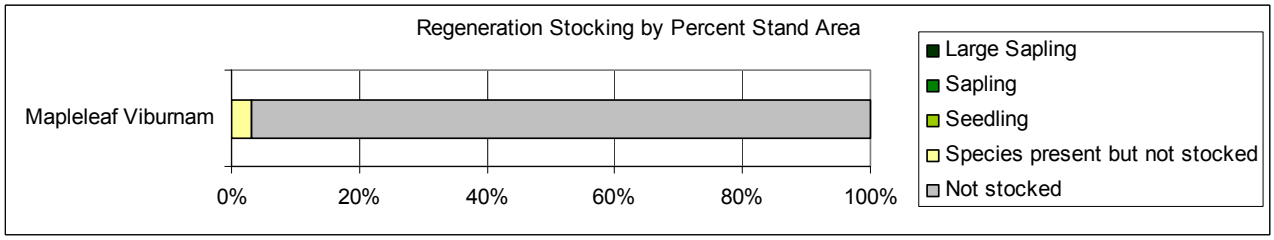




Graph 3.2: Regeneration stocking by percent of stand, species and stocking class. The species is considered "stocked" if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



Graph 3.3: Shrub and competing species regeneration stocking by percent of stand, species and stocking class. The species is considered "stocked" if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



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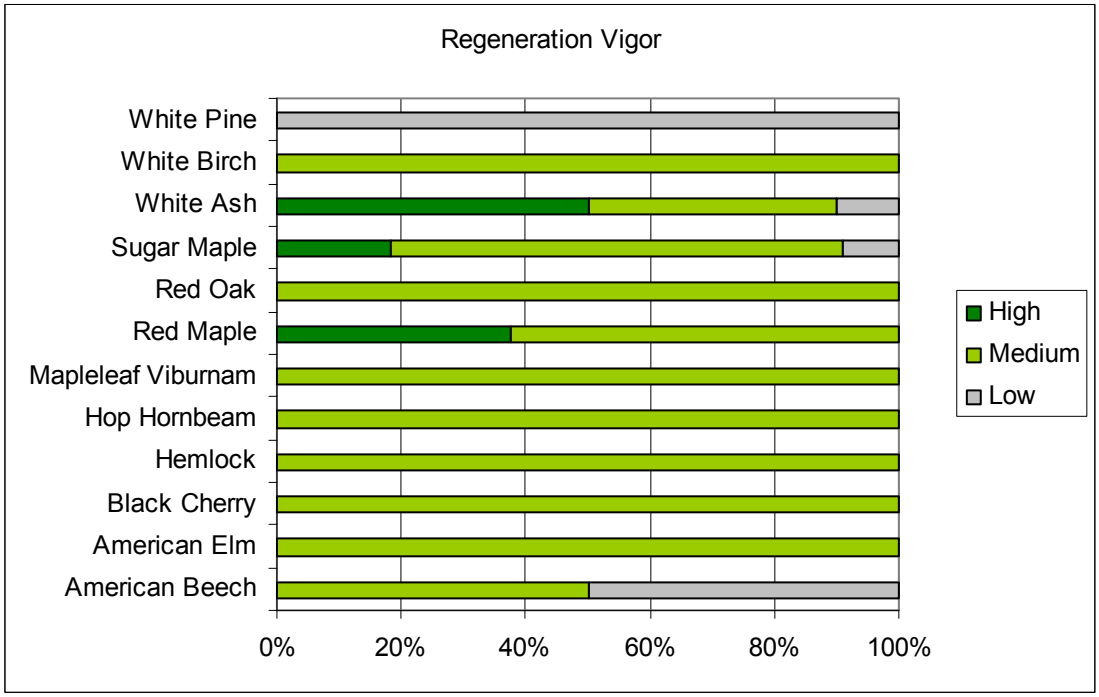
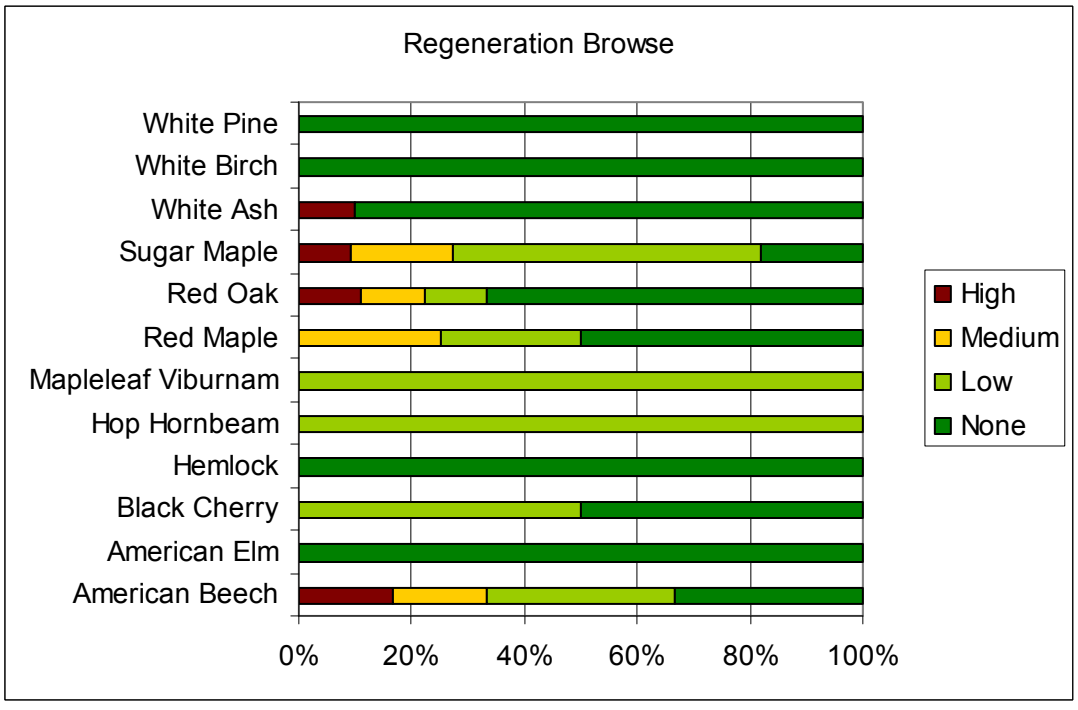


