



**SAXON HILL TOWN FOREST
TOWN OF ESSEX AND
ESSEX WESTFORD SCHOOL DISTRICT**

**ESSEX,
VERMONT**

APRIL, 2020

*REVISED 6.9.2025 & 9.8.2025 Both to: reflect more accurate
operational dates and clarify silvicultural prescriptions*

FOREST MANAGEMENT PLAN for

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TABLE OF CONTENTS

	Page No.
I. Property Data Summary	1
II. Forest Management Plan Goals	1
III. Property Description	1
IV. Property History	
V. Forest Natural Resources	3-8
-Special Sites and Social Considerations	
- Water and Soil Protection	
-Fish, Wildlife and Biodiversity	
-Management of Forest Resources	
VI. Stand Analysis	8-44
VII. Schedule of Management Activities	45

APPENDIX

- ° Forest Stand Map
- ° Glossary
- ° Suggested Reading List

I. PROPERTY DATA SUMMARY:

Prepared For: Town of Essex and Essex Westford School District

Address: 81 Main Street
Essex Junction VT 05452

Town Where Land Is Located: Essex, Vermont

Acreage: Town of Essex: 245 Acres
Essex Westford School District: 90 Acres

Ortho Photo Number: 108220, Saxon Hill Series 5000, 2018

II. FOREST MANAGEMENT PLAN GOALS:

This Forest Management Plan for Town of Essex and Essex Westford School District property is designed to serve several functions. These are as follows:

- to analyze the forest and natural resources on the property
- to make recommendations for any timber stand improvements that may be possible in light of current stand conditions
- to incorporate the results from the 2019 Saxon Hill Town Forest Vision Framework report
- to outline a comprehensive Schedule of Management Activities for plan implementation

III. PROPERTY DESCRIPTION: The Saxon Hill Town Forest is a cumulative 335-acre parcel of forestland located east of Sand Hill Road and east of Allen Martin Drive between Routes 15 and 117. The parcel is almost entirely forested with the exception of a few small wetlands (former reservoirs). The primary access point is off of Thompson Drive where there is a parking area.

The adjacent landscape is an assemblage of developed land (both residential and industrial). The property is situated within a 1,546 acre unfragmented forestland block. The Saxon Hill Town Forest is located in the Champlain Valley biophysical region. This region is characterized as the “banana belt” of Vermont, being low, warm and relatively dry. The Champlain Valley was covered with sea water approximately 13,500 years ago and has some of the oldest rocks in the northeast. Post-glacial deposits have developed prime agricultural soils throughout the region.

The property is situated in the Winooski River Watershed.

The majority of the property is situated on sand which was deposited from glacial lakes. These lakes were formed as the glaciers began retreating over 12,000 years ago. The easternmost portion of the property, on the school district lands, where the highest elevations occur, is situated on glacial till and exposed bedrock. There are numerous bedrock exposures throughout the School District parcel. Elevations range from 380' to 940'. The Town land is generally flat with the exception of two drainage systems that form into one and feed a stream into the Winooski River. There was an active pit that extracted much needed high-quality sand to the Burlington area for about ten years.

There are several trails and roads which traverse through the property. These consist of maintained recreational trails, access roads, old skid trails and old fire breaks. At least two potential ancient archeological sites have been identified and preserved from development.

IV: PROPERTY HISTORY: The 245-acre portion of the Saxon Hill Forest is part of what was once an 800-acre parcel owned by the town. The forest was established as a water conservation area for the Village of Essex Junction in the early 1900s. Between 1924 and 1944, 574,600 trees were planted (*Historical Analysis of Two Town Forests in Essex Vermont, 2017*) Additional planting continued into the late 1960s. These plantations have been a continuous timber resource for the property. Local mills and businesses have benefited from the timberlands on the property. In 1951, a conservation plan was prepared for the 800-acre Saxon Hill Forest. Management recommendations made in the plan included harvesting, fire prevention and planting of over 3,000 red pine seedlings (*Essex Junction Water Department Conservation Plan, 1951*). The Department of Forests, Parks and Recreation oversaw harvesting and planting activities on the parcel through the 1970s.

In 1978 the 650 acres were sold to Forestdale Heights, Inc. The 650 acres were managed by Dan Batchelder and subsequently Scott Moreau of Greenleaf Forestry. Greenleaf Forestry has been responsible for the forest management of the 650 acres since about 1997. In 2012 the 650 acres was purchased by Allen Brook Development. The Town purchased the 245 property from Allen Brook Development in 2017. The balance is owned by private landowners.

The 90 acres owned by the Essex Westford School District were deeded to the Town in 1978. Since 2004, the school district has leased this land to the Town of Essex for public recreation (*Historical Analysis of Two Town Forests in Essex Vermont, 2017*). No silvicultural treatments have occurred on this parcel likely since the 1970s.

The history of each stand is described in the Stand Analysis section of this plan.

V. FOREST NATURAL RESOURCES

Special Sites and Social Considerations

The Saxon Hill Town Forest is an important recreational resource for the Town of Essex and surrounding communities. There are miles of recreational trails which are used for mountain biking, snowshoeing, cross-country skiing and hiking, among others. Other passive recreational uses include birdwatching and wildlife viewing. In the Saxon Hill Vision Framework, recreation ranked as the top management focus by survey respondents. Careful planning and layout of silvicultural management activities is necessary to ensure there is limited impact to the recreational trail system.

Special Sites are discretionary to the individual. There may be a vista or area near a stream which one person reveres while another person might revere a place to sit in the middle of the woods or a large rock.

The old fire tower location at the top of Saxon Hill is a special site on the property. This area has is actively disturbed by recreational use. A 50' buffer around the old fire tower site should be maintained within which limited or no cutting occurs.

Management planning must involve public input regarding the location(s) of significant and renowned special sites so they can be protected during management activities.

Water and Soil Protection

Water and soil protection is important for the long-term health and productivity of forests. The water resources on the property include streams, wetlands, vernal pools and seeps. Prevention of erosion is the first step in maintaining water quality in these resources. Implementation of acceptable management practices (AMPs) during and after silvicultural management activities will ensure water quality is maintained in the forest. There is one trail on the school district land that is actively eroding. This trail is located in Stand S3, east of the water district outlot and adjacent to the corner with Villeneuve. A plan for remediation should be developed to stop the erosion and prevent future erosion.

In the event of a natural disaster (flood, major windstorm, ice storm, wildfire) a plan for salvage and mitigation of the damaged forest resources would be developed.

The forest soils present on the Saxon Hill Town Forest are Adams-Windsor, Agawam, Au Gres, Cabot, Duane and Deerfield, Lyman-Marlow and Peru:

Adams Windsor loamy sands

Adams soils developed in sandy beaches, deltas and terraces. They consist of deep, loose, excessively drained soils that are sandy throughout. These soils have a very low natural fertility and a moderately low available moisture capacity. These soils have been farmed intensively in Chittenden County, but many areas are now in trees or brush or have been developed. Windsor soils, like Adams, are also excessively drained, deep soils. These soils are filled to capacity with

available moisture at the start of the growing season and are rarely replenished over the course of the growing season. As a result, plants are apt to show drought signs towards the end of the growing season. These two soils were mapped as one complex in Chittenden County. Both soils are moderately suited to roads, have a slight erosion hazard and are well-suited to harvest equipment.

Agawam fine sandy loams

Agawam soils formed in water or wind-laid sand and occurs mainly along the Winooski and Lamoille Rivers just above the flood plain. These soils are deep, friable and well-drained. Their available water capacity is medium and their natural fertility is low, but the soils are easily tilled and able to be cultivated. These soils are mainly used as agricultural land. Where forestland occurs, white pine, red oak and northern hardwoods grow well on this soil type. Slopes range from 0-60%.

Au Gres fine sandy loams

Au Gres soils developed on water-deposited sand and gravel on terraces, outwash plains and lake plains. They are deep, loose, level to gently sloping and somewhat poorly drained. These soils have a moderately low available moisture capacity and low natural fertility. They are saturated with water from late in fall to late in spring, but water disappears during summer. The wetness of this soil is the biggest limitation to plant growth, harvest equipment operability, and roads. Erosion hazard is slight.

Cabot stony fine sandy loam

Cabot soils are formed on glacial till of Wisconsin age and are mainly found on foothills and mountains east of the Champlain Valley. Slopes range from 0-8%. Cabot soils are Site Class II and are poorly drained. Natural fertility is very high while available water capacity is moderate. Wetness and large stones on the surface may restrict the use of equipment in some areas. There is a seasonally high-water table which may limit harvest equipment operability and road suitability.

