

Jones Lot Operations Plan
UNH Office of Woodlands and Natural Areas



Various pocket wetlands are scattered across the Jones lot property

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I. Introduction

This operations plan should act as a supplement to the recently published and highly comprehensive “Forest Stewardship Plan” produced by the Ossipee Mountain Land Company in 2003. This plan is available on the woodlands website at www.unh.edu/woodlands. Some of the material provided here is redundant to that report but necessary to support the specific strategies outlined. The concept of this plan was approved by the Committee on Woodlands and Natural Areas on December 16th, 2008.

Timber and other inventory data were obtained during permanent plot sampling in the summer of 2008. Although this plan in its essence seeks to alter the current vegetative makeup, it is assumed that the overall productivity of the property for use in education will be heightened. This can only be stated assuredly knowing that:

Permanent long-term white pine growth plots have been located and will be either protected from impingement by management activities or treated according to research goals.

There are no other known long-term research sites in place that require a moratorium on management.

The site conditions are not so unique that classes that use this area for its present structure cannot easily find those conditions within this property or other local university properties.

II. Management Goals

Jones lot is a working forest that is managed to maximize educational and research opportunities. Preservation of unique or rare communities or characteristics, minimization of ecological impact, maintenance of wildlife habitat and demonstration of good land stewardship are all overarching principles that drive decision making. Management strategies and timber harvesting operations are geared towards practicality, sustainability and applicability to contemporary and long-term research programs.

III. Physical Description

Jones Lot is a 320 acre parcel off of Pigget Hill Road in Milton, NH. The property is nestled between the higher ground of Pigget Hill to the South and lower ground associated with Jones River and flood plain to the north and east. Moving across the property from west to east the terrain slopes downward to the river and transitions from sometimes steep and quite rocky to rolling to level with little evident surface features. A small 16 acre parcel is separated from the rest of the property by the railroad line that runs north south. Access is further hampered by its separation from other land by the Jones River along the entire eastern margin.

Access to the Jones Lot is off of Pigget hill road by a woods road that bisects the entire property running roughly north to south. This road eventually travels off of the property and onto abutters. The road is mostly flat but is crossed by several ephemeral streams or impacted by wetland pockets and seeps uphill of the road. The single steep section of the access, about a half mile in, is considerably eroded and currently impassable by anything but 4 wheeled drive truck or heavy equipment. Multiple skid/haul roads branch off from this main road and are for the most part wisely placed and have suffered little erosion. These skid roads will be used as much as is practical in future operations so as to limit impact on soils and overall site productivity.

Special considerations:

Areas of enrichment identified in the above management plan will not be at all impacted by the current version of this operations plan. Advice for intense ecological inventory of these areas will be incorporated in future iterations of this operations plan.

It should be noted that the Town of Milton has identified this property as one of significance in terms of its contribution towards natural resources. It has identified the need to contact UNH and request that permanent protection be put in place. It is unknown whether this contact occurred or not.

Although Fish and Games Wildlife Action plan identifies the riparian zone around Jones Brook as an area of significance, none of the UNH parcel or nearby area has been identified as a focus area in terms of wildlife management.

IV. Local properties and recent management

Harvest activity on Jones Lot is as follows:

Compartment A (Stand 6 here) 1982-1984	9mbf Beech 8mbf Hemlock 6mbf Hardwood
Compartment D (Stand 4 here) 1987	113 MBF White pine 4mbf Red Pine 210 cds (≈105MBF) Pulp

The Forest Society's 237 acre Jones Forest, just east of and the sister property to UNH's parcel, was just recently harvested (2007). A wide range of treatments were implemented so as to improve the current growing stock as well as create wildlife habitat. **It is unknown as to whether this work was meant to target specific wildlife species.**

Just to the west of the UNH parcel sits a 240 acre parcel owned by Siemons Land trust. This property has been high-graded repeatedly over the years and now has mostly poor

quality hardwoods growing on it. Unfortunately young growth is of low diversity and density levels, mostly beech and birch species. Nevertheless, some of this thicket cover is of benefit to a range of mammals and birds that use this lower ground cover and is of a type that is different than exists on UNH property. It is likely that the wildlife habitat portfolio of the entire area is broadened by this unfortunate treatment of our neighbor's land.

