FOREST MANAGEMENT PLAN

FOR THE LAND OF

Newport Town (Poginy Hill Conservation Park)

Newport Town, VERMONT

June 2014

Prepared by:

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Newport Town (Poginy Hill Conservation Park)

Property Location
Logan Road
Newport Town, Vermont 05855

Ortho Base 168264 "Cleveland Hill" and 164264 "South Newport"

Grand List Acres 393.7

Effective June 2014
Expires June 2024

Landowner Objectives and Management Goals

Landowner objectives:

- Manage property for long-term sustainable yields of natural resource products.
- Maintain and increase biological diversity.
- Maintain and improve wildlife habitat within the forest.
- Develop forest road infrastructure to enable sustainable natural resource management and recreational use.
- Encourage and enable a diverse array of recreational uses ranging from bird watching to environmentally responsible ATV use.
- Maintain aesthetics and health of the forest and fields.
- Protect water quality during management.

To meet these objectives, the following management guidelines are recommended:

- Timber harvesting will be conducted with an emphasis on long-term natural resource product yields.
- Where wildlife potential exceeds timber potential, wildlife management prescriptions will be implemented in accordance with appropriate wildlife management guides.
- Forest and access roads will be constructed and reclimated (stabilized) in accordance with the criteria set forth in *Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont* (Vermont Agency of Natural Resources, 2009).

Purpose of Forest Management Plan

This Forest Management Plan is designed to document current forest conditions, incorporate owners' objectives, and set forth directions for manipulating the forest in a manner that will increase the forest's timber value, aesthetics, and wildlife habitat potential. The prescriptions recommended in this document are in accordance with current proper forest management practices. This plan is intended to help ensure that this property continues to be a viable part of Vermont's working landscape.

This report is intended to meet or exceed the standards set forth by the Vermont Department of Forests, Parks, and Recreation and the requirements of the Natural Resource Conservation Service's (NRCS) Vermont Conservation Activity Plan 106 Point Checklist. It is written by Luke Hardt, Consulting Forester, phone 802-673-7769, e-mail luke@hardtforestry.com.

Property Overview

The Poginy Hill Conservation Park is located on Logan Road, approximately 300 feet from the intersection of Logan Road and Poginy Hill Road. There are roughly 6200 feet of frontage on Logan Road. The parcel shares common boundaries with large parcels used for natural resource management and one small residence on the corner of Logan Road and Poginy Hill Road.

The 393.7 acre Grand List parcel consists of forest land, open land, and non-productive wetland. This parcel is not a residential property and is used exclusively for natural resource management and recreation. The topography is sloped to the west with flat terrain abutting Logan Road.

Biophysical Region

Out of Vermont's eight biophysical regions, this parcel lies within the Northern Green Mountain biophysical region, which covers land masses running from the town of Middlesex north along the Green Mountains to the Canadian border.

Cultural Resources

There are several significant cultural resources within the property worth mentioning. First, there are two old stone foundations. The most southerly foundation is accompanied by an open stone well. Throughout the lower portion of the property there are old stone piles and stone walls, indicating past agricultural use. These stone piles and walls are the result of both recent (within the past 50 years) dozer work and other work from original settlement land clearing. These resources serve as pleasant reminders of bygone days and also provide clues as to past forest management. It is advisable that these resources remain intact if possible. Attempts should be made to clear these historic monuments (most importantly the stone foundations) of trees and shrubs as they are being slowly dismantled by the natural forces of time.

Miscellaneous Resources

As noted on the parcel's Forest Management Map, there are two intact spring tiles located on the parcel. Considering these spring tiles are in close proximity to the parcel's main parking area, a hand pump could be installed to enable a potable water supply to park visitors. This resource would greatly improve the park's appeal to recreational visitors and individuals implementing management prescriptions.

Parcel Hazards

As noted on the parcel's Forest Management Map, there is an open well located very close to Logan Road. This hazard is a liability which should be addressed immediately.

Watershed

This parcel lies on the watershed divide of the Lake Memphremagog Watershed and the Missisquoi Watershed. This parcel is near the top of its watershed; therefore, the issue of environmental contaminants entering the property via the parcel's main stream is not of great concern.

Waterways

Within this property there are three year-round streams. These small streams' flood plain appears as a wetland in the Vermont State Significant Wetlands Inventory dataset. When working around this water course, the landowner should keep in mind the ecological significance of this stream and avoid activities that could alter the riparian area along the banks of this stream. Ideally, a machinery-free buffer zone of at least 50 feet would be maintained along the edges of this stream. The landowner is advised to follow the practices outlined in the publication entitled *Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont.*

In addition to the year-round streams, there are seeps and intermittent streams throughout the property, most of which are featured on the Forest Management Map and need some level of management. This plan proposes that these areas be buffered by at least 50 feet from equipment entry. Cable extraction is permitted in these areas but the residual basal area must not be lowered below 50% to ensure that water quality is maintained.

Wetlands

There are two small, dynamic, Class Two wetland complexes within the parcel. According to Thompson and Sorenson's natural community classification system, the wetland complexes are an Alder Swamp natural community and a Shallow Emergent Marsh natural community. These wetlands have been mapped by the National Wetlands Inventory and are protected by the Clean Water Act of 1972. For compliance with these federal regulations, refer to the manual titled *Wetlands Rules and Regulations Handbook* (University of Vermont Extension Service, 1999) or contact your regional Vermont Wetlands Program Advisor, Sharon Morrison, at 802-241-3762.