Duane and Deerfield

Duane and Deerfield soils formed in water-deposited sand and are found in hills between the Champlain Valley and the Green Mountains. These soils are moderately well drained and have a very low natural fertility. Air and water move freely through the horizons above the seasonally high-water table. Much of these soils are farmed. Where forestland occurs, Hemlock, Northern Hardwood and White Pine are natural communities associated with this soil type.

Lyman-Marlow very rocky loams

Lyman soils formed on loamy glacial till and Marlow soils formed in loamy, compact glacial till on uplands. These soils are found in the Green Mountains and the foothills to the east of the Champlain Valley. These soils have a very low natural fertility and moderately low available moisture capacity. These soils dry out quickly and as a result plant growth slows during

midsummer when the soils dry out. Lyman and Marlow soils are generally so closely intermingled that they are not mapped separately in Chittenden County. Slope is the greatest limiting factor in suitability for harvest equipment, roads and the risk of erosion.

Peru stony fine sandy loam

Peru soils are found on the Green Mountains and foothills. Slopes range from 3-25%. They are deep to bedrock and moderately well drained. These soils are derived from glacial till. Peru soils have moderate available water capacity and soil fertility. The acidity of the surface layer is the main limitation. These soils are Site Class I and are well-suited for harvest equipment operability and road suitability. There is a slight erosion hazard due to a seasonally high-water table.

Fish, Wildlife and Biodiversity

With some exceptions, wildlife benefit from careful manipulation of the land. Forest management activities create openings in the forest canopy, create slash for cover, and stimulate re-growth for wildlife browse and fruit and seed production. These objectives should be considered and integrated into each prescribed silvicultural and/or Stewardship practice.

There are several wildlife features on the Saxon Hill Forest including beaver wetlands, riparian areas, mast stands and the presence of mast producing species adds to the wildlife significance of the property. Northern Red Oak and American beech are the most predominate mast trees present. Black cherry, ironwood and basswood, all mast producers, are also found. When feasible, these should be retained for wildlife.

The streams and wetlands located on the property are important to a number of invertebrate and mammal species including, but not limited to salamanders, newts, frogs, beaver and all those species that feed on them.

Dead and dying trees could be retained to serve as perches for predatory birds such as owls and hawks as well as for den trees for a variety of wildlife species. Increasing the population of prey, such as rodents, by leaving piles of brush, could also improve the habitat for predatory birds.

The Vision Framework respondents indicated the following items as natural resources of note on the forest:

- Deer Wintering Area
- Vernal Pools
- Large Ledges or Cliffs
- Groundwater Seepage Areas
- Forested Swamps (*None found on the property*)
- Rare Plants or flowers

Deer Wintering Area – Although no deer wintering habitat is explicitly mapped on the property, there are several stands with dense softwood cover. These softwood stands provide thermal cover during the winter months. Many of these stands are regenerating into a mixture of

hardwoods and softwoods, and so manipulation of the regeneration would be necessary to proliferate a softwood-dominated overstory. In areas where abundant softwood regeneration exists the goal is to perpetuate the softwood overstory, maintain deer mobility and provide browse.

Vernal Pools – Vernal pools are small, ephemeral bodies of water which occur in forest depressions. They have a very small watershed and most pools are smaller than 5,000 square feet. They provide critical habitat for amphibians and invertebrates that use these pools for breeding. Where identified, vernal pools should be protected by a 50-foot buffer in which light cutting, if any, should take place. There are several vernal pools located on the Town Forest property.

Large Ledges or Cliffs – There is one ledge of note on the school district parcel. This ledge is noted on the map. At least a 25-50' buffer will be maintained adjacent to this ledge during silvicultural management activities to ensure its protection.

Groundwater Seepage Areas – Woodland seeps are small wetlands with moving water. They provide important wildlife habitat and a steady flow of cold, clean water and are usually located near the headwaters of perennial or ephemeral streams. One seep was located on the school district parcel at the base of the ledge mentioned in the above paragraph. This seep should be protected by a 50-foot buffer in which light cutting, if any, should take place.

Rare, Threatened or Endangered Plants and Natural Communities – Due to rapid declines in species populations and habitat loss, special attention must be paid to the presence of rare, threatened or endangered species or natural communities. An “endangered” species is any species which is in danger of extinction within the foreseeable future throughout all or a significant portion of its range. A “threatened” species is defined as any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its habitat range. The State of Vermont describes species on their relative rarity (abundance) or endangerment throughout its range by using a ranking system. The ranks, preceded by an S (State) and G (Global), are as follows:

1. Very Rare (Critically Imperiled) At very high risk of extinction due to extreme rarity; Very steep declines in number of populations or occurrences
2. Rare (Imperiled) At high risk of extinction or extirpation due to very restricted range; Steep declines in number of populations or occurrences
3. Uncommon (Vulnerable) At moderate risk of extinction or extirpation due to restricted range; Relatively few populations or occurrences
4. Common to uncommon (Apparently secure) Locally common or widely scattered to uncommon, but not rare. Some cause for long-term concern due to declines
5. Common (Secure) Widespread and abundant

There are three state-mapped occurrences of Many-Leaved Sedge (*Scirpus polyphyllus*-G5/S3) which was last observed in 2009 by the Vermont Natural heritage program. This species was previously state listed as threatened but was found to be more common and was eventually de-listed.

Natural communities are assemblages of organisms, their physical environment and the natural processes that affect them. There are no state-mapped rare, uncommon or endangered natural communities on the Saxon Hill Town Forest.

Management of Forest Resources

The goal of management will be to maximize tree growth for a healthy, diverse forest while maintaining and improving wildlife habitat, recreation, and aesthetics at all times. A specific description and recommendation for individual stands follows in Section VI. There is a diverse suite of species and stands on the Saxon Hill Town Forest property. The forest includes a mixture of desirable and undesirable species, well-formed and misshapen trees, healthy and diseased trees, young growing stock, immature and mature timber. Forest management is designed to harvest mature growth, improve the composition of desirable species and the proportion of desirable growing stock while maintaining or enhancing recreational, ecological and wildlife habitat features.

Management activities on the property are aimed at a thinning and harvesting program. This is designed to remove defective and mature trees, release better quality stems, and at the same time maintain an ideal stocking for the production of quality timber, while promoting the advancement and establishment of desirable reproduction.

Trees should be selected on their capability to produce future sawtimber as well as provide wildlife amenities such as mast, browse and cover.

Woods roads created by previous harvesting operations provide valuable access for ongoing silvicultural activities, future harvesting, and emergency access in case of fire. These roads should be maintained for future silvicultural use where possible.

Invasive Species – The presence of invasive plants has the potential to compromise the health and future productivity of Vermont’s forests. Although eradication in many cases is unachievable due to the extent of the infestation and/or the financial burden of control, options are available to mitigate or reduce the impact of invasive plants. These options may include manual control, and in some cases chemical treatment.

Should the landowner choose to undertake management activities, further education should occur regarding the impact of unfettered invasive plant spread as well as how silvicultural treatments have the potential to exacerbate the problem(s). Further, there will be additional discussions regarding control of invasive plants in the areas to be managed (for invasive plants).

Five invasive plant species were noted during the field cruise:

Shrub Honeysuckle
Common Buckthorn
Japanese Barberry
Coltsfoot
Phragmites/Common Reed

The locations of the populations, with the exception of Coltsfoot, are noted on the map accompanying this report. The Coltsfoot is located along most of the roads on the property. The populations of honeysuckle, buckthorn and barberry were small (fewer than 50 plants at each location). The Phragmites populations range in size from 10 to greater than 50 plants at each location.

V. STAND LEVEL INFORMATION

For management purposes, the forestland has been divided into stands, which are defined as areas of relative similarity (such as age, species, topography, etc.) which can be treated uniformly. The stands are identified on the Forest Stand Map which accompanies this report. The analysis of each stand is included in this section and contains a description, acreage, management objectives, and recommendations. Stand analysis data, collected during the field cruise, is included to quantify the unit characteristics and monitor changes associated with future growth. The estimated sawtimber volume and cordwood volume is indicated for each stand. A field cruise of the property was conducted on April 15, 17 2020 using a 10 BAF prism and simple random sample.

STAND ANALYSIS

Map Area 1

Acreage 7

Stand Type: Red Pine (Red Pine 94%) Other species noted include white pine, red maple and beech.