When taken in combination, these three properties cover approximately 800 acres of land. Knowledge of the cover types of these properties is invaluable for the natural resource managers of these respective parcels. Wildlife diversity will benefit from shared knowledge about the unique characteristics each has to offer and managing in the context of this.

Upstream of these properties lies the 10 acre Fish and Game parcel the Milton Mills WMA; TNC's 170 acre Mt. Teneriffe property is within one mile due south and home to a community of small whorled pagonia.

V. Stand Descriptions and Planned Operations

Stand 1 Red Maple Swamp

QMD 8.7 “
TPA 141
BA 58sq. ft

Predominant tree species (in order of total basal area) Red maple (51), white pine(<5), yellow birch(<5).

Predominant regeneration: (>100 stems per acre) Spirea, sweet gail, speckled alder, winterberry holly, silky dogwood, nannyberry, arrowwood, buttonbush, red-osier dogwood.
Invasives found:
Multiflora rose.



This red maple swamp is 45 acres of muck and peat and sits at the southeastern end of the property. The Jones river runs through the center of it. Areas close to forest edge are mostly composed of red maple and some other facultative wetland species. As you move away from the shoreline into the swamp the canopy thins out to nothing and the vegetative layer is composed of a variety of wetland-shrubland species including blueberry, sweet gail, winterberry holly, mountain holly, buttonbush and various viburnums. This area is valuable in its contribution towards the property's overall diversity in terms of variety of vegetation and associated wildlife species. Undoubtedly various mammals and birds use the shrubland as a food source and the dense forested areas for cover, denning and nesting. No entry for this stand will be prescribed. This area is an excellent candidate for future low intensity invasive control work and will be prioritized for inventory and hand pulling.

Stand 2 Hemlock – WP – Mixed HWD

QMD 9.5 “
TPA 294
BA 143sq. ft
Vol/AC: 13.5 MBF

Predominant tree species
(in order of total basal
area) Hemlock (62), White
Pine (24), Red Maple (17),
American beech, Black
Birch, Red Oak(<10),
Balsam Fir, Paper Birch,
Red Spruce, Sugar Maple,
Yellow Birch (<5), American
Elm, Bigtooth Aspen, black
cherry, white ash (<1)



Predominant regeneration: (>100 stems per acre) American beech, hemlock, red maple, winterberry holly, lowbush blueberry.
Invasives found: None.

This is a fairly diverse 50 acre stand that is dominated by hemlock interspersed with larger diameter white pine. Hemlock quality is fair to good here; as with most of the other property the larger diameter white pine and pole-sized red oak is mostly good to excellent quality. The red maple quality ranges from poor to fair. All other species are fair to good.

The greatest asset this stand has in terms of wildlife is the dense hemlock thickets created during the last harvesting cycle. These thickets create excellent winter cover and should mostly be retained for this reason. Like the rest of the property, several intermittent streams cross the stand and the many terraced areas have low or sunken ground that holds surface water during wet times. These areas will be avoided during operations; otherwise the ground here is good in terms of operability.

Harvest operations within this stand will focus upon retaining thick and young hemlock cover while attempting to improve the quality of the current growing stock. Adjacent to thicket areas, crown thinning methods will be employed where clumps of large diameter white pine and hemlock compete with each other; focus will be on individual tree quality and not species. Where pockets of poorly formed white pine, hemlock and hardwoods exist near a white pine seed source, large patches will be made so as to add additional young coniferous(white pine) thicket cover. This will increase the timber

value here as well as diversify the age and type of wildlife cover available. Repeated entries into this stand every 15-25 years with similar goals should maintain good growing stock and maintain a diversity of ages and species makeup. **An updated version of this operations plan will be available at time of stand entry.**

Projected stand entry date: 2010

Volume Harvest Goal : 150-200mbf (3mbf per acre) this is 21% of the total estimated volume in this stand.