Graph 3.5: Browse level of all regeneration and shrub species.



Silvicultural Objectives

Management system:	Convert to multiple age
Harvest Entry:	15 years

Products:	Pine pulp/chips and sawtimber; Hardwood sawtimber, chips, and firewood; Hemlock pulp
Desired Composition:	Allow conversion to natural community type
Crop tree target diameter:	WP 22" RM 18"

Operational Considerations

Operability:	Operable
Seasonal limitations:	Avoid spring and fall mud season
Terrain:	Gentle slope, scattered low wet areas
Access and landing area:	Good access from Poor Farm road, need to establish landing site. Balch road needs improvement if used.
Access distance:	Up to 1/2 mile
General maintenance:	Maintenance on Balch road necessary- drainage, smoothing; establish landing
Brook-wetland crossings/buffer requirements:	Several wetlands need to be avoided

STAND SUMMARY
AND
10-YEAR MANAGEMENT SCHEDULE

Stand 3 includes the bulk of the planted pine, and the abandoned agricultural land that grew to a mix of pine and red maple. It includes the north-south running drumlin west of Poor Farm Marsh. This stand also includes vast stonewalls, the old barn site on the east side of Poor Farm Road, and the hand dug channel.

The forest is dominated by white pine, about 50%, and red maple with other hardwoods. Regeneration is dominated by ash and sugar maple, indicative of fairly nutrient rich soils.

The pine quality is generally poor, with only 34% of the sawtimber in acceptable growing stock. There is roughly 3,000 feet of pine sawtimber per acre, but 3/4 of that is low grade. Some of the plantations have been thinned over the years, but they are overstocked at this point. There is some red rot, and a small amount of white pine blister rust, as well as some weevil damage. The pine quality is likely not going to improve much, only increase in volume.

This site seems to be a hardwood site, likely capable of growing some decent northern hardwoods. Silviculture here should focus on allowing the site to convert to hardwoods.

Silviculture: The focus of management here will be to regenerate areas of the stand where the overstory quality is poor, and to improve quality and growing conditions on sections of the stand with adequate quality to retain.

Stand3a/3b: 2014
Stand3c: 2015

Regenerate and improve stand quality through:

- **Modified overstory removal** in patches were the overstory pine and hardwoods are poor quality and regeneration is already established. Leave 30-40 square feet of overstory basal area for structure and shelter.

- **Seed Tree** in areas where regeneration is not established. Attempt to leave individual pine seed trees or small groups of overstory pine seed trees scattered through the stand. Leave approximately 8 individual trees or 8 small groups of tree per acre (approximate spacing of 75'x75').
- **Thin** in pockets where quality is high enough to retain overstory.

Cultural Resources: Maintain 25' buffer around historic features described on page 24.

Wildlife: Wildlife habitat here will become more diverse as a multiple age structure is developed. Any treatments that promote hardwood regeneration will likely benefit deer, moose and rabbits by providing better browse opportunities. Multiple age classes help to ensure there is always a level of browse for wildlife. Specific wildlife habitat improvements will include retaining hard mast producing hardwoods; retaining beech trees with evidence of bear use; creating hardwood browse especially in areas with low-valued or poor vigor trees; creating standing snag trees by girdling some large white pine with no commercial value; creating down woody debris by felling and leaving some large white pine on the forest floor.

- Create additional down logs by felling up to 5 trees > 18" in diameter per acre.
- Maintain existing snags and large down logs.
- Maintain travel corridor around wetland with at least 65-70% canopy cover.
- Maintain forested edge of wetland to protect water quality
- **Follow wetland and wildlife management recommendations** on page 9 and 14 respectively.

Stand 4 HE-WP 34A 29.6 acres


Stand Structure


Forest Canopy


Forest Floor

GENERAL ATTRIBUTES

Natural Community Type:	Hemlock-white pine forest
Past Management History:	No recent management
Approximate Age of Dominant Trees:	70-90 years old
Stand Health:	Generally good
Insects/Damage/Disease:	Some weevil, white pine blister rust and red rot in white pine

SITE CONDITIONS

Determined by:	Soil map & onsite observation
Tree vigor:	Medium
Soils:	Tunbridge-Lyman-Monadnock Complex; Becket stony fine sandy loam; Marlow stony loam; Marlow loam
Drainage:	Well drained
Terrain:	Gentle to steep slope
Aspect:	Variable

Snags Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"		4.3	21.4	25.7
12-18"			2.0	2.0
>18"				
Grand Total		**4.3**	**23.4**	**27.8**

Table 4.1: Standing dead trees per acre by size and decay class.

