

CHAPTER 4 - FREEDOM LUMBER LOT

PROPERTY DESCRIPTION AND LAND USE HISTORY

The Freedom Lumber lot is located in the southeast side of Liberty. It is on the south-east side of Ridge School Rd., an old town road, 2 miles south of Stickney Hill Rd. The intersection with Stickney Hill Rd. is then just 1 mile south of Rt. 3 and 1½ miles west of Rt. 220. Road frontage is 2,200'. A small triangle in the west corner extends over the road. The property is a rectangle with a smaller rectangle cut out of it east corner. From the road, it extends about 2,800' southeasterly to an open shrub swamp associated with Fish Brook. Of the lot's 129 acres, 114 acres are wooded. The shrub swamp is 12 acres, a lightly wooded swamp near the shrub swamp in the south corner is 2 acres and 4 scattered small wood swamps add up to 1 acre. No buildings are present.

As with most woodland in this area of Maine, the ownership was farmland (mostly as pasture) in the 19th century. Some stone walls and stone piles are present in the upper north-west section and along the road. No cellar holes were located, however. The lot probably was originally part of a larger parcel. A forest management plan was prepared by Hollis Tedford in 1984. The property was commercially harvested in 1993-95 by Peasely Forest Products, under the supervision of Two Trees Forestry. A total of 142 mbf of sawtimber and 1,037 cords of pulp and firewood were harvested. This grossed \$21,382 and netted \$18,109 for the town. It was hit by a microburst in October, 2007, which blew down or broke off hundreds of trees. It was partially salvaged by Wade Bartlett during the winter of 2008 and will continue in the fall of 2008. Last winter's stumpage income was \$14,000.

The property is in a rural landscape of mostly forest and wetlands with a few houses only further north on Ridge School Rd. Forestland on both the east and west sides of the lot have been harvested at least since this lot was cut in 1993-5. The lot is in the upper end of the Medomak River watershed. The river itself flows beneath the town road as a small brook ¾ mile north of the lot. Fish Brook, mentioned above, is a tributary of Medomak R. The Ridge School Rd. area is the divide among 3 different watersheds. Just ½ mile to the west over another small ridge is the Sheepscot River watershed - a stream first flows into Colby Pond, near Palermo Rd. in the southwest corner of Liberty, then as Colby Brook flows into Sheepscot Pond. The north end of Ridge School Rd. slopes down towards Lake St. George, one of the headwater ponds for the St. George River watershed.

TOPOGRAPHY AND ACCESSIBILITY

Generally, the property's terrain is mostly moderate slopes in the north half and more gentle slopes in the south. Ledges and some steep sections are associated with the knoll near the northeast boundary. The swamps are flat. Two seasonal streams flow south across the lot and merge before entering the lightly wooded swamp, which is near but separate from the shrub swamp. Another flows across the west corner. The highest elevation is at the north corner at about 650'. The lowest point is 440' at the swamp along the southeast boundary.

Excellent access into the town lot is from Ridge School Rd., the last ½ mile of which before the lot is unimproved. Before that, fresh gravel was laid down in July, 2008 to the last driveway. Once at the lot, the road gets rougher and is only passable with a 4x4. The main skid road enters the lot midway along the road frontage. A 400' long wood yard lies along it starting 200' in from the town road. This main skid road heads south, branching many times into an extended system. It successfully negotiates around the wetlands and ledges. However, stream crossings are unavoidable and common. Most of the skid roads were created in the 1993-5 harvest; but most have also been recently re-used this past year. Two of the original skid roads leave the property. Separate skid roads enter the west corner, both east and west of Ridge School Rd. The wood from these roads seems to have been skidded southward on the town road to another harvesting operation on the southern abutter's.