Natural Community Type: White Pine-Northern Hardwood Forest Variant

Age Structure: Two-Aged

Size Class: saplings & small sawtimber

Stocking: Adequate; about half way between the the B and A-lines on the red pine stocking guide, *Managers Handbook for Red Pine in the North Central States*, General Technical Report NC-33, Benzie

Approximate Stand Age: 15- & 75-years

Plot Count: 3

Stand Description: This stand is one of many red pine plantations that were planted all throughout the original 1,250-acre parcel that consisted of the Essex Waterworks lands. It is the last of a specific planting and is located on some of the land that gently slopes. Management will be minimal due to the slopes and the fact that while the stand is mainly intact it may be more prone to windthrow if treated.

Stand History: There have been multiple thinning's in this stand since around the mid 1940's and beyond. There have been a series of wind events that have gradually reduced the structure of the stand to competing hardwoods.

Recreational Features: This stand is remotely used for hiking and mountain biking. There is a not-to-commonly used trail that passes though the stand.

Wildlife Habitat Features: This area is an open structured stand that offers little in the way of snow cover. Beech, an important mast-producer, is found in the stand.

Forest Health Conditions: No insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Abundant; there are hardwood and saplings all throughout the stand mainly consisting of beech saplings with some groupings of abundant white pine seedlings and saplings and red oak saplings scattered about.

Acc. Basal Area/acre: 127 ft²

Total Basal Area/acre: 163 ft²

Stems/acre: 148

Mean Stand Diameter: 14.3 inches

Slope: 2-8%

Aspect: southerly

Site Class: III

Soils: Adams and Windsor loamy sands

Site Index: *by soils*

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and production of forest products utilizing even-aged silvicultural techniques

Desired Future Condition: This red pine stand is developing into a mixedwood stand of white pine and mixed hardwoods. The gradual removal of the red pine component will allow for transition to the mixedwood type. The white pine-hardwoods are currently in the sapling size class. Over time the stand will develop into a white pine-mixed hardwood type.

Silvicultural Prescription: Given the location of the stand on somewhat steeper slopes and the current stocking levels there is no silvicultural recommendation prescribed for the next ten-year period. Refer to Managers Handbook for Red Pine in the North Central States, General Technical Report NC-33, Benzie.

Product: Red Pine Sawtimber pulp

Rotation Age: 120 years

Sawtimber Volume/acre: 13,069 bd. ft.

Cordwood Volume/acre: 23 cords

STAND ANALYSIS

Map Area 2

Acreage 35

Stand Type: White Pine (White Pine 64%, Hemlock 14%) Other species noted include red maple, red spruce, red oak, white oak, beech, red pine, and Scots pine.

Natural Community Type: Hemlock-White Pine Forest Variant

Age Structure: Uneven-Aged

Size Class: Saplings to Large Sawtimber

Stocking: Adequate; just above the managed B-line on the white pine stocking guide, NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak and Lamson

Approximate Stand Age: 30 thru over 100 years

Plot Count: 7

Stand Description: This stand is located along the banks of an unnamed stream. Thus, the aspect is highly variable along the riparian areas. The brook that passes through the stand is fed by manmade ponds that were created to supply water to the Village of Essex in the early 1900s. There is evidence of old access trails and test wells all throughout the stand. This is a beautiful White Pine and Hemlock natural community. There are very few intact examples of this natural community.

Stand History: This stand was treated in 1997 and then a second much lighter thinning took place in 2007.

Recreational Features: There are multiple hiking and mountain biking trails all throughout especially in the easterly portions of the stand.

Wildlife Habitat Features: Due to the dense cover and the water source this stand is a great Deer Wintering Area.

Forest Health Conditions: There is some minor wind damage but very light. There are several small patches of Phragmites along the stream which runs between this stand and Stand 10. These groupings are manageable in size and should be managed right away using an aquatic-approved herbicide. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Adequate; There is an abundance of Hemlock and White Pine seedlings to small poles all throughout the stand. There are scattered saplings and small poles of various oak

species and Red Maple along with Beech

Acc. Basal Area/acre: 121 ft²

Total Basal Area/acre: 168 ft²

Stems/acre: 142

Mean Stand Diameter: 16.4 inches

Slope: 2-20%

Aspect: Variable to southerly

Site Class: II **Soils:** Agawam fine sandy loam and Au Gres fine sandy loam Windsor

Site Index: by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, protection of the riparian areas, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: This is a white pine-mixed hardwood-hemlock stand type that has developed along Allen Martin and Sand Hill Rd west of the stream. The site conditions have favored white pine since the stand's establishment over 100 years ago, and continue to do so as evidenced by the robust white pine regeneration. Desired species continue to be white pine, hemlock and mixed hardwoods (particularly red oak). The hemlock component provides shading from its dense mid-story growth for the riparian portions of the stand. The phragmites should be eradicated from the riparian area.

Silvicultural Prescription: Due to the current stocking level there is no silvicultural prescription recommended for the next ten-year period.

Control the Phragmites during this planning cycle to prevent further spread. Refer to publications NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson, NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985 and NE-41, *A Silvicultural Guide for White Pine in the Northeast* and NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al.

Product: White Pine and Hemlock sawtimber and pulp.

Cutting Cycle: 25-30 years; Desired diameter 24" all species

Sawtimber Volume/acre: 14,065 bd. ft.

Cordwood Volume/acre: 20cords

STAND ANALYSIS

Map Area 3

Acreage 9

Stand Type: Red Pine (Red Pine 100%) Associated species noted include white pine, red oak and hemlock

Natural Community Type: White Pine-Hardwood Forest Variant, Sand Plain Forest Variant

Age Structure: Two-Aged

Size Class: Saplings & Small sawtimber

Stocking: Adequate; about one third above the B-line on the Red pine stocking guide in *Managers Handbook for Red Pine in the North Central States*, General Technical Report NC-33, Benzie

Approximate Stand Age: 10 & 85 years

Plot Count: 2

Stand Description: There have been numerous treatments over the years. These have included crop tree releases and intermediate thinning. This stand was part of a larger stand that is now a portion of the current sand extraction site.

Stand History: This is a red pine stand was planted sometime in the 1930s. It was row-thinned about 15 years ago.

Recreational Features: There are numerous trails throughout portions of the stand and also portions of the stand have access to the reservoirs.

Wildlife Habitat Features: There is limited information to present in this category as the stand is somewhat open and there is very little in terms of food sources.

Forest Health Conditions: There are small groups of honeysuckle scattered around the edges of the stand. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Abundant; White pine saplings and poles. Beech, hemlock, red maple and red oak saplings also noted.

Acc. Basal Area/acre: 108 ft²

Total Basal Area/acre: 129 ft²

Stems/acre: 146

Mean Stand Diameter: 12.9 inches

Slope: 0-2%

Aspect: Flat to northerly

Site Class: III

Soils: Adams and Windsor loamy sands

Site Index: by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, protection of the riparian areas, structural and species diversity and production of forest products utilizing even-aged silvicultural techniques.

Desired Future Condition: Gradually the stand will develop into a hardwood-white pine type. The desired future stand will be a diverse, vigorous stand of mixedwood species with quality recreational and wildlife habitat resources

Silvicultural Prescription: Complete a shelterwood cut that will release and establish the fledgling understory of white pine and oak in 2025. Approximately ½ of the red pine will be removed. The remaining red pine will continue to act as a nurse crop which means they will provide enough shade to promote growth and proper development of the understory. The residual basal area will be around 60 square feet per acre.

Because of the high recreation and aesthetic values of this stand, this treatment would need to be very minimal, low-impact and carried out in a fashion that didn't deleteriously affect these values. Control the honeysuckle. Many of the plants can be manually pulled out but herbicide may be needed for larger plants. Refer to publications NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson and *Managers Handbook for Red Pine in the North Central States*, General Technical Report NC-33, Benzie

Product: Red pine sawtimber and pulp.

Rotation Age: 120 years

Sawtimber Volume/acre: 11, 453 bd. ft.

Cordwood Volume/acre: 15 cords

STAND ANALYSIS

Map Area 4

Acreage 7

Stand Type: White Pine (White Pine 79%) Other species noted include hemlock, red pine, red oak black oak and beech.

Natural Community Type: White Pine-Hardwood Forest Variant, Sand Plain Forest Variant

Age Structure: Two-aged

Size Class: saplings to medium sawtimber

Stocking: Slightly Understocked; Midway between the Managed C and Un-Managed C-Line on the White Pine stocking guide, NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak and Lamson

Approximate Stand Age: 30 years and 100 years.

Plot Count: 2

Stand Description: This stand was part of a larger White Pine stand that got bifurcated when the sand pit was created. It is planted pine with some natural pine to the north. It has been cut multiple times using several silvicultural techniques for decades.

Stand History: This stand was continuously thinned since old enough to treat in the mid 1900's.