Down Logs Per Acre

DBH Class	Moderately punky	Punky throughout	Sound	Grand Total
<12"		8.2		8.2
12-18"	2.0	2.7		4.7
Grand Total	**2.0**	**10.9**		**12.9**

Table 4.2: Standing down logs per acre by size and decay class.

WILDLIFE HABITAT

Forest type:	Hemlock-white pine forest
Vertical diversity:	Medium
Vegetative diversity:	Medium to low
Hard mast:	Pine seed
Soft mast:	Blueberry
Special habitat features:	Dense softwood stand adjacent to several wetlands; good perch and nesting sites
Snag trees:	Mostly small diameter
Down logs:	Fair amount, good size distribution
Special wildlife practices:	Create additional large diameter snags; leave cull trees for wildlife; create small openings for structure; protect wetlands

RECREATION

Recreational features:	Hiking trail system
Recreational infrastructure:	Trail blazes, interpretative trail, map
Aesthetic resources:	Large hemlock and white pine overstory with open understory
Public access:	Open, no wheeled vehicles

SILVICULTURE

Structural and Silvicultural Attributes

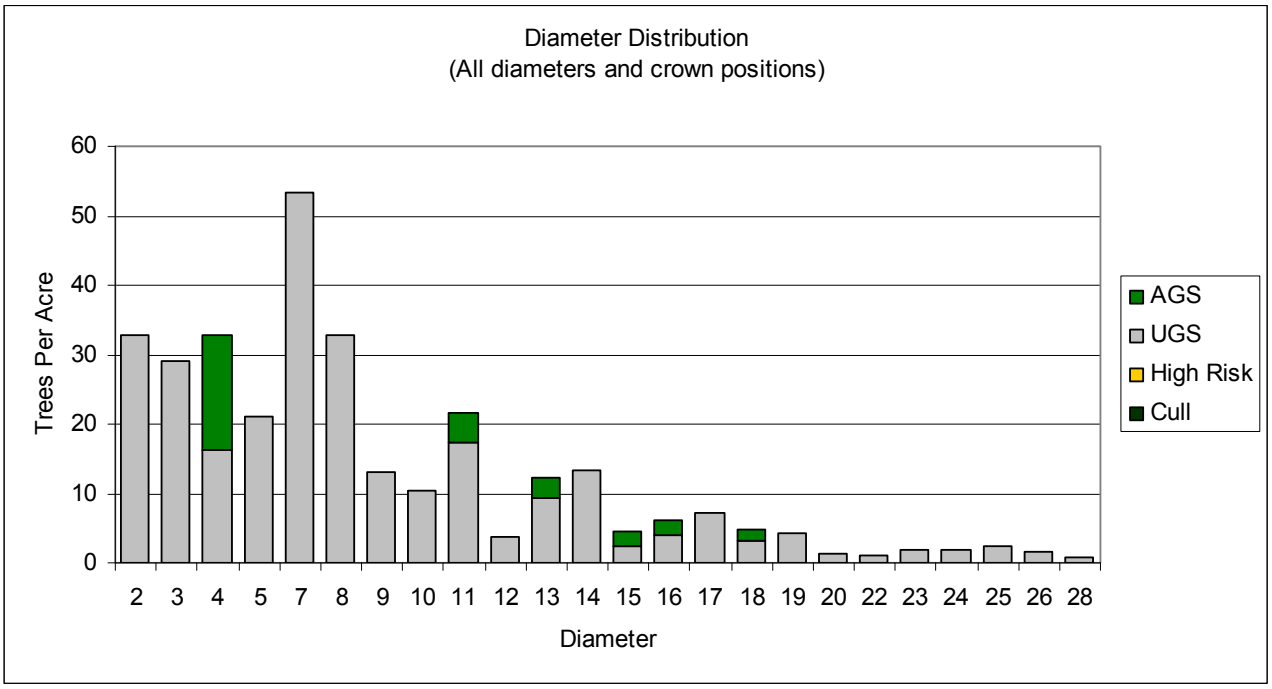
Broad Forest Type:	S34A
Size Class:	Small to large sawtimber
Stand Structure:	Evenaged
Crown Closure:	95%
Total Basal Area Per Acre:	165
Total Merchantable Basal Area Per Acre:	160
Total Acceptable Basal Area Per Acre:	16
Trees Per Acre:	314
Quadratic Mean Stand Diameter:	9.8
Percent AGS Sawtimber:	34.5%
Basal Area of AGS Sawlogs:	14
Timber Quality:	Variable