Stand 3 Hemlock – Mixed Hardwood

QMD	10.2 "
TPA	221.4
BA	127sq. ft
Vol/AC:	12 MBF

Predominant tree species (in order of total basal area) Hemlock (69), Red Maple (15.6), American Beech, Yellow Birch, Black Birch (8), Bigtooth Aspen, Hophornbeam, red oak, paper birch, red spruce, sugar maple, white ash, white pine (>5).

Predominant regeneration: (>100 stems per acre)
American beech, hemlock, red maple, red oak, winterberry holly, lowbush blueberry.
Invasives found: None.



This 47 acre stand is dominated by hemlock with a large component of mixed hardwoods.

Regeneration is primarily beech and hemlock. As with stand two, one of the main priorities will be to retain at least 75% of the current hemlock thicket. We will continue with “best tree” thinning approach, focusing on removing poorly formed growing stock. In these areas this is diseased American beech, red maple of poor form and multi-stemmed or crooked hemlock. Patches of 1/10-1/5 ac will be created using these guidelines to create additional early-successional openings for wildlife. Repeated entries into this stand every 15-25 years with similar goals should maintain good growing stock and maintain a diversity of ages and species makeup. **An updated version of this operations plan will be available at time of stand entry.**

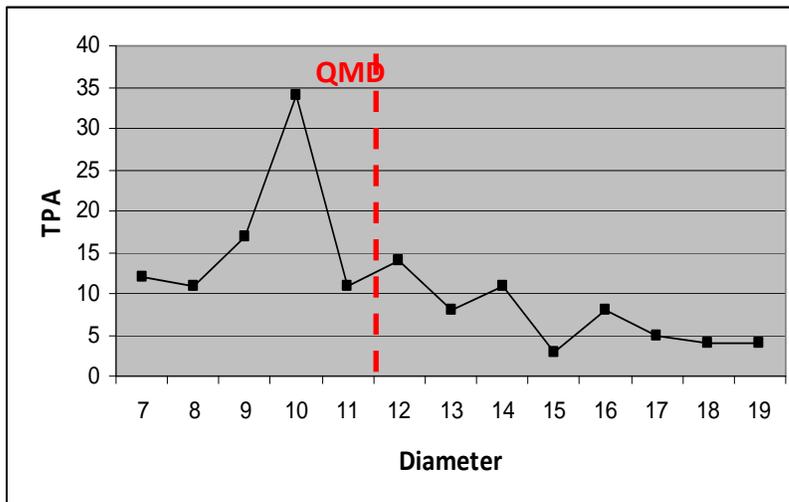
Projected stand entry date: 2011

Volume Harvest Goal : 150-200mbf (3mbf per acre) this is 27% of the total estimated volume in this stand.

Stand 4 White Pine

QMD	10.2 "
TPA	221
BA	127 sq. ft
Vol/AC:	16.5 MBF

Predominant tree species (in order of total basal area) White Pine (108), Red Maple (11) eastern Hemlock (7), American beech, basswood, Aspen, Black cherry, red oak, red pine, red spruce (<1).



Stand 4 Diameter distribution of white pine. Removal focus will be on the smaller age classes, mostly overtopped stems or pockets of pole-sized white pine.

Predominant regeneration: (>100 stems per acre) American beech, black birch, balsam fir, red oak, hemlock, red maple, red oak, lowbush blueberry, white pine.

This stand was treated twenty years ago, followed by pruning on dominant stems of good quality. In the uphill and core of the stand

the individual tree quality and growth is mostly good to excellent and hovering around average 16" diameter. On the fringes of the stand near the river and bordering other areas to the south, it appears that some areas were left untreated. This is unfortunate because of the excellent response this site had to the thinning in 1987. This oversight resulted in pockets of dense pine in a range of quality and diameters that have lagged behind in growth. The substantial standing and downed deadwood shows that we are missing the chance to capture some of the mortality resulting from competition.