BOUNDARIES

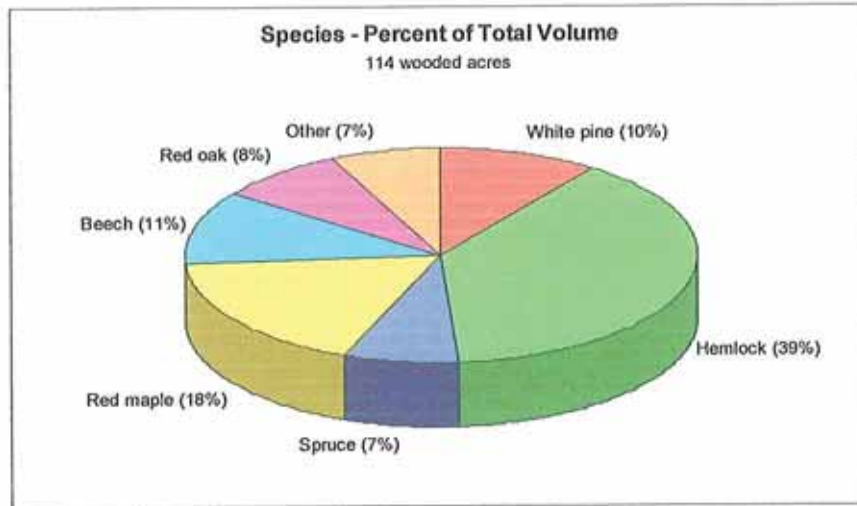
The property was surveyed in July, 1983 by David Brandt, of D & L Engineering, of Belfast, ME (Job # 83-019). It differs a bit from the tax map, which shows an additional rectangular bulge on the south corner. Iron pipes or rebars mark most corners. Two additional pipes are also along the north part of the northeast boundary (though 3 are shown on the survey map). The south corner in the shrub swamp is not marked, but a pin is at the edge of it 191' along the southwest line from the corner. The west corner has no pin, although a witness tree (with 3 blazes) is marked at the spot. The boundaries are marked through the woods with old ax blazes and blue paint. Old flagging is still scattered along the lines; this has been reinforced with new pink flagging in spots. Red paint was used near the road.

TIMBER RESOURCE

Forests cover 114 acres of the Freedom Lumber lot, distributed among 7 stands. Most of the acreage is classified as Mixedwood, located in the middle of the lot. Hardwood stands are in the north and west corners, while the softwood stands are down in the southeast end. The distribution of 3 major timber types among the stands is:

Type	# of stands	# of acres	% of total
Hardwood	2	32	28
Mixedwood	3	50	44
Softwood	<u>3</u>	<u>32</u>	<u>28</u>
	8	114 acres	100%

In July, 2008, inventory data were taken in the forested areas at 70 variable radius plots using a 15-BAF prism on cruise lines running parallel to the southwest boundary. One plot represents an average of 1.6 acres. The overall volume estimate is accurate within $\pm 8\%$ nine times out of ten. Error is greater for individual species, products and values.



Forest stands are further identified based on dominant canopy height and canopy closure. Much of the woodland is made up of pole/sawtimber size trees that are 60-80 years old. Saplings are common, both in open patches and in the understory. Canopy heights are irregular, containing a combination of moderate to tall trees interspersed with occasional open pockets containing younger saplings and stump sprouts. Canopy closure is variable, due to not only the 1993-5 harvest, but also the ongoing salvage harvest. Areas not affected by the 2007 microburst still have fully intact canopies. Areas that were hit by the storm (whether salvaged or not) have canopies that are either moderately open or sparse.

Tree quality, defined as trees with the potential to become sawtimber, is good, mostly due to the softwood. Most of the unacceptable trees are the diseased beech plus assorted hardwoods. Some of the pines and hemlocks exhibit an open-grown form with many large lower limbs and multiple stems, which degrade the tree's quality. There are, however, certainly some nice individual stems scattered through the lot. Many undoubtedly were blown over in the 2007 wind storm and subsequently salvaged in 2008. Some of the stems are designated as pulp due only to small size and is actually good quality growing stock. Through a program of cutting the poor quality individuals and favoring the better trees, overall tree quality will be maintained or improved over time.

The estimated total wood volume on the Freedom Lumber lot is 409,000 board feet of sawtimber and 1,930 cords of pulpwood. This is worth about \$63,500. For the 114 wooded acres, this comes to 3,590 board feet and 17 cords per wooded acre, which is below average for mixedwood forests in this part of Maine. The wood is valued at about \$557/acre, on the low side of average. Sawtimber volume is dominated by softwood (85%), primarily hemlock, plus white pine. The pulpwood volume is more evenly divided, with hardwoods representing 57%. Sawlogs comprise 30% of the total commercial wood volume, which is above average. This percentage can be maintained, if not increased, over time if the good quality small sawtimber is allowed to continue to grow rather than cut prematurely.