Recreational Features: There are recreational trails around and in the stand but not as frequent as other places within the forest.

Wildlife Habitat Features: This stand provides some cover opportunities for wildlife as well as limited cavity nesting.

Forest Health Conditions: There is some incidence of White Pine blister rust and evidence of White Pine weevil damage. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Abundant; White Pine saplings and poles. Beech, Oak and raspberries throughout the stand. There are some Hemlock saplings and poles scattered around.

Acc. Basal Area/acre: 63 ft²

Total Basal Area/acre: 106 ft²

Stems/acre: 77

Mean Stand Diameter: 15.1 inches

Slope: 0-2%

Aspect: flat to north or south

Site Class: III

Soils: Adams and Windsor loamy sands & Agawam fine sandy loam

Site Index: by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, protection of the riparian areas, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques. Trees to release over time will be the hard mast trees and the scattered Hemlock.

Desired Future Condition: This stand is continuing to regenerate and grow excellent white pine stock. The desired future stand will be an uneven-aged stand of white pine and mixed hardwoods with a hard mast and hemlock component.

Silvicultural Prescription: Due to the current stocking levels no silvicultural prescription is recommended for the next ten year period. Refer to NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson, NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al. and NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985

Product: White pine sawlogs & pulp

Cutting Cycle: 20-25 years; Desired diameter 22" white pine; 19" hardwoods; 18" hemlock

Sawtimber Volume/acre: 9,899 bd. ft. **Cordwood Volume/acre:** 17 cords

STAND ANALYSIS

Map Area 5

Acreage 7

Stand Type: Scots Pine (Scots Pine 95%) Associated species noted include white pine, hemlock and red maple

Natural Community Type: Hemlock Forest; Hemlock-Northern Hardwood Forest

Age Structure: Two-aged

Size Class: Saplings to medium sawtimber

Stocking: Adequate; About half way between the B-line and A-Line on the red pine stocking guide in *Managers Handbook for Red Pine in the North Central States*, General Technical Report NC-33, Benzie.

Approximate Stand Age: 30 years and 95 years.

Plot Count: 2

Stand Description: There are several recreational trails through the northern portions of the stand. White pine that co-existed has been thinned from the stand peripheries.

Stand History: This stand was planted around 1925. There has been little activity in the stand in the last 25 years as Scots Pine has little lumber value due to its nature to be poorly formed and as the lumber tends to twist as it dries.

Recreational Features: As with the rest of the forest there is ample opportunity to create and maintain recreational paths throughout

Wildlife Habitat Features: The dense mid-story and proximity to browse and mast trees in adjacent Stand 6 as well as the water sources provide within Stands 6, 7 and 12 allow for this to be an area of good cover for a variety of animals.

Forest Health Conditions: Minor weevil damage was noted. No other tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Abundant; White pine and Hemlock saplings and poles are very abundant throughout the stand. There are occasional Red Oak, Yellow Birch, saplings and poles.

Acc. Basal Area/acre: 87 ft²

Total Basal Area/acre: 143 ft²

Stems/acre: 152

Mean Stand Diameter: 12.9 inches

Slope: 0-3%

Aspect: Flat to southwest

Site Class: III

Soils: Adams and Windsor loamy sands

Site Index: by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques.

Desired Future Condition: This stand is natural regenerating/developing into a Hemlock and White Pine community. The desired future stand will be an uneven-aged stand of hemlock-northern hardwoods with quality recreational and aesthetic values.

Silvicultural Prescription: At this time due to excellent growth of the understory and mid-story and the overstory to act as a nurse cover there is no silvicultural prescription recommended for the next ten-year period. Because this stand is in such a high visibility and recreational use area there should be further discussion as to the primary management objectives for this area. At this point the stand is stable and regeneration is developing well. Refer to publications NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985 and NE-41, *A Silvicultural Guide for White Pine in the Northeast* and

Product: Scotch pine sawtimber and pulp with some white pine sawtimber

Cutting Cycle: 20-25 years; Desired diameter 17" Scots Pine; 18" hemlock; 20" hardwoods

Sawtimber Volume/acre: 9,031 bd. ft. **Cordwood Volume/acre:** 24 cords

STAND ANALYSIS

Map Area 6

Acreage 21

Stand Type: Mixedwood (White Pine 39%, Red Oak 28%, Red Maple 22%) Associated species noted include beech, paper birch, yellow birch, black cherry, sugar maple and aspen

Natural Community Type: White Pine-Northern Hardwood Forest Variant

Age Structure: Uneven-Aged

Size Class: Saplings-Large Sawtimber

Stocking: Adequate; approaching midway between the B and A-lines on the Mixedwood stocking guide in publication NE-603

Approximate Stand Age: >110 years

Plot Count: 5

Stand Description: This stand established on abandoned agricultural land that was abandoned in the early 20th century. White pine and red oak are the dominant overstory species, with red maple and other hardwood associates intermingled. The stand is relatively flat, with the exception of the area adjacent to the stream in the northern portion of the stand. The stand is in an uneven-aged condition as past cutting has released a variety of age classes.

Stand History: Improvement thinning in area north of the stream 10-15 years ago. Shelter wood cut in the mid 1970's. Shelterwood cut in the mid 1980's. Intermediate thinning in winter 1997-98. Partial overstory removal completed in 2012.

Recreational Features: There are no mountain bike trails in this stand. An access road runs through the stand.

Wildlife Habitat Features: Red oak and beech, two important mast-producing species, occur in this stand. There is a small beaver wetland complex associated with the stream and riparian area in the northern portion of the stand.

Forest Health Conditions: Minor weevil and blister rust damage noted on the white pine component. Beech scale noted on the beech component. Scattered white pine mortality was noted. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Excellent; beech, white pine, red maple, yellow birch, red oak and sugar maple

seedlings, saplings and poles. White pine saplings are especially prolific along skid trails/adjacent to canopy openings created by past cutting.

Acc. Basal Area/acre: 118 ft²

Total Basal Area/acre: 125 ft²

Stems/acre: 168

Mean Stand Diameter: 13.7 inches

Slope: 0-5%

Aspect: Variable

Site Class: III

Soils: Adams and Windsor and Agawam

Site Index: (53, Red Oak)

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: Over time the red oak component of this stand has increased in density and vigor. Although white pine will persist in the next cohort (now in the sapling-small pole size class), this stand has a propensity towards hemlock-mixed hardwoods. The white pine component is a desirable timber producing species and should be favored and managed as such. The stand is developing into a complex of red oak-white pine-hemlock with associated hardwoods (red maple, yellow birch, beech) and, depending on management, will continue to develop in this mixedwood condition.

Silvicultural Prescription: Conduct a single-tree selection harvest in 2027 with a residual basal area of 100 sq ft/ac. White Pine and Red Maple will be the primary species removed, along with degraded beech, paper birch, aspen and black cherry. A small percentage (<10%) of the red oak may be removed. The treatment should occur during the summer months in order to scarify the soil to promote oak and white pine establishment.

Maintain a 50' no-cut buffer around the riparian and wetland areas.

Refer to publications NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al. and NE-41, *A Silvicultural Guide for White Pine in the Northeast* and NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985.

Product: White pine and hardwood sawtimber, firewood, and pulp.

Cutting Cycle: 15-20 years; Desired diameter 23" white pine; 20" red oak; 19" all other hardwoods

Sawtimber Volume/acre: 7,054 bd.ft.

Cordwood Volume/acre: 15 cords

STAND ANALYSIS

Map Area 7

Acreage 30

Stand Type: Red Pine (Red Pine 83%, Red Maple 7%) Associated noted include white pine, red oak, beech, white oak and hemlock.

Natural Community Type: White Pine-Northern Hardwood Forest Variant

Age Structure: Uneven-Aged

Size Class: Seedlings-Medium/Large Sawtimber

Stocking: Adequate; Midway between the B and A-lines on the Red Pine stocking guide in NC-264

Approximate Stand Age: >100 years

Plot Count: 6

Stand Description: This stand is located on flat terrain immediately west of the school district lands. Red pine is the dominant overstory species, with mixed hardwood associates.

Stand History: This stand was planted in 1925. A thinning occurred in 2012. Thinning's have occurred in the stand since the 1950s.

Recreational Features: There are no mountain bike trails in this stand. An access road runs through the stand. The eastern boundary of the stand is also an access road.

Wildlife Habitat Features: Red oak and beech, two important mast-producing species, occur in this stand. There is a small beaver wetland complex associated with the stream and riparian area in the northern portion of the stand.