Regeneration in this stand is mostly black birch and white pine. In some cases the white pine is being outcompeted by the black birch or has died off from being in closed canopy conditions for too long.

Prescription:

- 1) In higher quality areas focus on co-dominant stems to prepare for seed cut in 10-15 years. A primary goal is to further release crop trees, removing stems in the 8-

14" range. "Take" trees will be those of poorest quality and/or those that will aid in the release of the optimal number of leave trees. In this area we will remove approximately 20-25% of the current basal area.

Our next entry will be when the majority of the stems will be in the 18-20" range and/or financially mature. This seed cut will focus mainly on taking stems that have substantial lower branching or other grade classification that prevents them from gaining clear wood. The leave trees will be those that still can jump to next grade class for the next cut 10-15 years later.

2008 prep cut

2018-2023 Seed cut (1/3 to 1/2 removal)

2028-2033 Release harvest

2) In the lower quality "fringe areas", focus will be on removing trees that are codominant to or overtopped by stronger individuals. Average harvest diameter in these areas will primarily be in the 6-10" diameter range.



Unthinned fringe area of stand 4

3) In either of areas addressed in (1) or (2) some good pockets of white pine regeneration exist. The regeneration is quite healthy yet has slowed in growth due to the closed canopy. Where individual canopy tree quality surrounding these areas is low (trees cannot make an additional grade jump, have severe defect, etc) release of this younger age class will trump the former two –prescriptions.

4) In areas of release or dense white pine, tsi in the form of brush saw to reduce the amount of undesirable hardwood regeneration in the understory. (summer 2009)

Projected stand entry date: 2008

Volume Harvest Goal : 3mbf per acre or a total of 150mbf. This is 20% of the total volume of this stand.

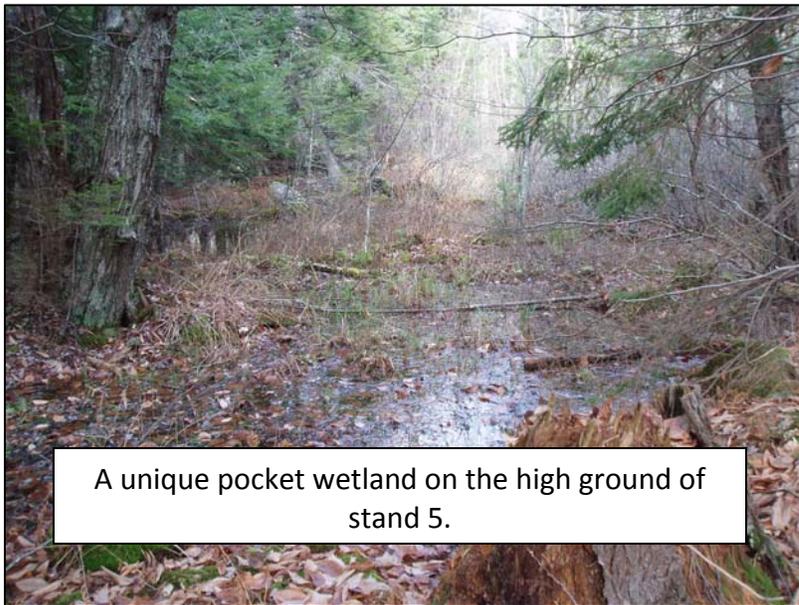
Stand 5 Mixed Wood

QMD	8.8 "
TPA	281.7
BA	120sq. ft
Vol/AC:	14 MBF

Predominant tree species (in order of total basal area) American beech (31)Red maple (24), Hemlock (23), red oak (17), White pine (5), paper birch, sugar maple, yellow birch, black birch, sugar maple, basswood (<5), aspen, white ash(<1).

Predominant regeneration: (>100 stems per acre) Beech, hophornbeam, red maple, red oak, hobblebush, sugar maple, witch hazel.