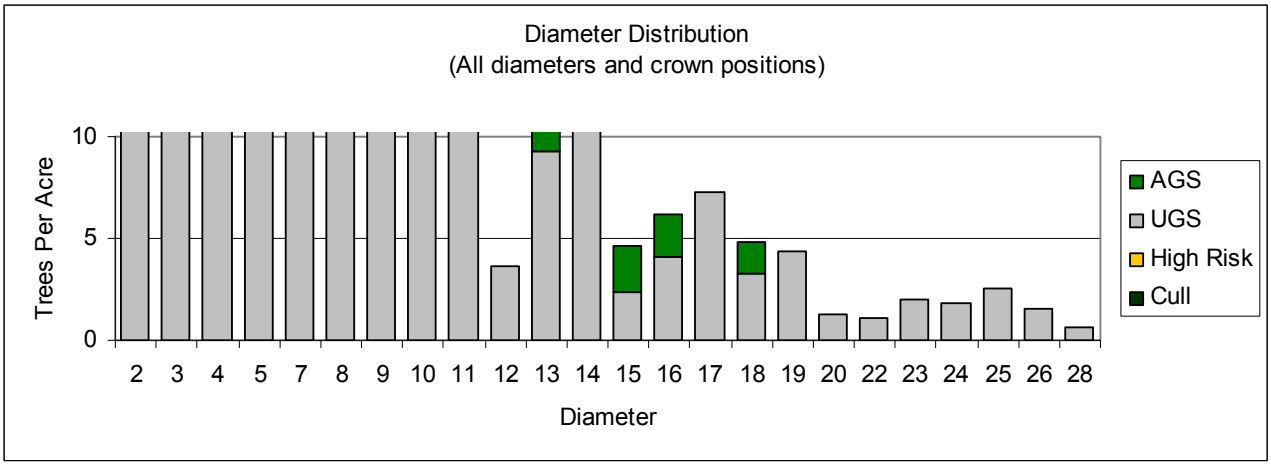
Forest Composition and volume

Species	% TPA	Sawlog (bf)	Pallet/Tie (bf)	Pulp (cd)	Growing Stock (cd)	Legacy (cd)	Total Volume in Cords	High Risk	AGS Saw	% AGS Saw
Red Maple	7.4%	0	0	1.3	0.0	0.0	1.3	0.0	0	0%
White Birch	6.7%	233	0	1.0	0.0	0.0	1.4	0.0	0	0%
Total Hardwood Per Acre:	*14.1%*	*233*	*0*	*2.3*	*0.0*	*0.0*	*2.8*	*0.0*	*0*	0%
Hemlock	58.7%	0	0	17.4	0.0	0.0	17.4	0.0	0	0%
White Pine	27.2%	1,845	2,709	26.1	0.0	0.0	33.9	0.0	1,654	36%
Total Softwood Per Acre:	*85.9%*	*1,845*	*2,709*	*43.5*	*0.0*	*0.0*	*51.3*	*0.0*	*1,654*	36%
Total Volume Per Acre:	100.0%	2,077	2,709	46	0	0	54	0	1,654	35%
Stand Volume:		61,490	80,192	1,356	0	0	1,601	0	48,951	

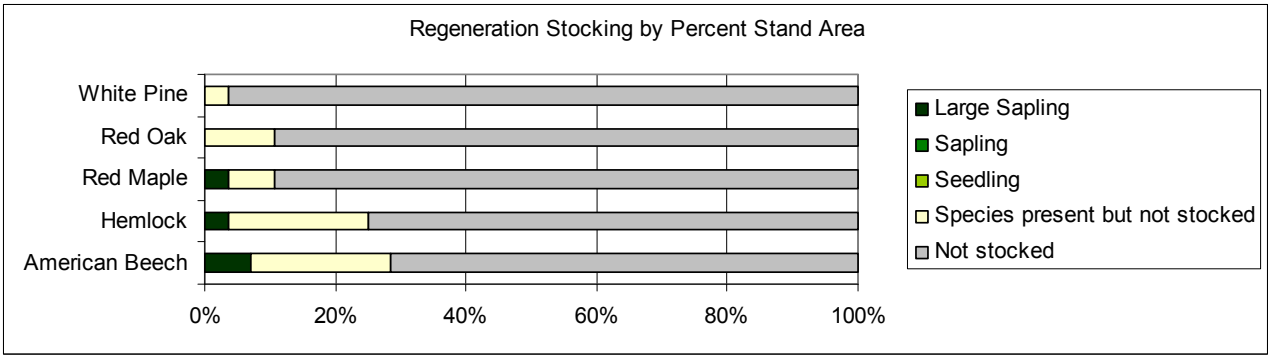
Table 4.3: Stand volume by species and product per acre values.

Graph 4.1a and 4.1b: Diameter distribution showing trees per acre on the Y axis, diameter class on the X axis and tree condition. Includes trees in all canopy positions down to 2 inches in diameter. 4.1b provides a close-up of the breakdown in the larger diameter classes.