Deer Yards

According to the *Vermont Fish and Wildlife Deer Yard Database*, this parcel is not part of a deer yard complex. Although the state database does not indicate that this parcel contains a deer yard, the two main components which create a potential deer yard are present in several locations. These components are a 70% canopy cover and a portion of mixed woods which provides suitable browse. It is important that these two deer yard requirements be considered when implementing harvesting prescriptions within this parcel. In the spring, heavily travelled corridor lanes indicated heavy population pressure of both moose and deer.

Invasive Species

There were no invasive species detected within the bounds of this parcel during the spring and summer 2014 data collection. Although no invasive species were identified within the parcel at this time, yearly invasive checks should be performed so as to identify any satellite populations as soon as they arrive.

Rare, Threatened, and Endangered Species and Natural Communities

According to the *Vermont Rare, Threatened and Endangered Species and Natural Communities Database*, there are no rare, threatened, or endangered species and natural communities within this parcel.

Natural Communities of Special Interest

There were several natural communities of special interest identified with the parcel. These natural communities include a Rich Northern Hardwood Forest, Northern Hardwood Talus Woodland, Northern White Cedar Swamp, Shallow Emergent Marsh, and Alluvial Alder Swamp. These natural communities are featured on the parcel's Forest Management Map as both Ecologically Significant Treatment Areas and Non-Productive Forest Land.

Aesthetics

This parcel is potentially aesthetically spectacular. During forest management operations, aesthetics will be a top priority at all times. This includes properly closing landings, maintaining discrete woodland entrances from the parcel's main field, cutting slash low, laying out forest roads correctly, and constructing forest roads.

Wildlife Resources

This parcel's wildlife habitat is extensive. These wildlife resources combine to create an intricate network of give and take relationships among the entire forested ecosystem. By recognizing that animal and plant species are directly linked, one can understand that by managing for healthy wildlife populations, the land steward is also managing for healthy trees.

American beech mast: This parcel contains surprisingly healthy populations of American beech trees whose locations have been featured on the parcel's Forest Management Map. These populations are both resistant to beech bark disease and produce healthy mast. This beech mast is being used by not only black bear, but also by white tailed deer, raccoon, turkey, ruffed grouse, and countless small mammals and passerine species. The trees witness this utilization through bear scaring, bear nests, and significant disturbances to the leaf litter.

Apple tree mast: This parcel is also home to a many apple trees which appear to be in surprisingly good health. The apple trees featured on the Forest Management Map represent just a sample of the total population of apple trees present on this parcel. Wildlife would greatly benefit from the release of these soft mast apple trees. It is advisable that the apple trees be slowly released from competing species. During the year these trees are released there should be no pruning so that the apple trees can focus their energy stores on adapting to the increased exposure. This will limit the chances of sun scald and high levels of suckering. The following year only major growth form cuts are to be made with the objective being structural and not directed towards fruitwood production. The trees will respond to the initial growth form cuts the following growing season by sending up copious amounts of sucker shoots or water sprouts; these water sprouts need to be removed during the dormant season of the same year they develop. Once these corrective actions are taken, the apple trees can be pruned on a two year cycle, insuring that the apple-producing trees will continue to provide associated benefits to this parcel and its wildlife.

Large dead snags: Large dead snags are well distributed throughout the parcel, providing future denning and nesting opportunities for avian species and mammals alike. These dead snags also ensure that woodpeckers and other grub-eaters remain within the bounds of this parcel and continue to keep insect populations in check.

Large downed trees and woody material: Large downed trees and woody material exist throughout the entire parcel but are not optimally prevalent. This woody material provides drumming sites for partridge and showshoe hare along with habitat for various other organisms requiring organic matter in various stages of decomposition. There were adequate large diameter logs and trees observed during this parcel's inventory. The existence of large woody material within this parcel is due to natural causes such as windthrow and the snapping off of overmature trees.

Stream bank corridors: The small streams within this parcel provide corridor travel lanes for members of the weasel family and raccoons. These streams also provide habitat for various macroinvertebrates.

Seeps and springs: The seeps and springs are wildlife resources that stand out as some of this parcel's finest treasures. Woodland seeps and springs provide potable water and nutrient-rich aquatic vegetation almost year-round. These habitats are also home to amphibians and macroinvertebrates. After long winters, these areas are the first to be exploited as a food source for numerous mammals and avian species.

Vernal Pools: Vernal pools are seasonal wet areas which contain standing water. They provide annual amphibian habitat and are frequented by raptors, raccoons, and bears seeking the abundant amphibian food supply**.** Amphibians play a key role in maintaining forest health. They constitute a greater biomass than mammals and are almost solely responsible for controlling algae levels. During this parcel's inventory, Yellow Spotted Salamanders were found dead within ruts created by ATVs. Unfortunately, amphibians like our Yellow Spotted Salamander resort to laying eggs in ruts in the springtime when other alternatives are not available. Ruts usually serve as traps and lead to the demise of amphibians. Because of this issue, this plan proposes the creation of a vernal pool in Stand 2 near the ATV trail where Yellow Spotted Salamanders were found crushed.