The last 2 harvests have given growth rates a boost. It averages 0.55 cord per acre per year. This will allow a sustainable harvest level of 63 cords per year for the 114 non-wetland acres. For a 15-year cutting cycle, 945 cords can then be harvested (or 8¼ cords per acre per year). For a 20-year cutting cycle, this comes to 1,250 cords (or 11 cords per acre). This is only a property-wide total. Due to variability of age, structure and stocking of the forest types, harvest levels will vary among stands. Some may not be cut at all, while others may possibly experience a heavy regeneration cut.

The density of the regeneration depends on light/shade conditions and wetness on the forest floor. The last harvest has also created a profusion of tree regeneration. It is dominated by the shade tolerant trees of beech (with its high sprouting capability), fir and hemlock. Openings also contain other overstory trees, such as red maple (another prolific sprouter), sugar maple, spruce, pine, white and yellow birch, oak and ash. Striped maple, a non-commercial weedy shrub-like tree, is also present. Shrubs are fairly limited to mostly raspberry and blackberry in the recent openings and blueberry scattered elsewhere. A small amount of hazelnut and dogwood are near the wood yard. Poison ivy is near the lightly wooded swamp in stand 2. Alder and winterberry are in the wooded swamps. and hawthorn.

INSECT, DISEASE AND WEATHER INFLUENCES

The most significant pathological condition is the presence of beech-bark disease, an endemic disease through the northeastern U.S. Also known as *Nectria*-scale, it is actually a compound attack by both a *Nectria* fungus and a scale insect. Over the years, the bark becomes pockmarked, eventually degrading the wood quality of the tree. Finally the tree succumbs and dies. No feasible control method exists. Individual trees that show resistance to the disease should be favored. Crowns of healthier trees could be opened up to increase mast production and thus the dissemination of disease-resistant seed.

The micro-burst wind storm last October, 2007 was a significant weather event. It blew down or broke off the tops of hundreds of trees. Some portions of the woodlot were hit harder than others.

WILDLIFE

The property has a variety of wildlife habitats. Fresh water, a critical habitat element for all animals, is present in the swamps (larger shrubby one, medium lightly wooded one and several smaller heavily wooded ones) and the seasonal streams. Fish and other aquatic animals such as muskrats, minks and turtles are probably active in the wetlands and streams. There are no sign of beavers. The beech and oaks provide valuable hard mast with their nuts that are preferred by many birds and mammals, including deer, gray squirrels, chipmunks, bear, grouse and turkey. Birch seeds and alder plus hazelnuts are additional food. Red squirrels prefer spruce seeds.

The large areas of abundant hardwood saplings and sprout growth provide browse for deer and hares. Fir saplings are good moose browse. The thick ground cover provide cover for birds and small mammals, which in turn are prey to larger predators. The edges between the forest and the field and roads present an interface of habitat for both food and cover for animals such as deer, moose, partridge, fox and hare. Moose evidence is especially abundant common. Deer, coyote and fisher are probably in the neighborhood.

Regarding "Habitats of Management Concern," the Maine Department of Inland Fisheries and Wildlife has mapped the Fish Brook swamp as a "Inland Waterfowl and Wading Bird Habitat" (see following page). A "Deer Wintering Area" is also mapped on the southwest side of the lot, but it doesn't come over the boundary. The Maine Natural Areas Program (MNAP) reports no documentation for this site to contain 1) rare, threatened and/or endangered plants, 2) rare, threatened and/or endangered animals, or 3) rare and/or exemplary natural communities. The property does not intersect with Atlantic salmon habitat, nor provides habitat for lynx. The parcel does not intersect with MNAP land trust focus area nor has it been targeted by MNAP for inventory. No evidence of threatened or endangered plants or animals was noted during the fieldwork. Should such plants or animals be discovered, appropriate measures should be adopted to ensure protection of their habitat.