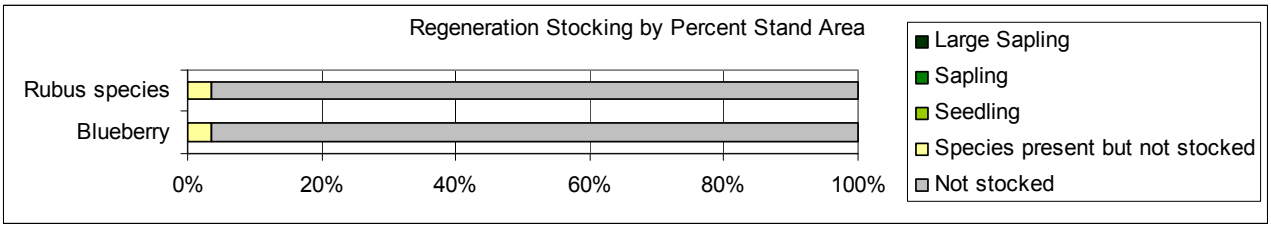




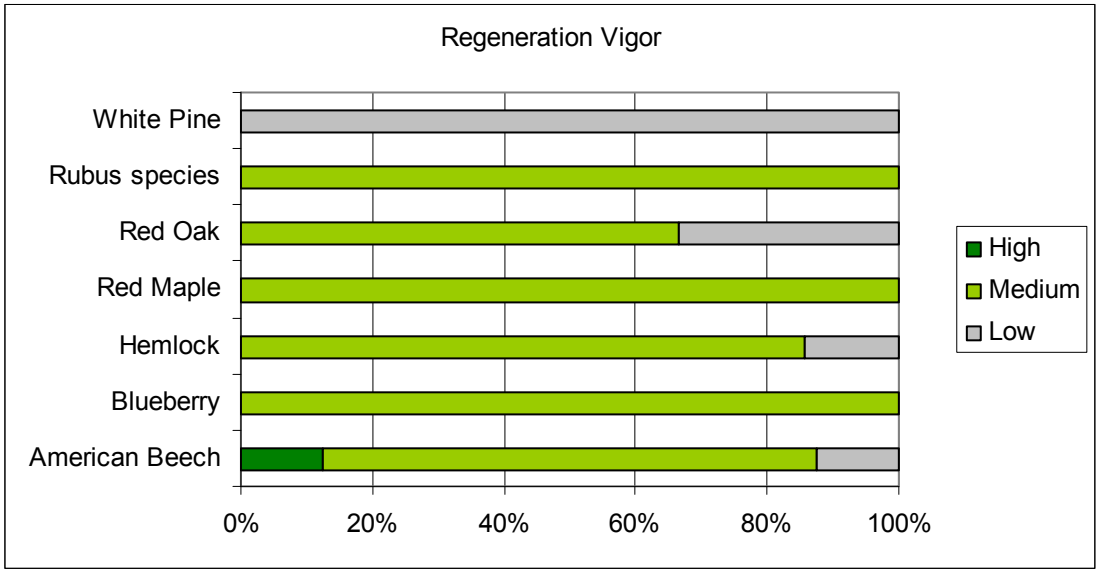
Graph 4.2: Regeneration stocking by percent of stand, species and stocking class. The species is considered "stocked" if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter (Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



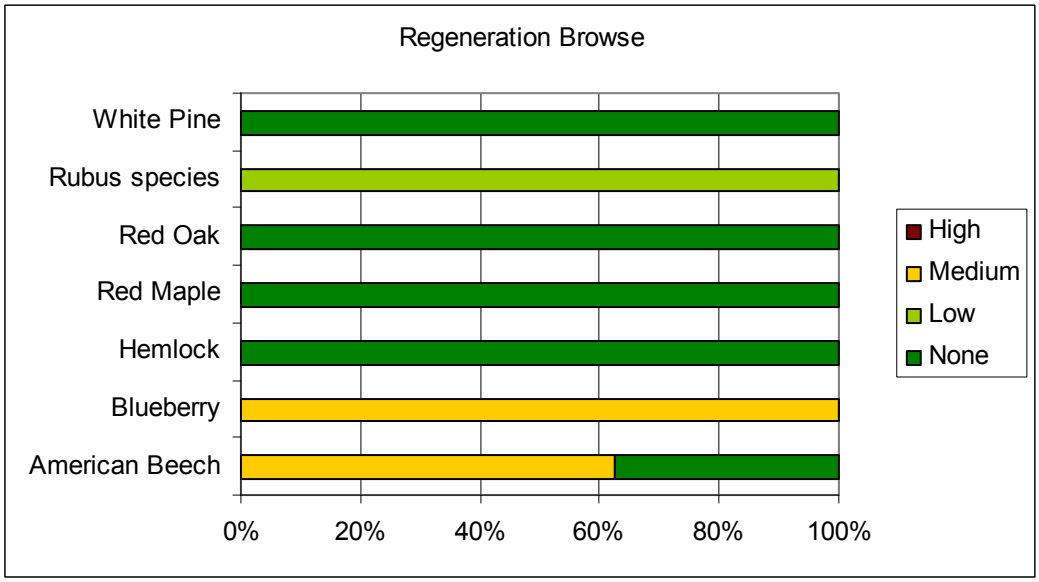
Graph 4.3: Shrub and competing species regeneration stocking by percent of stand, species and stocking class. The species is considered "stocked" if it meets at least one of three stocking levels including 2 stems between 0.5 and 1.5 inches diameter(Large Sapling), 5 stems between 3 and 5 feet tall (Sapling), or 25 seedlings less than 3 feet tall (Seedling). If a species is present but does not meet one of these conditions, it is recorded as present but not stocked.



Graph 4.4: Vigor of all regeneration and shrub species.



Graph 4.5: Browse level of all regeneration and shrub species.