This stand occupies the highest ground, sets at the middle of the property and on the far



western edge. The boundary line to the western neighbor is defined by a distinct type change over to hemlock as you move off of UNH. Aggressive harvesting has left this area with a distinct appearance and vegetative makeup unlike the other parts of the property. Although on enriched soil like the stand to the north, open canopy conditions left

this area with a large component of white birch and poplar. Unfortunately, the quality of red maple and American beech continues to be low. Conversely, scattered about are oaks with beautiful form as well as similar specimens of black and yellow birch. Occasionally there is a random sugar maple, or groups of them with white ash and basswood clustered about wet areas or along the edge of ephemeral streams.

The parameters that will be used to thin this stand are:

-Retain the maximum desired TPA of paper birch. Paper birch of this quantity or quality is unique to our timber holdings. For research, educational and ecological and portfolio diversity this stand will be thinned to promote white birch stand development. Following this, species that will be given preference will be red oak, yellow birch, and black birch. Vigorous and well formed specimens (because they are relatively rare) of American beech and red maple may also be thinned around. Focus will be on removing overtopped and codominant stems of all trees that are of least quality.



On lower reaches of the slope (nearing the road) larger stems of red oak are present and will be thinned around to further growth. Occasionally, poorly formed groups of hardwoods will be cut where they are in proximity to individual trees of desirable species (white pine or red oak) and of age and vigor to provide ample seed. Logging injury

during the last stand entry has left several large groups available for this type of treatment. Ironically, these areas are closest to the road and would be the easiest to manage intensively.

Additionally, large groups of poplar may be cut in groups to regenerate these species in pockets for benefit to wildlife.

An updated version of this operations plan will be available at time of stand entry.

Projected stand entry date: 2012

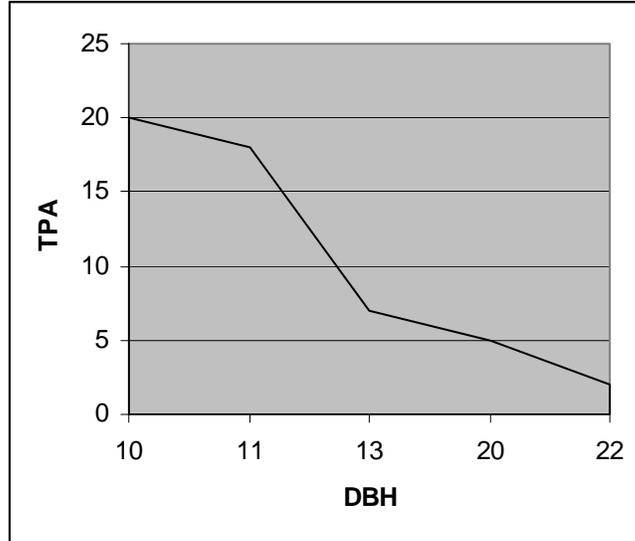
Volume Harvest Goal : 150-200mbf (3mbf per acre) this is 27% of the total estimated volume in this stand.

Stand 6

QMD 12.2 "
TPA 136
BA 110 sq. ft

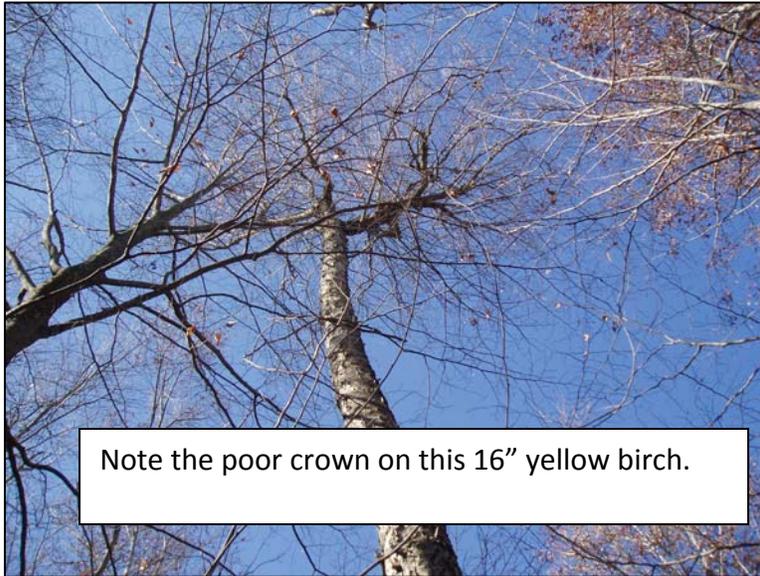
Predominant tree species (in order of total basal area) Sugar Maple (45), American beech (25), white ash (12), yellow birch (11), hemlock (9), red maple (4), basswood, paper birch, white pine (<2)..