Early Succession Habitat: Early successional habitat is lacking within this parcel. Early successional habitat is utilized as brooding, nesting, foraging, and mating habitat by a wide array of species including mammals and birds. When in juxtaposition to wetlands and mature forests, early succession habitat ensures that key species such as woodcock, black bear, white tailed deer and warblers remain within this parcel. To ensure that the desired regeneration becomes established, several patch cut areas have been selected on the parcel. Directions for implementing these patch cuts appear in the prescription sections of this plan.

Open Fields: Within this parcel there are several open field areas that should be brush hogged once a year in late August. Brush hogging any earlier than August will jeopardize nesting songbirds like the Wood Thrush and Dark-Eyed Junco, both of which nest on the ground and in fields with tall grass. This brush hogging restriction should not apply to trails. Trails should be brushed hogged whenever needed to improve human use.

Species diversity: Lastly, the high diversity of tree species within this parcel provides innumerable wildlife resources. Through the juxtaposition of such a diverse range of trees species, the various habitat needs ranging from food to shelter are met for wildlife.

The silvicultural prescriptions within this plan keep wildlife habitat as a priority. It should be recognized by all parties that wildlife management and timber stand management are inextricably interconnected. By manipulating the forest for timber, wildlife habitat is also manipulated. There are management schemes and prescriptions that benefit either wildlife habitat or timber quality to a greater extent; however, through research, observations, and quality site analysis, the land steward can choose a forestry prescription that is the best possible compromise between both timber quality and wildlife habitat objectives.

Non-timber Forest Resources

This parcel presents an excellent opportunity to cultivate wild Ginseng. The soils and topography within certain small areas of Stand 2 have the potential of yielding higher economic returns if managed for Ginseng rather than timber. One big advantage when managing a site for Ginseng is that it can exist within a forest polyculture. In other words, cultivating Ginseng can be just one of the management objectives along with timber and wildlife. According to the Cornell Cooperative Extension of Green County, Cairo, NY (1998), although the commercial cultivation of Ginseng within a forested environment requires an approximate 200 hours per year of labor time, Ginseng has the potential of yielding a net profit of no less than $10,000 to $36,000 over a nine year period per acre.

Ecologically Significant Treatment Areas (ESTAs)

On the parcel's Forest Management Map there are areas identified as ESTAs. This plan proposes that no or limited timber harvesting is to happen within the ESTAs. ESTA 9 is to receive sociocultural treatments only when the ground is completely frozen because of the sensitive herbaceous species it contains. ESTAs 10 and 11 are to receive no silvicultural treatment and are not to be entered with equipment.

Forest Health Concerns

The main health issues within this parcel are directly linked to the high percentage and overstocking of sugar maple. Sugar maple stems are suffering from both biotic and abiotic health issues such as Cobra Conk, Sugar Maple Borers, Spine Teeth Fungus, Coal Fungus, Nectria Canker, seems, forks, and crown die off. Trees with signs of these health issues should be removed.

Heavy moose browse is also an issue is some areas.

Extensive Windthrow exists within the aspen contingent of trees.

Erosion directly linked to reckless 4x4 use is an area of concern.

Parcel Access, Forest Roads, and Log Yarding Areas

Parcel access is from Logan Road which traverses the parcel's entire western boundary. Logan Road is a Class Four Road of minimal grade capable of accommodating tractor trailers and straight log trucks. The town should be approached regarding road maintenance consistent with the road's designation as a Class Four Road. This maintenance could include upgrading culverts and ditching. Yarding areas will be within the parcel's open fields which are located directly off Logan Road. Interior forest roads are for the most part in good condition and easily reopened but some are in poor condition with active erosion. All forest roads should be reclamated after timber harvests have been completed. The reclamation procedures should include the installation of culverts, broad base dips, water bars, diversion belts, ditching, and re-grading. Once reclamated, the forest roads will insure continued access for recreation and management. These forest road reclamation measures should be performed in accordance with Vermont's BMPs and with excavation equipment capable of ditching and general soil manipulation (experience has shown that bulldozers alone are not appropriate).

Biodiversity

Maintaining a high level of biodiversity is a management objective for this parcel. The diverse relationships between different organisms enable the forest ecosystem to function properly and be self-sustaining. Many ecological cycles have yet to be fully understood and quantified, but it is known that it is because of the many relationships between different organisms that our forests are self-sustaining. These countless beneficial relationships can only be sustained through the maintenance of high levels of species diversity. Some examples of the benefits of biodiversity include increased rates of pollination, increased rates of nutrient cycling, seed dispersal, pest control, and seed bed preparation. The silviculture prescriptions recommended within this plan have biodiversity as a priority.

Forest Stand Number: 1

Data Collection Date: April 2014 **Number of Data Plots:** 16

BAF/Plot Size: Plots are variable radius and a prism with a basal area factor of 10 was used.

Calculated Acres: 149.75

Forest Type: Northern Hardwoods

Forest Structure: Even-aged

Quadratic Mean Stand Diameter: 11.3

Basal Area (ft^2/acre): Total Growing Stock: 123
Acceptable Growing Stock: 89.7
Unacceptable Growing Stock: 33.3

Trees per Acre: 176.8 (calculated from TPA formula)

Species Composition: Sugar maple 60%, white ash 9%, American beech 1%, basswood 1%, butternut 0.5%, northeastern hophornbeam 0.5%, black cherry 0.5% and unacceptable growing stock for sawlogs (sugar maple 20%, white ash 4%, red maple 1%, black cherry 1%, yellow birch 1%) 27%.