Silvicultural Objectives

Management system:	Convert to multiple age
Harvest Entry:	10-15 years
Products:	Hemlock and pine sawlogs and pulpwood
Desired Composition:	Maintain hemlock and pine
Crop tree target diameter:	HE 18" WP20-22"

Operational Considerations

Operability:	Operable
Seasonal limitations:	Avoid spring and fall mud season
Terrain:	Gentle to steep slope
Access and landing area:	Good access from Poor Farm road, need to establish landing site. Balch road needs improvement if used.
Access distance:	Up to 1/2 mile
General maintenance:	Maintenance on Balch road necessary- drainage, smoothing; establish landing
Brook-wetland crossings/buffer requirements:	Several wetlands need to be avoided

STAND SUMMARY
AND
10-YEAR MANAGEMENT SCHEDULE

Stand 4 is a hemlock-white pine stand, with some of the best quality pine on the tract. It is fairly dense, with little to no understory, and occurs on two relatively dry, high shoulders in the southwest corner of the forest.

The stand is 59% hemlock, 27% pine, with scattered red maple and white birch. The hemlock is poor to fair quality, typical for hemlock. The timber data shows over 4,000 feet of variable quality pine sawtimber per acre, with about 2/3 of that as low grade.

The soils are well drained despite a large wetland bisecting the stand into 2 areas. There are fairly steep slopes leading down to the wetland.

Regeneration is sparse, dominated by shade tolerant hemlock and American beech, with some red maple as well.

The long-term goal of management in this stand is to maintain the hemlock and pine, and increase overall quality of the stand while also developing and maintaining distinct age classes of quality trees of species well suited to the site. The age classes will exist primarily as pockets of similarly aged trees mixed throughout the stand. This multiple-age composition will provide a diversity of forest structure beneficial to wildlife and will provide opportunity for a mix of silvicultural operations.

Silviculture: The focus of management here will be to improve growth on the better quality trees in the overstory and midstory and create more age classes by removing groups of low value, mature or low vigor overstory and intermediate stems while thinning the residual trees for increased vigor and quality.

Stand 4a/4b: 2014

Reduce overall basal area to approximately 100-110 square feet through:

- **Group Selection:** Create openings of single trees and groups of 5-10 trees to establish or release intermediate shade tolerant and intolerant regeneration. If harvest is to be done in the summer, scarifying areas with no regeneration or areas of undesirable seedlings/saplings will help promote the regeneration of light seeded individuals such as birch, hemlock, and pine.
- **Single Tree Selection:** Focus removal of maturing white birch where it exists.
- **Crop Tree Release:** In between groups release crop trees of high quality and vigor. Release selected crop trees on at least 2 but preferably 3 sides. This will also promote regeneration of tolerant hardwoods and hemlock.

Cultural Resources: Maintain 25' buffer around historic features described on page 24.

Wildlife: Wildlife habitat is somewhat diverse, offering areas of dense softwood cover, some hard mast production, browse opportunities in groups, beaver activity, and riparian/wetland habitat. Any treatments that promote hardwood regeneration will likely benefit deer, moose and rabbits by providing better browse opportunities. Specific wildlife habitat improvements will include retaining hard mast producing hardwoods; increase blueberry production along wetland; and maintaining the strong softwood overstory component to provide cover.

- Maintain existing snags and large down logs.
- Use group selection to regenerate hemlock and white pine for future cover
- Maintain travel corridor along wetland edge

Poor Farm Forest

TOTAL FOREST TIMBER AND PULP VOLUME
August, 2011
144.1 Forested Acres

Species	Sawlog (BF)	Tielog (BF)	Total BF	Pulp (CDS)	Growing Stock (CDS)	Cull (CDS)	Total Volume in Cords	% Cords
Hardwood								
American Beech	8,906	5,285	*14,191*	294	0	18	*337*	*5.7%*
Black Birch	3,367	2,577	*5,944*	155	13	0	*180*	*3.1%*
Black Cherry	0	0	*0*	17	0	0	*17*	*0.3%*
Red Maple	3,113	28,917	*32,030*	661	39	18	*765*	*13.0%*
Red Oak	96,587	47,876	*144,463*	389	94	0	*737*	*12.5%*
Sugar Maple	0	3,796	*3,796*	90	4	5	*106*	*1.8%*
White Ash	0	0	*0*	18	23	0	*41*	*0.7%*
White Birch	10,719	2,939	*13,658*	185	0	0	*211*	*3.6%*
Yellow Birch	0	4,022	*4,022*	12	0	0	*20*	*0.3%*
Total Hardwood:	122,692	95,412	218,104	1,821	173	41	*2,414*	
Softwood								
Hemlock	2,854	0	*2,854*	684	0	35	*699*	*11.9%*
White Pine	84,635	148,076	*232,710*	2,340	0	282	*2,780*	*47.2%*
Total Softwood:	87,489	148,076	235,564	3,024	0	317	*3,479*	
Total Volume:	210,181	243,488	453,668	4,845	173	358	*5,893*	