Predominant regeneration:
(>100 stems per acre)
American beech, sugar maple, white ash.



Sugar Maple TPA of stand 6

Shrub species of note: Leatherwood.



This is a 40 acre northern hardwood stand. The ground slopes considerably here, making it susceptible to erosion. The enriched soils here have provided for excellent growth and a unique canopy tree composition : sugar maple, white ash, yellow birch and beech. Large sugar maples (avg. diameter 14") represent the greatest value in the stand although some of them appear to

have suffered crown damage 20 years ago. Some of these trees appear to have finally recovered from this although residual internal damage cannot be assessed. As with the rest of the property, American beech is suffering and should be removed using approaches similar to other stands. Some light thinning could also be done here to encourage growth in some of the better quality/larger individuals. Unfortunately the volume that this represents is small enough that it may be difficult to pull off as a commercial operation. Most regeneration is shade tolerant (including yb and sm) and will be perpetuated using single tree and small group selection methods. The next

operation within 15 years will seek to do a final release on the available crop trees. Since sugar maple is both predominant and most valuable its diameter distribution is being used to determine the harvesting schedule. A projected growth of 3% should put the smaller individuals easily within small sawtimber range. Lower valued individuals of smaller size classes and large individuals with poor or diminishing crowns will be the focus of this harvest.

These entries will be preceded by a careful study of the herbaceous layer to protect scarce populations of ginseng and others and special care should be given to the steeper portions of this stand. A survey of this stand will be made in the spring of 2009 and followed up in the year of harvest (2018?).



An updated version of this operations plan will be available at time of stand entry.

Projected stand entry date: 2018

Volume Harvest Goal : TBD

Stand 7

QMD	12.2 "
TPA	136
BA	110 sq. ft

Predominant tree species (in order of total basal area) White Pine (132.5), eastern hemlock (22.5), Red Maple (5), bigtooth aspen, red oak, red pine, sugar maple.

Predominant regeneration: (>100 stems per acre) White pine, hemlock, American beech, red maple, red oak.

This stand is 16 acres and separated from the rest of the property by the railroad tracks to the west; it is separated by all other land from the east by the river. Given its amount of river frontage, size and relative isolation, this stand represents an excellent research opportunity. It is mostly flat and densely covered. Some areas of pole sized white pine thickets have started to break up due to competition, offering some small canopy breaks. In these small spots white pine regeneration has been established. This area is an excellent haven for large mammals given the lack of human activity here, diversity offered by the riparian zone surrounding Jones brook and excellent cover offered by dense coniferous growth. As recent as 2006 a Goshawk was sighted during a reconnaissance of the property. It is likely that the nest was located in this stand.

No entry for this stand will be prescribed. This area is an excellent candidate for future research work and could be used as a comparator for stands that we will be treating on the main body of the property.

Appendix 1 Operations timeline

Stand	2008-2009	2010	2011	2012	2018
1	N/A	N/A	N/A	N/A	
2		Free thinning – regeneration patch cuts			
3			Free thinning – regeneration patch cuts		
4	Uniform crown/under thinning				
5				Free thinning – regeneration patch cuts	
6	Ecological assessment on herbaceous and shrub layer				Possible thinning or regen harvest following CFI Reassess
7		IMPLEMENT RESEARCH PLOTS		IMPLEMENT RESEARCH PLOTS	
Entire					CFI Reassess
Road Work	Fix Haul Road				

Appendix 2 Soil Reference

Soils:

Jones lot is a highly productive site for growth of timber. Broken out in sections are each of the major soil types found on Jones lot with average site index for timber type [] as well as notes regarding accessibility, likelihood of erosion and windthrow. Wildlife applications to soils are only noted when they are considered exceptional.