Primary Species: Sugar maple

Use Value Appraisal Site Class: I
The site class determination was ascertained through USDA Web Soil Surveys.

Age of Top Stratum: 40 years

Size Class: Large Pole-Small Sawlog

Regeneration Data: Regeneration is limited to adequate consisting of sugar maple, beech, ash and yellow birch. There is heavy hophornbeam regeneration in select locations.

Stand History: It appears that this parcel was harvested around 30 years ago, during which time a selective harvest was performed targeting poorly formed trees and biologically mature sawlogs.

Aspect: West

Soils: The soils within this stand are very erodible but potentially highly productive consisting of Dixfield sandy loam, 15 to 35 percent slopes, very stony, Tunbridge-Lyman complex, 15 to 35 percent slopes, very rocky, and Tunbridge-Dixfield complex, 8 to 15 percent slopes, very stony. Within this stand these soils are generally well drained but frequent seeps and shallow streams indicate localized shallow to hardpan and hydric soils. These areas should be located and flagged prior to snow cover and timber entry.

Stocking Level: According to Northern Hardwoods stocking charts, this stand is fully to over stocked.

Silviculture Recommendations

Objectives: Maintain high quality wildlife habitats, maintain aesthetics, and increase the proportion of high quality sawlogs.

General Management Scheme: Even-aged

Type of Treatment: Intermediate thinning

Stand Rotation: 100 years

Residual Basal Area: 75

Species Targeted for Removal: Sugar maple

Thinning Criteria: Remove approximately 70 trees per acre consisting of cull trees first and market trees second. An average spacing of 16 feet between trees of the residual stand is to remain.

General Management Guidelines: Leave about two logs per acre on the forest floor for habitat niches. These logs should be a minimum of 10 inch DBH and should be of low quality for timber or firewood. Buffer the stream and wet seep with a no cut buffer of at least 15 feet. If possible, scarify the soil to encourage angiosperm (hardwoods) seedling establishment.

Wildlife Management Recommendations: Within this stand there is one area as featured on the Forest Management Map which contains healthy mast-producing beech trees. Within this area, all healthy beech are to be retained. When possible, the *VT ANR Management Guidelines for Optimizing Mast Yields in Beech Mast Production Areas* (2011) are to be followed. This includes but is not limited to retaining stems on the south side of mast trees to limit sun scald and selecting cull trees based on their genetic resistance to beech bark disease.

Wildlife Consideration: Because wildlife health is directly linked to forest health there is significant economic incentive for woodland owners to manage for wildlife. For example many woodland song birds eat twice their body weight each day within a home range of less than an acre. During warm weather their diets consist of insects, many of which are considered forest pests (such as thrips and bores). By maintaining song bird habitat, the forest's main defense against these insect pests is maintained. This plan recommends: 1) maintaining lower strata hardwoods vegetation such as hobble bush and regeneration whips, 2) maintaining dead snags for nesting and feeding habitat, and 3) maintaining a diversity of mast to ensure that food supplies are available year round.

Time Frame: This work is scheduled for 2015.

Silvicultural Guide Referenced:
Leak, W. B., Solomon, D. S., & De Bald, P. S. (1987). *Silvicultural Guide for Northern Hardwood Types in the Northeast (Revised). Research Paper NE-603.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Forest Stand Number: 2

Data Collection Date: April 2014 **Number of Data Plots:** 5

BAF/Plot Size: Plots are variable radius and a prism with a basal area factor of 10 was used.

Calculated Acres: 58.3

Forest Type: Northern Hardwoods

Forest Structure: Even-aged

Quadratic Mean Stand Diameter: 12

Basal Area (ft^2/acre): Total Growing Stock: 94
Acceptable Growing Stock: 72
Unacceptable Growing Stock: 22

Trees per Acre: 120 (calculated from TPA formula)

Species Composition: Sugar maple 61%, white ash 7%, basswood 5%, red maple 2%, yellow birch 2%, and unacceptable growing stock for sawlogs (sugar maple 16%, red maple 2%, white birch 2%, yellow birch 2%, northeastern hophornbeam) 23%.

Primary Species: Sugar maple

Use Value Appraisal Site Class: I
The site class determination was ascertained through USDA Web Soil Surveys.

Age of Top Stratum: 40 years

Size Class: Large Pole-Small Sawlog

Regeneration Data: Regeneration is limited to adequate consisting of sugar maple, beech, ash and yellow birch. There is heavy hophornbeam regeneration in select locations.

Stand History: It appears that this parcel was harvested around 30 years ago, during which time a selective harvest was performed targeting poorly formed trees and biologically mature sawlogs.

Aspect: West

Soils: The soils within this stand are very erodible but potentially highly productive consisting of Dixfield sandy loam, 15 to 35 percent slopes, very stony, Tunbridge-Lyman complex, 15 to 35 percent slopes, very rocky, and Tunbridge-Dixfield complex, 8 to 15 percent slopes, very stony. Within this stand these soils are generally well drained but frequent seeps and sallow streams indicate localized shallow to hardpan and hydric soils. These areas should be located and flagged prior to snow cover and timber entry.