Forest Health Conditions: One population of honeysuckle was noted in the northernmost portion of the stand south of the access road. Beech scale. Weevil damage noted on the white pine component. Scattered windthrow. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Abundant; beech, white pine, red oak, red maple, yellow birch and hemlock seedlings, saplings and poles. White pine regeneration is especially lush in skid trails and canopy openings created from past cutting.

Acc. Basal Area/acre: 126 ft²

Total Basal Area/acre: 134 ft²

Stems/acre: 150

Mean Stand Diameter: 13.0 inches

Slope: 0-5%

Aspect: Level

Site Class: III

Soils: Adams and Windsor & Agawam

Site Index: (55, Red Pine)

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: A healthy, diverse uneven-aged stand of mixed hardwood-white pine saplings and poles in the under-mid stories

Silvicultural Prescription: No silvicultural treatment is recommended at this point as the stocking levels are not critically high and the regeneration is developing well. The honeysuckle patch should be controlled. Due to the large size of the plants, the plants will either need to be pulled out using a tractor or treated using herbicide.

Refer to publication *Managers Handbook for Red Pine in the North Central States*, General Technical Report NC-33, Benzie.

Product: Red pine poles, sawtimber, and pulp.

Sawtimber Volume/acre: 13,996 bd.ft.

Cordwood Volume/acre: 10 cords

STAND ANALYSIS

Map Area 8

Acreage 7

Stand Type: Herbaceous Species including Invasive Species and Red Pine and White Pine

Natural Community Type: Mesic Pine-Oak Sandplain Forest

Age Structure: Even-aged

Size Class: Herbs, Grasses and seedlings

Stocking: Not available as all trees are below four inches in diameter. Herbaceous plants and some seedlings

Approximate Stand Age: N/A years

Plot Count: 1

Stand Description: This area is heavily impacted by sand extraction and placement of materials not native to the parent soils.

Stand History: This stand was formerly forested then cleared for sand extraction 1992 through 2008 and replanted after sand extraction complete. The success rate is about 5%

Recreational Features: To be determined

Wildlife Habitat Features: To be determined

Forest Health: There is some dieback, chlorosis (yellowing) and mortality as these trees were planted on very compromised soils

Regeneration: None

Acc. Basal Area/acre: 0 ft²

Total Basal Area/acre: 0 ft²

Stems/acre: N/A

Mean Stand Diameter: N/A inches

Slope: 0-2%

Aspect: Flat to southwesterly

Site Class: II **Soils:** Agawam fine sandy loam & Adams and Windsor loamy sands

Site Index: by soils

Management Objective: Undetermined at this time

Desired Future Condition: Not sure at this time as the condition and objectives for this area is

not determined. It is our recommendation that this site be revisited after the emergence of the various grass and herbaceous plants emerge at which time the Desired Future Condition will be assessed and amended into this plan. This stand has the potential to be managed as Open Land, which is an important cover type for wildlife.

Silvicultural Prescription: Not applicable at this time.

Product: N/A

Rotation Age: 80 years White Pine

Sawtimber Volume/acre: 0 bd. ft.

Cordwood Volume/acre: 0 cords

STAND ANALYSIS

Map Area 9

Acreage 31

Stand Type: Mixed Hardwood (Red Maple 24%, White Pine 21%, Black Oak 18%, Red Oak 12%)
Other species noted include Beech, Hemlock, Yellow Birch, White Oak and Aspen.

Natural Community Type: White Pine-Northern Hardwood Forest Variant

Age Structure: Uneven-Aged

Size Class: Saplings-Large Sawtimber

Stocking: Adequate; About three quarters of the way from the B-Line to the A-line on the Hardwood stocking guide in NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al.

Approximate Stand Age: 30 to 100 plus years

Plot Count: 8

Stand Description: This stand is located from Sand Hill Road all the way to the former sand pits cells to the east. It is situated on somewhat steep slopes surrounding the riparian area which drains through the stand. It is primarily a hardwood stand with white pine peppered throughout the stand.

Stand History: There has been very little activity in this stand since 2003 when it was thinned at the same time the adjacent sandpit cells were cleared.

Recreational Features: Due to the location and slopes associated with this stand the recreational opportunities are limited to passive uses such as bird watching and exploration but not suited for a trail system.

Wildlife Habitat Features: The source of hard mast trees as in the oak trees and the proximity to water and dense cover make this a good stand for browse and water.

Forest Health Conditions: There is a minor infestation of honeysuckle along Sand Hill Rd in this stand. Beech scale. No other, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Adequate; beech, red oak, white oak and hemlock saplings to poles especially in pockets of areas where the white pine thinning areas took place in 2003.

Acc. Basal Area/acre: 78 ft²

Total Basal Area/acre: 108 ft²

Stems/acre: 159

Mean Stand Diameter: 10.9 inches

Slope: 3 to 25% **Aspect:** Generally south but variable due to the stream bank influences

Site Class: II **Soils:** Agawam fine sandy loam & Duane and Deerfield **Site Index:** by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and protection of the riparian areas in the stand utilizing uneven-aged silvicultural techniques. Due to slopes and location of the stand within the landscape this stand will be left alone to develop into an “Old Growth” structure.

Desired Future Condition: “Old Growth Forest” with riparian protections.

Silvicultural Prescription: Due to the slope conditions location to the stream and past cutting there is no silvicultural prescription recommended for the next ten-year period. The honeysuckle population should be removed. Due to the size of the plants, the plants will either need to be pulled out using a tractor or controlled using herbicide. Refer to publications NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al. and NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson and NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985.

Product: Hardwood and White Pine sawlogs, firewood, & pulp.

Cutting Cycle: 30-35 years; Desired diameter 21” hardwoods; 22” white pine

Sawtimber Volume/acre: 6,451 bd. ft.

Cordwood Volume/acre: 22 cords

STAND ANALYSIS

Map Area 10

Acreage 15

Stand Type: Hemlock (Hemlock 94%) associated species include white pine, white oak, red oak, red maple, white birch, and yellow birch.

Natural Community Type: Hemlock Forest; Hemlock-Northern Hardwood Forest

Age Structure: Uneven-Aged

Size Class: saplings to large sawtimber

Stocking: Adequate; This stand is above the B Line on the Hemlock stocking guide in NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985.

Approximate Stand Age: 20 to 120 plus years

Plot Count: 3

Stand Description: This is an excellent example of the Hemlock Forest natural community which has been relatively undisturbed for many decades. The features of an uneven-aged structure are visible throughout.

Stand History: There has been very little activity in this stand. There was some light thinning in 1997 along the edges of stands 3 and 11.

Recreational Features: There are trails intermingled all through this stand.

Wildlife Habitat Features: Though not mapped as a Deer Wintering area by the State of Vermont, it is highly likely, especially during deep snow conditions, that this stand is used as winter cover by a variety of wildlife species. This is due to the density of the canopy (>75% canopy closure) and the uneven-aged structure of the various canopy levels of cover which also includes song birds. There are several snags that

Forest Health Conditions: All along the brook that is also adjacent to stand 2 there are sporadic populations of honey suckle and phragmites. These same groupings are also found along the stream in stand one. At the southern juncture of this stand there is a small no productive area. This site is quickly becoming occupied with phragmites and honey suckle. No other, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Adequate; There is abundant Hemlock saplings to poles throughout, yellow birch and beech saplings and poles are found throughout the stand in areas of past minor disturbances.

Acc. Basal Area/acre: 127ft²

Total Basal Area/acre: 178 ft²

Stems/acre: 148

Mean Stand Diameter: 14.9 inches

Slope: 5-45%

Aspect: Variable to south

Site Class: II **Soils:** Agawam fine sandy loam & Adams and Windsor loamy sands

Site Index: by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and protection of the riparian areas in the stand utilizing uneven-aged silvicultural techniques. Due to slopes and location of the stand within the landscape this stand should be left alone to develop into an “Old Growth” structure.

Desired Future Condition: To continue to allow this to develop as a high quality example of a Hemlock Forest Natural Community.

Silvicultural Prescription: Due to the nature of this stand as an excellent example of mature fully stocked and minimally-disturbed Hemlock stand there is no silvicultural prescription recommend over the next ten-year period.

The phragmites and honeysuckle populations should be controlled as they pose the greatest threat to the stand’s health. The populations should be treated using an aquatic-approved herbicide for greatest efficacy. Refer to NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985.

Product: Hemlock sawtimber and pulp.

Cutting Cycle: 120 year plus; Desired diameter 24” Dbh all species

Sawtimber Volume/acre: 10.342 bd. ft.