AdB ACTON VERY STONY FINE SANDY LOAM

These soils are rated good for pine[65] upland oaks[60] and northern hardwoods[55]. There is a slight chance of windthrow and equipment use limitation on these soils. These soils produce conditions that are good for open land types of wildlife.

This soil occupies a tiny portion of stand seven.

GsC GsD GtD GsC GLOUCESTER VERY STONY FINE SANDY LOAM

These soils are rated good for pine[65] upland oaks[60] and northern hardwoods[55]. These soils produce conditions that are good for open land types of wildlife. There is a slight chance of windthrow and equipment use limitation on these soils.

This soil occupies all of stand six and upper/upland (western portions) of stand 3 and 5

HaC HaB HINCKLEY LOAMY SAND

These soils are rated fair for pine[55] upland oaks[50] and northern hardwoods[50]. There is a chance of equipment limitation on these soils.

This soil occupies all of stand four and seven, the middle portions of stand 3 and middle and downhill sections of stand 5.

Mp MUCK AND PEAT

These areas consist of organic matter in deposits from 1.5 to 10 feet deep. These areas are inoperable. Muck and peat is an important natural resource in terms of the diversity of vegetation and accompanying wildlife habitat it offers.

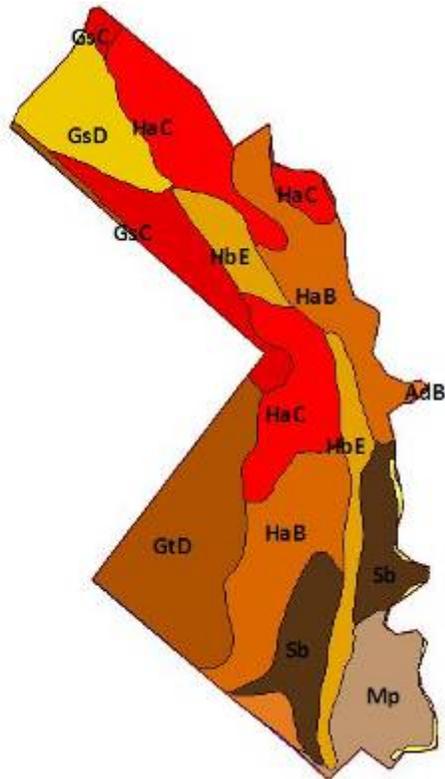
Stand one is almost entirely muck and peat.

Sb SAUGATUCK LOAMY SAND

These soils are rated good for pine[65] and fair for upland oaks[50] and northern hardwoods[50]. These soils have a high water table and are poorly drained. There are severe limitations on equipment use and high likelihood of windthrow.

This soil occupies the upland fringes of stand 1 and some lower (eastern) sections of stand 3.