Stocking Level: According to northern hardwoods stocking charts, this stand is fully to over stocked.

Silviculture Recommendations

Objectives: Maintain high quality wildlife habitats, maintain aesthetics, and increase the proportion of high quality sawlogs.

General Management Scheme: Even-aged

Type of Treatment: Intermediate thinning

Stand Rotation: 100 years

Residual Basal Area: 75

Species Targeted for Removal: Sugar maple

Thinning Criteria: Remove approximately 25 trees per acre consisting of cull trees first and market trees second. An average spacing of 16 feet between trees of the residual stand is to remain.

General Management Guidelines: Leave about two logs per acre on the forest floor for habitat niches. These logs should be a minimum of 10 inches DBH and should be of low quality for timber or firewood. Buffer the stream and wet seep with a no cut buffer of at least 15 feet. If possible, scarify the soil to encourage angiosperm (hardwoods) seedling establishment.

Time Frame: This work is scheduled for 2015.

Silvicultural Guide Referenced:
Leak, W. B., Solomon, D. S., & De Bald, P. S. (1987). *Silvicultural Guide for Northern Hardwood Types in the Northeast (Revised). Research Paper NE-603.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Wildlife Habitat Recommendations

Wildlife Habitat Improvement Treatment: Considering this stand's juxtaposition to the forested wetland, long ledge outcrop, topography, and centralized seep, the construction of a **vernal pool** is recommended. The proposed location of this vernal pool is located on the Forest Management Map.

Vernal pools are the main lacking wildlife habitat within this parcel; in order to increase overall biodiversity, managing for a vernal pool would be most beneficial to the amphibian community and easily constructed through the utilization of existing topography and hydraulic regimes.

General Construction Guidelines:

1) The vernal pool should be constructed within a seep area selected by an individual familiar with forest soils to ensure it fills with water.

2) Construction of this pool should happen during the dry season so that collateral damage caused by the presence of large machinery is limited and surficial hydrology is not altered.

3) This pool should be approximately 30 feet to 60 feet in diameter and have a depth of no more than 3 feet.

4) Once a vernal pool is constructed it should be brushed in to provide egg mass laying habitat for amphibians.

5) The riparian area (edge) of the vernal pool could be planted with species capable of vegetatively reproducing, such as *Salix* species. Cuttings of these species can be simply stuck into the ground around the pool.

Wildlife Habitat References:

Farm Ponds as Critical Habitats for Native Amphibians
http://www.umesc.usgs.gov/terrestrial/amphibians/mknutson_5003869.html

University of Maine, Cooperative Extension (1999). *Biodiversity in the Forests of Maine: Guidelines for Land Management.* (UMCE Bulletin #7147).

Vermont NRCS (2010). *Vermont Biology Technical Note 1: Vernal Pool Habitat in Conservation Planning. Updated 2010 Objectives: Create Amphibian Breeding Habitat.*

Vermont Department of Fish & Wildlife and Forests, Parks, & Recreation (1995). *A Landowner's Guide: Wildlife Habitat Management for Vermont Woodlands.*

Vermont Reptile and Amphibian Atlas
http://community.middlebury.edu/~herpatlas/index.html

Wildlife Management Recommendations: Within this stand there is one area as featured on the Forest Management Map which contains healthy mast-producing beech trees. Within this area, all healthy beech are to be retained. When possible, the *VT ANR Management Guidelines for Optimizing Mast Yields in Beech Mast Production Areas* (2011) are to be followed. This includes but is not limited to retaining stems on the south side of mast trees to limit sun scald and selecting cull trees based on their genetic resistance to beech bark disease.

Wildlife Consideration: Because wildlife health is directly linked to forest health, there is significant economic incentive for woodland owners to manage for wildlife. For example many woodland song birds eat twice their body weight each day within a home range of less than an acre. During warm weather their diets consist of insects many of which are considered forest pests such as thrips and bores. By maintaining song bird habitat the forests main defense against these insect pests is maintained. This plan recommends: 1) maintaining lower strata hardwoods vegetation such as hobble bush and regeneration whips, 2) maintaining dead snags for nesting and feeding habitat, 3) maintaining a diversity of mast to ensure that food supplies are available year round.

Forest Stand Number: 3

Data Collection Date: April 2014 **Number of Data Plots:** 8

BAF/Plot Size: Plots are variable radius and a prism with a basal area factor of 10 was used.

Calculated Acres: 62.47

Forest Type: Mixed woods

Forest Structure: Even-aged

Quadratic Mean Stand Diameter: 10

Basal Area (ft^2/acre): Total Growing Stock: 120
Acceptable Growing Stock: 96
Unacceptable Growing Stock: 24

Trees per Acre: 243 (calculated from TPA formula)

Species Composition: Balsam fir 48%, red maple 6%, red spruce 5%, poplar 5%, white ash 5%, white cedar 4%, sugar maple 3%, elm, 1%, black cherry 1%, basswood 1%, and unacceptable growing stock for sawlogs (red maple 10%, balsam fir 3%, white ash 2%, northern hemlock 2%, poplar 2%, sugar maple 1%) 20%.

Primary Species: Balsam fir

Use Value Appraisal Site Class: II
The site class determination was ascertained through USDA Web Soil Surveys.