POOR FARM FOREST

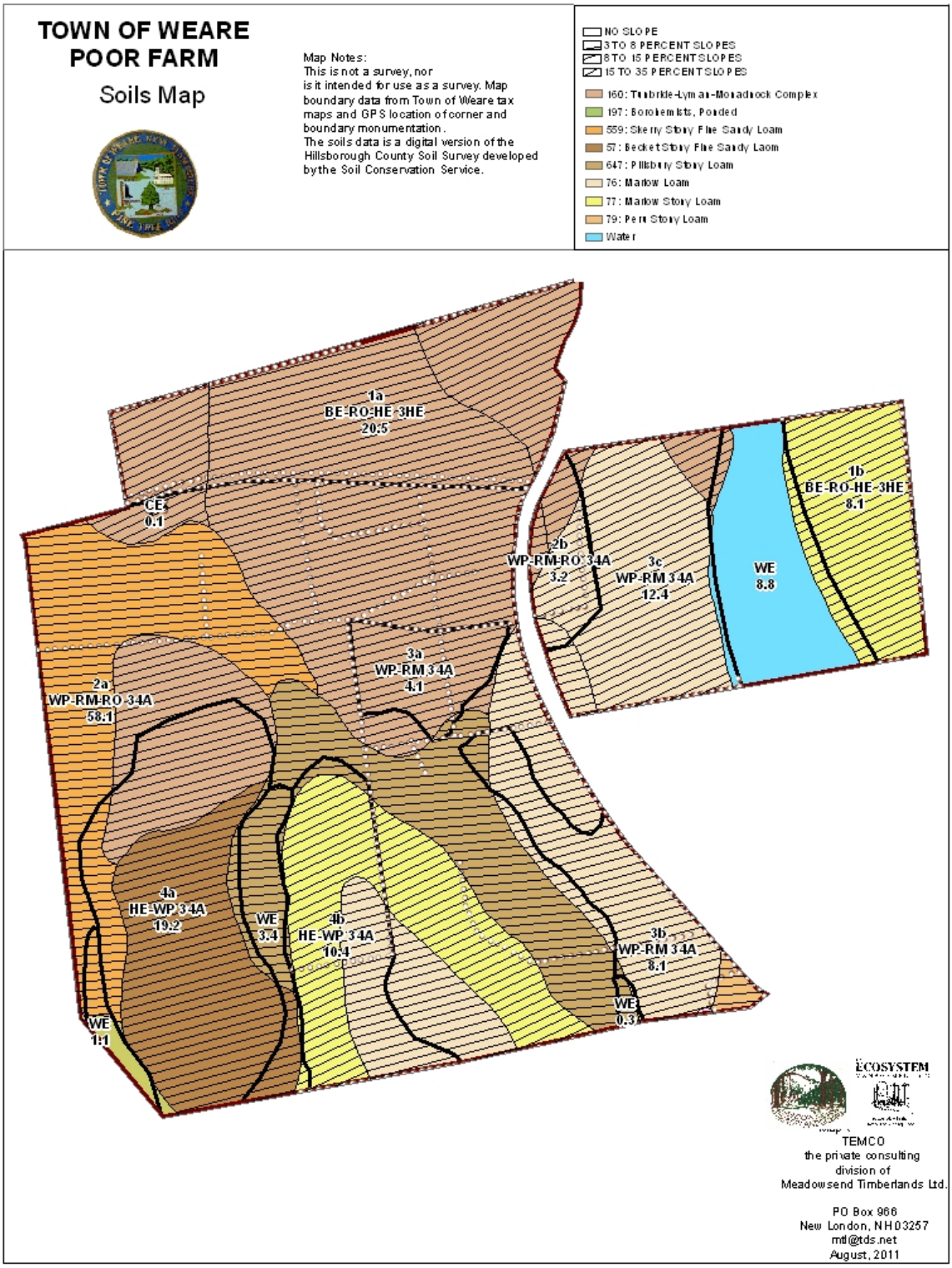
10-YEAR TREATMENT SCHEDULE

The dates given in this treatment schedule are meant to help prioritize work on the entire Weare ownership. It is meant to be flexible and may change due to weather and market conditions or to unforeseen opportunities and access issues. The treatment activities may change due to the same reasons if silviculturally justifiable and agree with landowner mission, principles and management objectives.