Cordwood Volume/acre: 23 cords

STAND ANALYSIS

Map Area 11

Acreage 13

Stand Type: Mixedwood (Red Oak 35%, Black Oak 22%, White Pine 18%, Hemlock 17%)
Associated species noted include red maple, Yellow Birch, Beech and Aspen

Natural Community Type: White Pine-Hardwood-Hemlock Variant

Age Structure: Two-aged

Size Class: saplings to medium sawtimber

Stocking: Overstocked: Just at the A-line on the Mixedwood stocking guide in NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al.

Approximate Stand Age: 25 and 100 plus years

Plot Count: 3

Stand Description: This stand is located on a sandplain formation and is almost entirely flat.

Stand History: There has been some light thinning to remove the maturing White Pine component over the last 30 years. The most recent treatment occurred in 2009.

Recreational Features: There are recreational trails throughout the stand.

Wildlife Habitat Features: This stand offers an excellent opportunity to continue to provide hard mast for a variety of wild life species. The primary mast species are red and black oak. The dense midstory of Hemlock and the proposed Crop Tree Release of the oak by girdling the red maple and the density of the adjacent softwood stands offers a unique opportunity for forage and cover in close proximity.

Forest Health Conditions: Minor white pine weevil and blister rust damage noted. Beech scale. Very sparse wind damage. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Adequate; There are dense pockets or grouping as well as scattered seedlings to medium poles of all common species throughout the entire stand.

Acc. Basal Area/acre: 103 ft²

Total Basal Area/acre: 173ft²

Stems/acre: 238

Mean Stand Diameter: 11.5 inches

Slope: 0 to 4%

Aspect: Southerly

Site Class: III

Soils: Adams and Windsor loamy sands & Agawam fine sandy loam

Site Index: by soils

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and protection of the riparian areas in the stand utilizing uneven-aged silvicultural techniques.

Desired Future Condition: The stand is developing into a complex of red oak-white pine-hemlock with associated hardwoods (red maple & beech) and, depending on management, will continue to develop in this mixedwood condition. The presence and vigor of white pine seedlings and sapling regeneration indicates that this site favors white pine. Desired species to manage for are white pine, red oak, black oak and hemlock with quality recreational and aesthetic features.

Silvicultural Prescription: Complete a crop tree release of the Oak component in 2025. The goal will be twofold: to release the Oak component for further and more prolific Oak mast and the provide further brose within the stand as a result of competing hardwood trees stump sprouting. The trees cut do not have to be removed they can just be severed and dropped to the ground. When possible, release established hemlock regeneration. Maintain a minimum basal area of 120 square feet per acre. Refer to publications NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al, NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985 NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson and NA-TP-19-93, *Crop Tree Management in Eastern Hardwoods*, Perkey & Wilkins

Product: White pine sawtimber & pulp, and hardwood sawtimber, firewood, & pulp.

Rotation Age: 140 plus years

Sawtimber Volume/acre: 4,318 bd. ft.

Cordwood Volume/acre: 21 cords

STAND ANALYSIS

Map Area 12

Acreage 37

Stand Type: Hemlock-White Pine (Hemlock 37%, White Pine 18%, Red Oak 12%, Black Oak 11% associated species include Red Maple, Beech, White Birch, basswood, Yellow Birch and Aspen)

Natural Community Type: Hemlock Forest

Age Structure: All-Aged

Size Class: small poles to large sawtimber

Stocking: Adequate; Above the B-line on the Hemlock-Hardwood stocking guide (above 30% hemlock), NA-FR-30, *Managing Eastern Hemlock, A Preliminary Guide*, Kenneth F. Lancaster, 1985

Approximate Stand Age: 40 thru 120 plus years

Plot Count: 7

Stand Description: This stand is topographically diverse. There are flat areas particularly in the eastern portion of the stand. Other areas are situated around two streams with steep riparian banks. There is a road that accesses one of the old reservoir sites. The reservoir site and adjacent streams should have further review and address the phragmites and honeysuckle infestations.

Stand History: Selection harvest approximately 25 years ago. Second harvest in the northern 2/3rd of the stand, winter 1997-98. Minor thinning winter of 2003.

Recreational Features: There are some trails located along the upper (northly) reaches of the stand.

Wildlife Habitat Features: This stand offers an excellent opportunity for wildlife cover especially considering the dense canopy and the southern-facing slopes. Oak, in important mast-producing species, is found in the stand.

Forest Health Conditions: Scattered wind damage was noted throughout the stand. A minor infestation of phragmites is located along the streambank in this stand. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Regeneration: Adequate; there is abundant hemlock saplings to poles usually in groupings with scattered hardwood poles scattered throughout.

Acc. Basal Area/acre: 137 ft²

Total Basal Area/acre: 220 ft²

Stems/acre: 205

Mean Stand Diameter: 12.3 inches

Slope: 5-35%

Aspect: Southerly

Site Class: III

Soils: Adams and Windsor loamy sands, Agawam fine sandy loam & Au Gres

Site Index: by soils

Management Objective: Like Stand 10 the objective is to leave this area as intact as possible. This is a great example of a mature Hemlock-Northern Hardwood Forest natural community Variant. Due to slopes and location of the stand within the landscape this stand should be left alone to develop into an “Old Growth” structure.

Desired Future Condition: This stand is situated on two stream banks and the areas in between. It is another excellent example of an uneven-aged stand that will only degrade in its biological and environment features if treated so this stand like Stand 11 will be left as forever wild when it comes to logging.

Silvicultural Prescription: Due to the ecological importance of this stand, no silvicultural prescription recommend over the next ten-year period. Refer to NA-FR-30, *Managing Eastern Hemlock A Preliminary Guide*, Kenneth F. Lancaster, 1985. NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al. and NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson

Product: White Pine Hardwood and Hemlock sawtimber and pulp

Cutting Cycle: 40 years, maximum diameter all species 24 inches

Sawtimber Volume/acre: 4,107 bd.ft.

Cordwood Volume/acre: 28 cords

STAND ANALYSIS

Map Area 13

Acreage 8

Stand Type: White Pine (100% White Pine)

Natural Community Type: White Pine

Age Structure: Even-aged

Size Class: saplings to small poles

Stand Age: 24 years

Stocking: Adequate; well stocked of white pine refer to NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson

Stand Description: This stand is a White Pine plantation that was fragmented from the larger portion of the plantation when the lands were subdivided.

Stand History: This stand was an active sand pit during the late 1990's and early 2000's and was subsequently replanted to white pine.

Recreational Features: Due to the objectives of reforestation and the density of plants this area will not feature and recreational activity at this time.

Wildlife Habitat Features: This stand while a monoculture adds very dense wildlife cover.

Forest Health Conditions: There is a narrow band of honeysuckle at the top of the bank adjacent to stands 9 and 12. There is a minor amount of white pine weevil damage and there is a very limited amount of white pine blister rust. No other insect, tree disease, browsing, abiotic or invasive exotic plant problems were noted within the stand that could affect recommended silvicultural treatments.

Access distance: less than 1-mile

Plot Count: 2

Regeneration: Adequate; this is a regenerating stand of planted white pine.

Acc. Basal Area/acre: 0 ft²

Total Basal Area/acre: 0 ft²

Stems/acre: Approximately 690

Mean Stand Diameter: less than 4 inches about a 7-inch caliper diameter

Slope: 0 to 2%

Aspect: easterly

Site Class: II **Soils:** Agawam fine sandy loam compromised soils as this was part of the former sandpit **Site Index:** by soils

Management Objective: Manage using even-aged silvicultural techniques for the production of white pine pulpwood and sawtimber

Desired Future Condition: A long term quality white pine plantation to provide wood products to the local economy and eventually open the area up to recreational uses of the stand acknowledging this make take the cooperation of the neighboring landowner.

Silvicultural Prescription: Due to the age of the stand, approximately 23 years, there is no silvicultural activity prescribed for the next ten-year period. Control of the honeysuckle is recommended as this poses the greatest threat to the current and future health of this stand. Herbicide use is recommended in light of the extent of the population. Refer to NA-TP-01-99, *Revised White Pine Stocking Guide for Managed Stands*, Leak & Lamson

Product: White Pine sawtimber and pulp. **Rotation Age:** 140 years

Sawtimber Volume/acre: 0 bd. Ft. **Cordwood Volume/acre:** 0 cords

**The following stands are located on the School District parcel:
STAND ANALYSIS**

Map Area S1

Acreage 20

Stand Type: Red Pine (Red Pine 89%) Associated species noted include red oak, white pine, red maple and aspen

Natural Community Type: White Pine-Northern Hardwood Forest Variant; Hemlock-Northern Hardwood Forest

Age Structure: Two-Aged

Size Class: Saplings & Medium Sawtimber

Stand Age: 15 & 90 years

Stocking: Fully stocked; Just below the A-line on the Red Pine stocking guide in NC-264

Stand Description: This red pine stand is located in the western portion of the school district property adjacent to Saxon Hill Road. The stand is situated on the western slopes of Saxon Hill. This stand has high recreational and aesthetic values.