Stand Age: 80 years

Size Class: Small sawlogs

Regeneration Data: Regeneration is adequate consisting of seedlings and saplings of hemlock, red maple, red spruce, balsam fir, and white ash.

Stand History: It appears that this stand was harvested around 20 years ago

Aspect: West

Soils: The soils within this stand are potentially highly erodible but highly productive consisting of Colonel-Cabot complex, 3 to 8 percent slopes, very stony. Within this stand, these soils are generally well drained but frequent seeps and shallow streams indicate localized shallow to hardpan and hydric soils. These areas should be located and flagged prior to snow cover and timber entry.

Stocking Level: According to mixed wood stocking charts, this stand is stocked at the quality line and ready for an entry.

Silvicultural Recommendations

General Management Scheme: Even-aged

Type of Treatment: Intermediate thinning

Stand Rotation: 70 years

Residual Basal Area: 100

Species Targeted for Removal: Balsam fir and Aspen

Thinning Criteria: Remove approximately 43 trees per acre consisting of cull trees first and market trees second.

General Management Guidelines: Leave about two logs per acre on the forest floor for habitat niches. These logs should be a minimum of 10 inches DBH and should be of low quality for timber or firewood. Buffer the stream and wet seep with a no cut buffer of at least 15 feet.

Time Frame: This work is scheduled for 2015.

Silvicultural Guide Referenced:
Leak, W. B., Solomon, D. S., & De Bald, P. S. (1987). *Silvicultural Guide for Northern Hardwood Types in the Northeast (Revised). Research Paper NE-603.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Forest Stand Number: 4

Data Collection Date: April 2014 **Number of Data Plots:** 6

BAF/Plot Size: Plots are variable radius and a prism with a basal area factor of 10 was used.

Calculated Acres: 42.22

Forest Type: Mixed woods

Forest Structure: Even-aged

Quadratic Mean Stand Diameter: 12.2

Basal Area (ft^2/acre): Total Growing Stock: 86
Acceptable Growing Stock: 76
Unacceptable Growing Stock: 10

Trees per Acre: 105 (calculated from TPA formula)

Species Composition: Poplar (aspen) 50%, sugar maple 11%, red maple 11%, white ash 6%, basswood 4%, white pine 2%, yellow birch 2%, and unacceptable growing stock for sawlogs (poplar 3%, red maple 2%, sugar maple 2%, white pine 2%, yellow birch 1%) 10%.

Primary Species: Poplar (aspen)

Use Value Appraisal Site Class: II
The site class determination was ascertained through USDA Web Soil Surveys.

Stand Age: 40 years

Size Class: Small and large sawlogs

Regeneration Data: Regeneration is adequate consisting of seedlings and saplings of red maple, white ash, poplar, balsam fir and red spruce.

Stand History: This stand received a heavy cut around 30 years ago.

Aspect: West

Soils: The soils within this stand are very erodible but potentially highly productive consisting of Colonel-Cabot complex, 8 to 15 percent slopes.

Stocking Level: According to mixed wood stocking charts, this stand is stocked below the recommended residual stocking level but will be stocked within the next 10 years.

Silvicultural Recommendations

Objectives: Create high quality wildlife habitats and harvest mature timber.

General Management Scheme: Even-aged (directed at creating wildlife habitat).

Wildlife Management Treatment: Considering this parcel's need for early successional habitat and this site's potential to produce aspen sucker regeneration, two areas have been selected for patch cuts and are featured on the Forest Management Map. These areas have existing high production aspen phenotypes which are situated in optimal areas for wildlife utilization and contain merchantable timber which will pay for the patch cut. When cut, the aspen roots will send up hundreds of clones, resulting in comprehensive coppice regeneration. The large cut will benefit our resident higher order mammals such as white-tailed deer and black bear. The smaller patch cut will be directed at creating snipe and woodcock habitat. The proposed location of the smaller patch cut is a candidate for woodcock management due to its juxtaposition to wetland, alder-dominated seeps, and contiguous forestland. Woodcock have three main habitat requirements: 1) feeding and brooding habitat, 2) nesting habitat, 3) and singing habitat. Within a 600 foot radius of this patch cut area, feeding ground is provided in the moist soils of the wetland and in the alder-dominated area. Because of the alders' ability to fix nitrogen, the soils in which it grows are often rich with earthworms and macroinvertebrates (both staples in woodcock diets). Nesting habitat is provided in the surrounding young forest with an understory of brush. One last woodcock habitat requirement remains: singing habitat. Fortunately, singing habitat can easily be created through the prescription described below.

Species Targeted for Removal: All species within patch cut.

Patch Cut Rotation: 10 years

Stand Rotation: 80 years for areas outside patch cuts and 10 years within patch cuts.

General Management Guidelines: Leave about two logs per acre on the forest floor for habitat niches. These logs should be a minimum of 10 inch DBH and should be of low quality for timber or firewood. Buffer the stream and wet seep with a no cut buffer of at least 15 feet. If possible, scarify the soil to encourage coppice establishment.

Marking Guidelines: Within the two patch cut areas depicted on the Forest Management Map, all trees are to be felled and left or removed for sale. If possible, four trees per acre are to be retained. Also, a minimum of four trees per acre are to be left on the ground for microhabitat. The ecotone (edge) between the forest and the patch cut should be softened with a transitional zone where trees are retained near the forest's edge, creating an even gradient of change rather than an abrupt habitat change. The trees to be retained should be marked to ensure compliance with this prescription. This area will regenerate with thick coppice regeneration critical for wildlife.