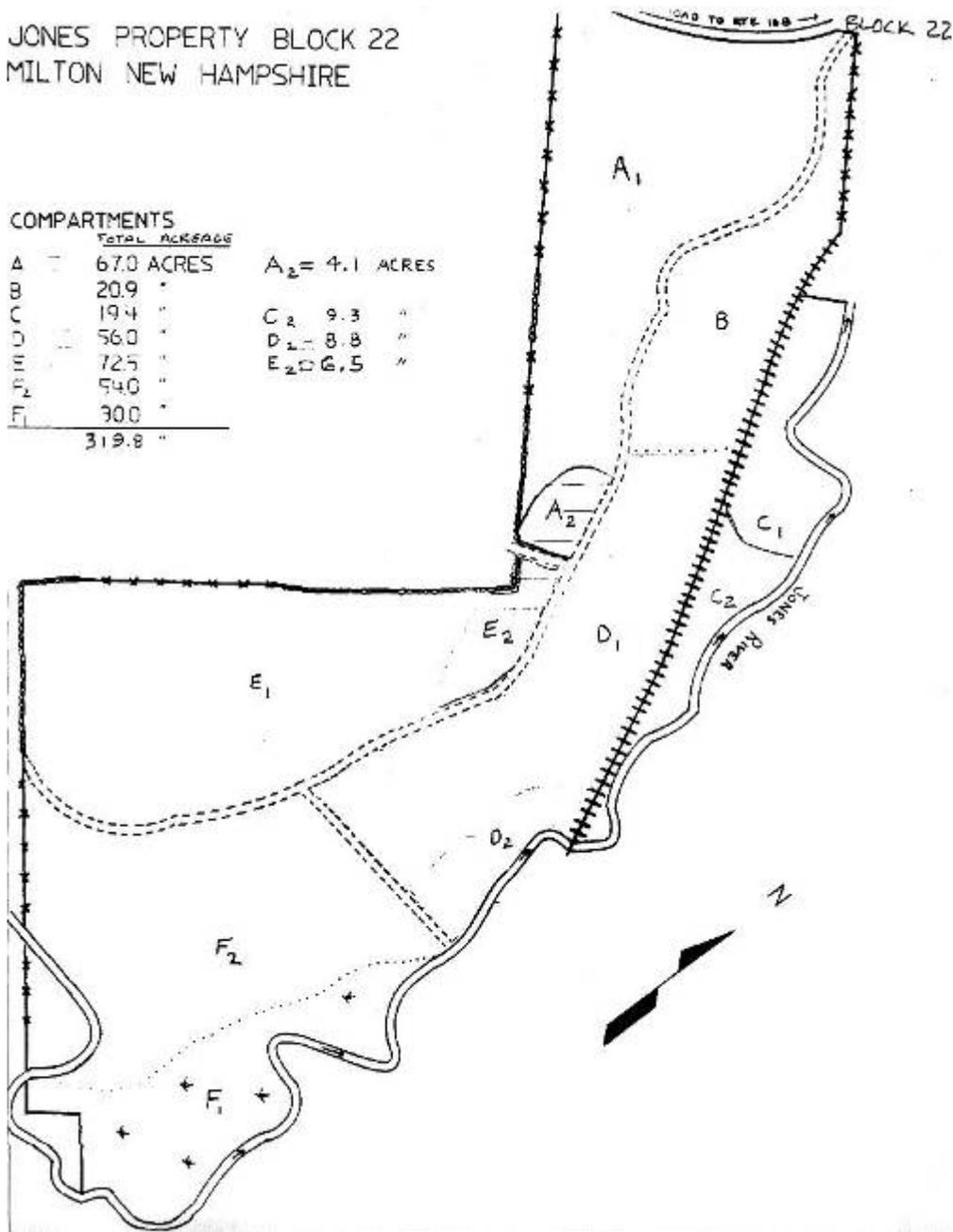
Symbol	Soil
HaC	HINCKLEY LOAMY SAND
HaB	HINCKLEY LOAMY SAND
HbE	HINCKLEY GRAVELLY LOAMY SAND
GsC	GLOUCESTER VERY STONY FINE SANDY LOAM
GsD	GLOUCESTER VERY STONY FINE SANDY LOAM
GtD	GLOUCESTER EXTREMELY STONY FINE SANDY LOAM
AdB	ACTON VERY STONY FINE SANDY LOAM
Mp	MUCK AND PEAT
Sb	SAUGATUCK LOAMY SAND



Map 1 Property Map

JONES PROPERTY BLOCK 22
MILTON NEW HAMPSHIRE

COMPARTMENTS		
	TOTAL ACREAGE	
A	67.0 ACRES	A ₂ = 4.1 ACRES
B	20.9 "	
C	19.4 "	C ₂ = 9.3 "
D	56.0 "	D ₂ = 8.8 "
E	72.5 "	E ₂ = 6.5 "
F ₂	54.0 "	
F ₁	30.0 "	
	<u>319.8 "</u>	



Map 2 Stand Map