Stand History: This stand was planted approximately 90 years ago. Thinning last occurred likely in the 1970s, based on cut stump decay.

Recreational Features: There are several recreational trails in the stand.

Wildlife Habitat Features: Red oak and beech, two important mast-producing species, occur in this stand. The softwood cover provides thermal protection for white-tailed deer in the winter. There are numerous snags (standing dead trees) that provide roosting and nesting habitat for birds.

Forest Health Conditions: Honeysuckle, barberry and buckthorn are all present in the stand. Some of the red pine has died, cause unknown. The red pine in the southern portion of the stand is lower quality/vigor than those in the north. No other insect, tree disease, browsing, and abiotic problems were noted within the stand that could affect recommended silvicultural treatments.

Access distance: less than 1 mile

Plot Count: 4

Regeneration: Adequate; beech saplings and poles are most abundant. Hemlock, yellow birch, white pine, white ash, striped maple, red maple, red oak and sweet birch saplings and poles.

Acc. Basal Area/acre: 178 ft²

Total Basal Area/acre: 189 ft²

Stems/acre: 180

Mean Stand Diameter: 14.9 inches

Slope: 5-10%

Aspect: West

Site Class: III

Soils: Adams-Windsor

Site Index: 55 Red Pine

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: Hardwood regeneration is well-established in the stand. Very little white pine regeneration is present. Although white pine will persist in the next cohort (now in the sapling-small pole size class), this stand has a propensity towards hemlock-mixed hardwoods. Without extensive site manipulation (herbicide, planting, burning), the stand will continue to trend towards a hardwood-hemlock forest type. The desired future stand is a healthy, diverse forest of mixed hardwoods and hemlock with recreational and aesthetic values.

Silvicultural Prescription: Because of the high recreation and aesthetic values of this stand, any silvicultural treatment would need to be very minimal, low-impact and carried out in a fashion that didn't deleteriously affect these values. The stand density is at a point where crown development is stalled and the red pine will continue to senesce and die off in the overstory over the next 100 years.

Assuming a vacuum condition, where trails/aesthetics did not matter, an intermediate thinning should be conducted in the stand to reduce the stocking to 110 sq ft/ac in 2025-2026. In many areas of the stand rows or every 3rd tree would be removed. In other areas, the lowest quality stems would be removed to favor quality stem development. The landing would need to be located across the access road in Stand 4. Standing dead trees should be retained for wildlife. The invasive plants should be controlled. Manual control should be attempted, but herbicide use is likely needed to completely control the populations.

Refer to publication *Managers Handbook for Red Pine in the North Central States, General Technical Report NC-33*, Benzie.

Product: Red Pine sawtimber, pulp and firewood.

Cutting Cycle: 20 years; Desired diameter 21" red pine; 21" hardwoods

Sawtimber Volume/acre: 17,124 bd. Ft.

Cordwood Volume/acre: 18 cords

STAND ANALYSIS

Map Area S2

Acreage 8

Stand Type: Scots Pine (Scots Pine 94%) Associated species include red maple, beech, red pine and striped maple

Natural Community Type: White Pine-Northern Hardwood Forest Variant; Hemlock-Northern Hardwood Forest

Age Structure: Two-Aged

Size Class: Saplings & Small/Medium Sawtimber

Stand Age: 15 & 90 years

Stocking: Fully stocked; Just below the A-line on the Red Pine stocking guide in NC-264

Stand Description: This Scots Pine stand is located west of the water tower and east of the red pine plantation. The stand is situated on the western slopes of Saxon Hill. This stand has high recreational and aesthetic values.

Stand History: This stand was planted approximately 90 years ago. Thinning last occurred likely in the 1970s, based on cut stump decay.

Recreational Features: There are several recreational trails in the stand.

Wildlife Habitat Features: Beech, an important mast-producing species, occurs in this stand. The softwood cover provides thermal protection for white-tailed deer in the winter. There are numerous snags (standing dead trees) that provide roosting and nesting habitat for birds.

Forest Health Conditions: Weevil damage. Beech scale. No other insect, tree disease, browsing, and abiotic problems were noted within the stand that could affect recommended silvicultural treatments.

Access distance: less than 1 mile

Plot Count: 2

Regeneration: Adequate; beech, yellow birch, ironwood, white pine and red maple saplings.

Acc. Basal Area/acre: 143 ft²

Total Basal Area/acre: 205 ft²

Stems/acre: 155

Mean Stand Diameter: 15.9 inches

Slope: 10-12%

Aspect: West

Site Class: III

Soils: Adams-Windsor

Site Index: 55 Scotch Pine

Management Objective: Maintenance/enhancement of forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: Hardwood and white pine regeneration is well-established in the stand. The desired future stand is a healthy, diverse forest of white pine, mixed hardwoods and hemlock with recreational and aesthetic features.

Silvicultural Prescription: Because of the high recreation and aesthetic values of this stand, any silvicultural treatment would need to be very minimal, low-impact and carried out in a fashion that didn't deleteriously affect these values. A treatment like this would likely end up costing money rather than bring in revenue. The stand density is at a point where crown development is stalled, which will result in decline and mortality of Scots pine over time.

Assuming a vacuum condition, where trails/aesthetics did not matter, an intermediate thinning should be conducted in the stand to reduce the stocking to 110 sq ft/ac in 2025/2026. In many areas of the stand rows or every 3rd tree would be removed. In other areas, the lowest quality stems would be removed to favor quality stem development. The landing would need to be located across the access road in Stand 4. Standing dead trees should be retained for wildlife. Refer to publication *Managers Handbook for Red Pine in the North Central States*, General Technical Report NC-33, Benzie.

Product: Scots Pine sawtimber, pulp and firewood.

Cutting Cycle: 20 years; Desired diameter 21" red pine; 21" hardwoods

Sawtimber Volume/acre: 13,103 bd. Ft.

Cordwood Volume/acre: 14 cords

STAND ANALYSIS

Map Area S3

Acreage 28.53

Stand Type: Mixed Hardwood-White Pine (Red Maple 30%, White Pine 25%, White Ash 19%, Red Oak 17%) Associated species noted include aspen, sugar maple, beech, paper birch, ironwood, black cherry and Norway spruce

Natural Community Type: Northern Hardwood Forest; Woodland Seep

Age Structure: Uneven-Aged

Size Class: Saplings-Medium Sawtimber

Stand Age: >110 years

Stocking: Fully stocked; At the A-line on the Mixedwood stocking guide in NE-603

Stand Description: This stand is situated on the school district lands on the western slopes of Saxon Hill. Mixed hardwoods and white pine occupy the overstory. The stand was last cut likely in the 1970s based on stump decay evidence. There is an exposed ledge located in the southeastern portion of the stand and a woodland seep is located at the base of the ledge.

Stand History: This stand developed from pastureland that was abandoned near the turn of the 20th century. The species composition is mid-successional, but the regeneration is trending towards climax forest composition.

Recreational Features: There are several recreational trails in the stand.

Wildlife Habitat Features: Beech and red oak, important mast-producing species, occur in this stand. There are numerous snags (standing dead trees) that provide roosting and nesting habitat for birds. There is a woodland seep located at the base of the ledge in the southeastern portion of the stand. This seep is important for clean water supply to streams as well as early spring vegetation for mammals.

Forest Health Conditions: Weevil and blister rust damage noted on the white pine. Beech scale. Windthrow from wind events scattered throughout the stand. Fewer than 10 honeysuckle were noted. No other insect, tree disease, browsing, and abiotic problems were noted within the stand that could affect recommended silvicultural treatments.

Access distance: less than 1 mile

Plot Count: 6

Regeneration: Excellent; beech, ironwood, yellow birch, red maple, white ash and balsam fir

seedlings, saplings and poles

Acc. Basal Area/acre: 148 ft²

Total Basal Area/acre: 177 ft²

Stems/acre: 201

Mean Stand Diameter: 14.5 inches

Slope: 5-30%

Aspect: West

Site Class: II **Soils:** Lyman-Marlow, Duane-Deerfield, Peru **Site Index:** 55 Red Maple

Management Objective: Maintenance/enhancement of recreational features, forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: The stand is developing into a northern hardwood type and, depending on management, will continue to develop in this mixedwood condition. The desired future stand is a diverse, vigorous stand of mixedwood species with quality recreational and wildlife resources

Silvicultural Prescription: Because of the high recreational value of this stand, any silvicultural treatment would need to be very minimal, low-impact and carried out in a fashion that didn't deleteriously affect these values. Conduct a single-tree selection harvest with a residual basal area of 120 sq ft/ac in 2025/2026. White Pine and Red Maple will be the primary species removed, along with degraded beech, paper birch, aspen and black cherry. Treatment should occur during the summer months in order to scarify the soil to promote oak and white pine establishment.