Time Frame: This work is scheduled for 2015.

Silvicultural Guides Referenced:

Hobson, S., Barclay, J., & Broderick, S. (1993). *Enhancing Wildlife Habitat: A Practical Guide for Forest Landowners.* Ithaca, New York: Natural Resource, Agriculture, and Engineering Service (NRAES-64).

Ohaman J,H. (1977). *Manager's Handbook to Aspen in the North Central States.* General Technical Report NC-36. St. Paul, Minnesota: North Central Forest Experiment Station, Forest Service, U.S. Department of Agriculture.

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Forest Stand Number: 5

Data Collection Date: April 2014 **Number of Data Plots:** 6

BAF/Plot Size: Plots are variable radius and a prism with a basal area factor of 10 was used.

Calculated Acres: 31.45

Forest Type: Mixed Wood

Forest Structure: Even-aged

Quadratic Mean Stand Diameter: 7.7

Basal Area (ft^2/acre): Total Growing Stock: 103
Acceptable Growing Stock: 60
Unacceptable Growing Stock: 43

Trees per Acre: 318 (calculated from TPA formula)

Species Composition: Red maple 24%, balsam fir 10%, white ash 8%, aspen 6%, white pine 5%, yellow birch 4%, hophornbeam 1% and unacceptable growing stock for sawlogs (red maple 36%, balsam fir 4%, white ash 2%) 42%.

Primary Species: Red maple

Use Value Appraisal Site Class: II
The site class determination was ascertained through USDA Web Soil Surveys.

Stand Age: 30 years

Size Class: Poles

Regeneration Data: Regeneration is limited, consisting of balsam fir and red spruce.

Stand History: This stand is a 30 year-old regeneration field.

Aspect: Northwest

Soils: The soils within this stand are very erodible Colonel-Cabot complex, 8 to 15 percent slopes. These soils are very heavy, seasonally hard to work yet potentially very productive.

Stocking Level: According to mixed wood stocking charts, this stand is at the suggested residual stocking line.

Silvicultural Recommendations

Objectives: Regenerate stand. In 10 years, reevaluate plan and possibly perform an intermediate thinning to remove aspen and white pine.

General Management Scheme: Even-aged management

Type of Treatment: No treatment is recommended as stand needs to regenerate.

Stand Rotation: 70 years

Silvicultural Guide Referenced:
Leak, W. B., Solomon, D. S., & De Bald, P. S. (1987). *Silvicultural Guide for Northern Hardwood Types in the Northeast (Revised). Research Paper NE-603.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Forest Stand Number: 6

Data Collection Date: April 2014 **Number of Data Plots:** No plots taken

Calculated Acres: 22.51

Forest Type: Mixed Wood

Forest Structure: Even-aged

Silvicultural Recommendations

Objectives: Manage as a wilderness area where no harvest activity takes place.

Forest Stand Number: 7

Data Collection Date: April 2014 **Number of Data Plots:** 3

BAF/Plot Size: Plots are variable radius and a prism with a basal area factor of 10 was used.

Calculated Acres: 15.56

Forest Type: Mixed Wood

Forest Structure: Even-aged

Quadratic Mean Stand Diameter: 10

Basal Area (ft^2/acre): Total Growing Stock: 106
Acceptable Growing Stock: 92
Unacceptable Growing Stock: 14

Trees per Acre: 190 (calculated from TPA formula)

Species Composition: Red maple 30%, aspen 21%, yellow birch 15%, white ash 9%, balsam fir 6%, hophornbean 3%, northern hemlock 3%, and unacceptable growing stock for sawlogs (yellow birch 9%, white ash 6%, red maple 3%) 18%

Primary Species: Red maple

Use Value Appraisal Site Class: II
The site class determination was ascertained through USDA Web Soil Surveys.

Stand Age: 40 years

Size Class: Poles and small saw logs

Regeneration Data: Regeneration is limited, consisting of balsam fir, red maple, white ash and red spruce.

Stand History: This stand is a 30 year-old regeneration field.

Aspect: Northwest

Soils: The soils within this stand are very erodible stony Colonel-Cabot complex, 8 to 15 percent slopes. These soils are very heavy, seasonally hard to work yet potentially very productive.

Stocking Level: According to mixed wood stocking charts, this stand is at the suggested residual stocking line.

Silvicultural Recommendations

Objectives: Regenerate stand. In 10 years, reevaluate plan and possibly perform an intermediate thinning to remove aspen and white pine.

General Management Scheme: Even-aged management

Type of Treatment: No treatment is recommended as stand needs to regenerate.

Stand Rotation: 70 years

Silvicultural Guide Referenced:
Leak, W. B., Solomon, D. S., & De Bald, P. S. (1987). *Silvicultural Guide for Northern Hardwood Types in the Northeast (Revised). Research Paper NE-603.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Possible Wildlife Treatment Area

Data Collection Date: November 2014 **Number of Data Plots: NA**

Calculated Acres: 3.26

Type: Apple orchard consisting of old standard stock.