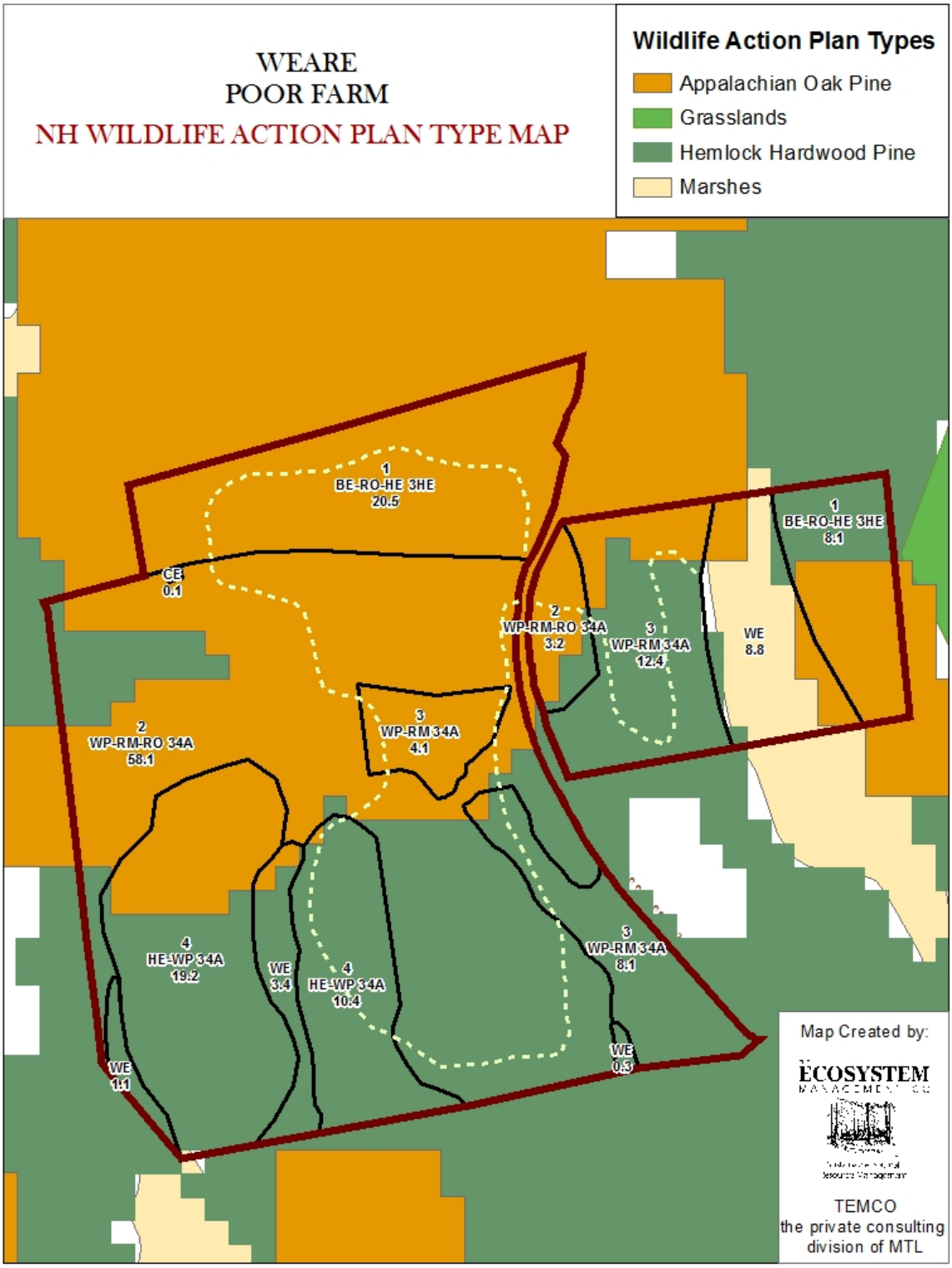
The entire Poor Farm Forest may be treated during the same year if conditions permit.

Stand #	Acres	Treatment	Priority	Year
1a	**20.5**	Group selection/Patch Cut/Crop tree release	**High**	**2014**
1b	**8.1**	If access is granted: Group selection/Patch Cut/Crop tree release	**Med.**	**2015**
2a	**58.1**	Single Tree/Group selection/Crop tree release	**High**	**2014**
2b	**3.3**	Single Tree/Group selection/Crop tree release	**Med.**	**2015**
3a/3b	**12.2**	Modified OSR/Seed Tree/Thin	**High**	**2014**
3c	**12.4**	Modified OSR/Seed Tree/Thin	**High**	**2015**
4a/4b	**29.6**	Single tree/group selection/Crop tree release	**Med.**	**2014**
		Paint boundary lines	**High**	**ASAP**
all		Reevaluate and update management plan		**2021**

APPENDIX A: SOILS MAP


TOWN OF WEARE
POOR FARM
Soils Map
Map Notes:
This is not a survey, nor
is it intended for use as a survey. Map
boundary data from Town of Weare tax
maps and GPS location of corner and
boundary monumentation.
The soils data is a digital version of the
Hillsborough County Soil Survey developed
bythe Soil Conservation Service.
NO SLOPE
3 TO 8 PERCENT SLOPES
8 TO 15 PERCENT SLOPES
15 TO 35 PERCENT SLOPES
160: Tunbridge-Lyman-Monadnock Complex
197: Borohemists, Ponded
559: Sherry Stony Fine Sandy Loam
57: Becket Stony Fine Sandy Loam
647: Pillsbury Stony Loam
76: Marlow Loam
77: Marlow Stony Loam
79: Peru Stony Loam
Water
1a
BE-RO-HE-3HE
20.5
1b
BE-RO-HE-3HE
8.1
CE
0.1
2b
WP-RM-RO-34A
3.2
3c
WP-RM-34A
12.4
WE
8.8
3a
WP-RM-34A
4.1
2a
WP-RM-RO-34A
58.1
4a
HE-WP-34A
19.2
WE
3.4
4b
HE-WP-34A
10.4
3b
WP-RM-34A
8.1
WE
0.3
WE
1.1
ECOSYSTEM
TEMCO
the private consulting
division of
Meadowsend Timberlands Ltd.
PO Box 966
New London, NH 03257
mtl@tds.net
August, 2011

APPENDIX B: WILDLIFE ACTION PLAN MAP


WEARE
POOR FARM
NH WILDLIFE ACTION PLAN TYPE MAP
Wildlife Action Plan Types
Appalachian Oak Pine
Grasslands
Hemlock Hardwood Pine
Marshes
1
BE-RO-HE 3HE
20.5
CE
0.1
2
WP-RM-RO 34A
58.1
3
WP-RM 34A
4.1
2
WP-RM-RO 34A
3.2
3
WP-RM 34A
12.4
WE
8.8
1
BE-RO-HE 3HE
8.1
4
HE-WP 34A
19.2
WE
3.4
4
HE-WP 34A
10.4
3
WP-RM 34A
8.1
WE
1.1
WE
0.3
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