Maintain a 50' no-cut buffer around the seep/ledge areas.

The invasive plants should be controlled. Manual control should be attempted, but herbicide use is likely needed to completely control the population.

Refer to publications NE-603, *Silvicultural Guide for Northern Hardwood Types in the Northeast*, Leak et al. and NE-41, *A Silvicultural Guide for White Pine in the Northeast* and NA-FR-30, *Managing Eastern Hemlock a Preliminary Guide*, Kenneth F. Lancaster, 1985.

Product: Hardwood and White Pine sawtimber, pulp and firewood.

Cutting Cycle: 15-20 years; Desired diameter 22" White Pine; 18" white ash; 21" other hardwoods

Sawtimber Volume/acre: 7,549 bd. Ft.

Cordwood Volume/acre: 14 cords

STAND ANALYSIS

Map Area S4

Acreage 4

Stand Type: Mixedwood (Norway Spruce 62%, White Ash 13%, Red Oak 8%, Red Maple 5%)
Associated species noted include paper birch, sweet birch, sugar maple, basswood, bitternut hickory and red pine

Natural Community Type: Northern Hardwood Forest; Hemlock-Northern Hardwood Forest

Age Structure: Two-Aged **Size Class:** Saplings/Small Poles & Small/Medium Sawtimber

Stand Age: 100 years

Stocking: Overstocked; Above the A-line on the Mixedwood stocking guide in NE-603

Stand Description: This stand is located in two areas on the school district parcel: one is in the northwestern corner adjacent to Villeneuve's land, and the other is at the top of Saxon Hill adjacent to the old fire tower location. The two areas are distinct from one another due to soils and topography. The northern area is situated on flat, seasonally wet soils. The area on the top of Saxon Hill is dry and ledgy and at a higher elevation. The Norway spruce which occupies a significant portion of the overstory is the feature that unifies these two areas into one stand delineation.

Stand History: The Norway spruce was planted at the beginning of the 20th century. No evidence of past cutting was observed, but it is possible that thinning occurred in the mid-20th century.

Recreational Features: Mountain biking trails are in and adjacent to this stand. It's apparent from soil compaction and debris at the old tower site that this area is heavily trafficked.

Wildlife Habitat Features: The seeds from Norway spruce are important for wildlife, especially squirrels and chipmunks. There are several snags throughout the stand which provide roosting and nesting habitat for birds. The wet depressions found in the stand are important to amphibians and reptiles in the spring season.

Forest Health Conditions: Wind has uprooted and broken trees over time repeatedly in this stand. The red pine is very poor quality. There is a patch of honeysuckle located at the old tower site. No other insect, tree disease, browsing, and abiotic problems were noted within the stand that could affect recommended silvicultural treatments.

Access distance: less than 1 mile

Plot Count: 1

Regeneration: Adequate; beech, striped maple and red maple saplings and poles. Red oak, Norway spruce and white pine saplings and poles also noted

Acc. Basal Area/acre: 161 ft²

Total Basal Area/acre: 189 ft²

Stems/acre: 228

Mean Stand Diameter: 13.5 inches

Slope: 0-3%

Aspect: Flat to west

Site Class: II

Soils: Cabot and Lyman-Marlow

Site Index: 49 Norway Spruce

Management Objective: Maintenance/enhancement of recreational features, forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: A diverse, vigorous stand of mixedwood species with quality recreational and wildlife habitat resources

Silvicultural Prescription: The area of the stand at the top of Saxon Hill is a special site that should remain a no-cut area. The honeysuckle should be removed from this area. Due to the large size of the plants, the plants will either need to be pulled out using a tractor or treated using herbicide.

The area of the stand adjacent to Villeneuve's land should be cut to reduce the stocking. An improvement cut should be conducted to reduce the stocking to 130 sq ft/ac in 2050/2026. Low quality and at-risk Norway spruce, red pine and white ash should be removed along with low quality red maple. Because of the high recreation and aesthetic values of this stand, this treatment would need to be very minimal, low-impact and carried out in a fashion that didn't deleteriously affect these values.

Product: Spruce and Hardwood sawtimber, pulp and firewood.

Cutting Cycle: 15-20 years; Desired diameter 18" Norway spruce; 18" white ash; 21" all other hardwoods

Sawtimber Volume/acre: 6,779 bd. Ft.

Cordwood Volume/acre: 17 cords

STAND ANALYSIS

Map Area S5

Acreage 30

Stand Type: Red Oak-Mixed Hardwood (Red Oak 68%, White Ash 21%) Associated species noted include aspen, basswood, sugar maple, ironwood, paper birch, bitternut hickory, white pine and hemlock

Natural Community Type: Red Oak-Northern Hardwood Forest

Age Structure: Uneven-Aged

Size Class: Saplings-Medium/Large Sawtimber

Stand Age: >110 years

Stocking: Overstocked; Above the A-line on the Hardwood stocking guide in NE-603

Stand Description: This stand is located in the easternmost portion of the property along the knob at the top of Saxon Hill. The soils are thin and ledgy and there are several small ledge outcroppings.

Stand History: The stand was pastured up through the early 20th century. Although no stump evidence was found, the stand was likely cut in the mid-20th century.

Recreational Features: Numerous recreational trails traverse through the stand.

Wildlife Habitat Features: Red oak, an important mast species for wildlife, is abundant in this stand. Ironwood and ash are also both important mast species. The standing dead ash are utilized as roost and nesting sites for bird species.

Forest Health Conditions: Wind events regularly blowdown trees especially in the northern portion of the stand. The ash is degraded in quality and several standing dead ashes were noted. No other insect, tree disease, browsing, and abiotic problems were noted within the stand that could affect recommended silvicultural treatments.

Access distance: less than 1 mile

Plot Count: 6

Regeneration: Adequate; Ironwood saplings and poles are most abundant. White ash, striped maple and sugar maple saplings and poles also

Acc. Basal Area/acre: 107ft²

Total Basal Area/acre: 131 ft²

Stems/acre: 156

Mean Stand Diameter: 12.2 inches

Slope: 15-25%

Aspect: Variable

Site Class: II

Soils: Lyman-Marlow

Site Index: 45 Red Oak

Management Objective: Maintenance/enhancement of recreational features, forest health, wildlife habitat, structural and species diversity and production of forest products utilizing uneven-aged silvicultural techniques

Desired Future Condition: A diverse, uneven-aged stand of red oak and associated northern hardwood species with quality recreational and wildlife habitat resources

Silvicultural Prescription: The stand is overstocked and should be cut to allow more growing space for quality crown and stem development. Conduct an improvement cut to reduce the stocking to 95 sq ft/ac in 2025/2026. Low quality white ash and approximately 10-15% of the oak should be removed. Retain as many snags as possible for wildlife. Because of the high recreation and aesthetic values of this stand, this treatment would need to be very minimal, low-impact and carried out in a fashion that didn't deleteriously affect these values.

Product: Hardwood sawtimber, pulp and firewood

Cutting Cycle: 20-25 years; Desired diameter 22" red oak; 18" white ash

Sawtimber Volume/acre: 3,960 bd. Ft.

Cordwood Volume/acre: 16 cords

SECTION VII. RECOMMENDED MANAGEMENT ACTIVITIES

<u>Area</u>	<u>Year</u>	<u>Management Activity</u>
S1	2025-2026	Intermediate Thinning Residual BA=110 sq ft/ac
S2	2025-2026	Intermediate Thinning Residual BA=110 sq ft/ac
S3	2025-2026	Single-Tree Selection Harvest Residual BA=100 sq ft/ac
S4	2025-2026	Improvement Cut Residual BA=130 sq ft/ac
S5	2025-2026	Improvement Cut Residual BA=95 sq ft/ac
3	2025	Shelterwood Residual BA=60 sq ft/ac
11	2025	Crop Tree Release of Oak Residual BA=120 sq ft/ac
6	2027	Single-Tree Selection Harvest Residual BA=100 sq ft/ac

***In all stands where invasive plants are noted, further review of the invasive plant populations and development of control actions are recommended.*

Note: The guidelines in this plan allow for carrying out the individual prescribed activity within three years, before and after the recommended date.