Age: ~50 years

Apple Trees per Acre: ~30

General Description: This apple orchard consists of surprisingly healthy trees which are being overstoried by juxtaposed species. There is very little regeneration in this area due to high levels of rodent activity and deer browse. As this area presently exists it is not suitable for future timber production. The non-apple trees within this area should be removed to release the apple trees and at the same time salvage their merchantable value. This area's greatest and best use is without question as a wildlife management area.

Silvicultural Recommendations

It is advisable that the apple trees be slowly released from competing species. During the year these trees are released there should be no pruning so that the apple trees can focus their energy stores on adapting to the increased exposure. The following year only major growth form cuts are to be made with the objective being structural and not directed at fruitwood production. The trees will respond to the initial growth form cuts the following growing season by sending up copious amounts of sucker shoots or water sprouts. These water sprouts need to be removed during the dormant season of the same year they develop. Once these corrective actions are taken, the apple orchard can be pruned on a two year cycle, ensuring that the apple orchard will continue to provide associated benefits to this parcel and its wildlife.

Time Frame: This work is scheduled for 2015.

Reference:
Hobson, S., Barclay, J., & Broderick, S. (1993). *Enhancing Wildlife Habitat: A Practical Guide for Forest Landowners.* Ithaca, New York: Natural Resource, Agriculture, and Engineering Service (NRAES-64).

Boundary Lines

This property's boundary lines should be re-painted on a ten year cycle. As they currently exist they are in good condition with the exception of two problematic areas. The first problematic area is an inside corner near the parcel's Area 12 wetland complex. This inside corner has been incorrectly marked and needs to be re-marked. The second boundary issue is boundary encroachment along the boundary where Logan Road and Poginy Hill Road join. These two issues should be addressed as soon as possible to avoid trespass or abutters claiming adverse possession.

In Vermont, property boundaries can be relocated by the property owner or an agent of the property owner who does not possess a Vermont survey license. These boundaries can be flagged. Where old trees with survey blazes are discovered, paint can be applied by the property owner or an agent of the property owner. If these trees are in need of re-blazing, the new blaze should not disturb any portion of the original blaze established by the licensed surveyor. The trees blazed by a surveyor are sacrosanct; once a tree is blazed it is a boundary tree for as long as that tree stands or until the line is remonumented by a surveyor. It is unlawful to place a blaze on a tree that was not first blazed by a surveyor or an agent of a surveyor.

It is Vermont State Law to mark harvest areas prior to stand entry as outlined in Title 13, Chapter 77: Trees and Plants 13 V.S.A. §3603. Marking harvest units:

> "A landowner who authorizes timber harvesting or who in fact harvests timber shall clearly and accurately mark with flagging or other temporary and visible means the harvest unit. Each mark of a harvest unit shall be visible from the next and shall not

exceed 100 feet apart. The marking of a harvest unit shall be completed prior to commencement of a timber harvest. If a violation as described in section 3602 of this title occurs due to the failure of a landowner to mark a harvest unit, the landowner who failed to mark a harvest unit in accordance with the requirements of this subsection shall be assessed a civil penalty of not less than $250.00 and not more than $1,000.00. (Added 2009, No. 147 (Adj. Sess.), § 4.)".

References

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Frank, R. and Bjorkbom, J. (1973). *A Silvicultural Guide for Spruce-Fir in the Northeast. Technical Report NE-6.* Upper Darby, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

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Lancaster, K. F. (1985). *Managing Eastern Hemlock: A Preliminary Guide. Research Paper NA-FR-30.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Leak, W. B., Solomon, D. S., & De Bald, P. S. (1987). *Silvicultural Guide for Northern Hardwood Types in the Northeast (Revised). Research Paper NE-603.* Broomall, PA: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.

Vermont Agency of Natural Resources, Department of Forests, Parks, and Recreation. (2009). *Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont.* Waterbury, VT: Vermont Agency of Natural Resources.

Vermont Agency of Natural Resources, Department of Forests, Parks and Recreation, Forestry Division, County Forester Program. (Revised 2010). *Use Value Appraisal Program Manual.* Retrieved from: www.vtfpr.org/resource/documents/UVAManual.pdf

Vermont State Legislature. (2009). *The Vermont Statutes Online, Title 13: Crimes and Criminal Procedure, Chapter 77: Trees and Plants, §3603. Marking harvest units.* Retrieved from: http://www.leg.state.vt.us/statutes/fullchapter.cfm?Title=13&Chapter=077

Forest Management Plan Priority and Schedule Form

Priority	Stand	Acres	Activity
Year: 2014			
1	All stands	NA	Address boundary line issues
Year: 2015			
1	1	149.75	Thinning
2	2	58.75	Thinning
3	3	57.25 and 5	Thinning
4	4	6	Patch cuts
5	7	3.26	Release apple orchard
6	All stands	NA	Release mast trees including apple
7	All stands	NA	Reclamate forest roads
8	2	NA	Construct vernal pool

This is a suggested schedule and prioritization of management activities. If the owner adopts it, it will be the basis for management. This schedule can be modified as needed. Each date has an acceptable operation window of three years on either side of the date specified in this schedule, creating a total six year window to implement the activities.

2014 Photo Documentation

Salamander within Forest Trail
Due to improper trail use Stand 2

Poor Growth Form Stand 2

Bear-Scarred Beech Stand 2

Cobra Conk Stand 1

Historical Resource within Stand 4

Rich N. Hardwoods Stand 4