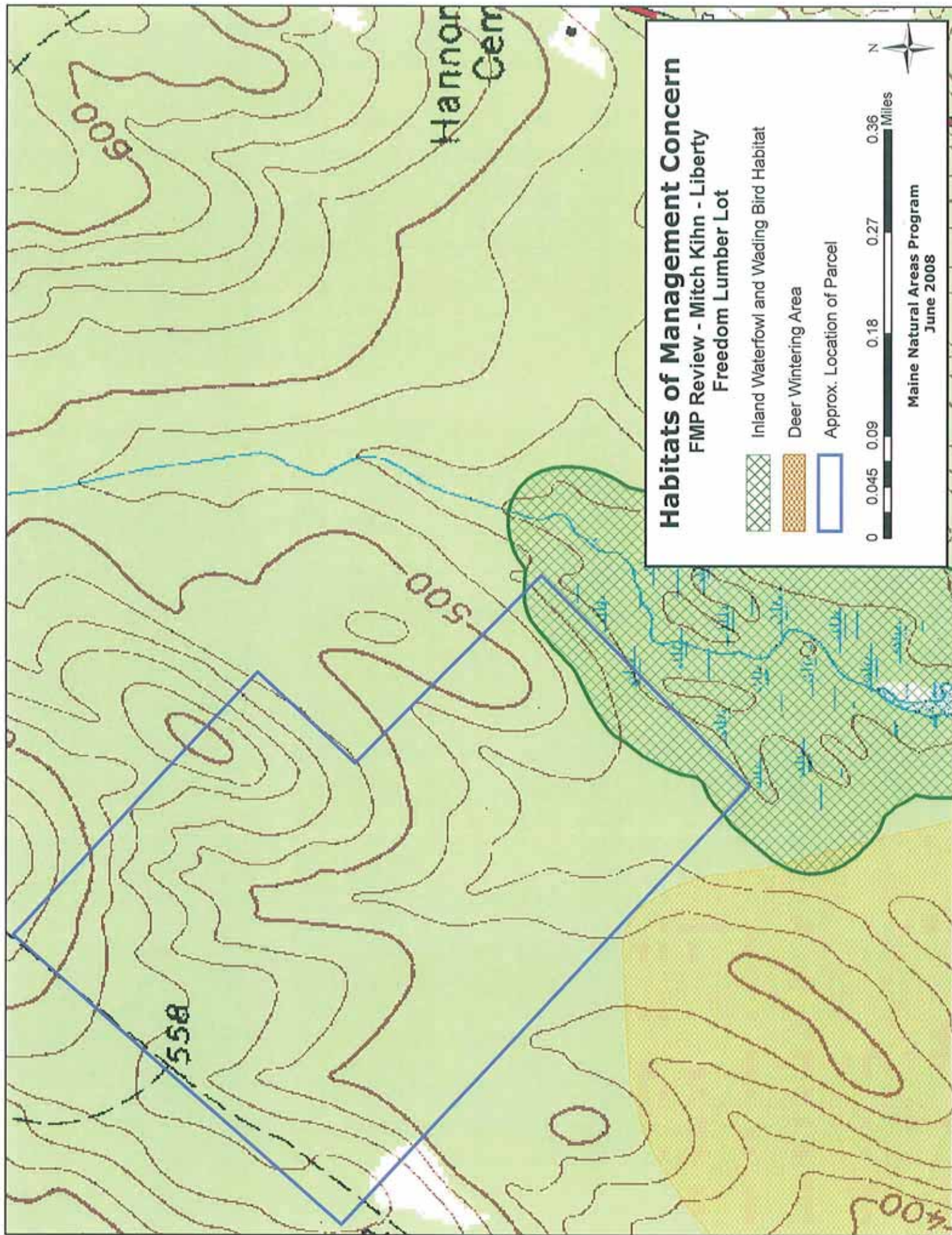
RECREATION, AESTHETICS AND CULTURAL FEATURES

Recreational activity is probably limited to snowmobile/ATV use of the town road and skid roads, with only an occasional pedestrian. The land is not posted and hunting probably occurs. Aesthetic features include the swamps and pockets of the big trees. Aside from a couple of stone walls, there are no cultural points of interest.

The Maine Historic Preservation Commission reports that no prehistoric archeological sites are known and none are expected. There are also no known historic archaeological sites and none are expected. Additionally, the property contains no historic building.

LEGAL RESTRICTIONS

A "Limited Residential" Shoreland Zone runs along the edge of the shrub swamp, but does not continue around the northwest side of the nearby lightly wooded swamp. See the General Chapter for details.



ESTIMATES OF TIMBER VOLUMES AND VALUE BY SPECIES

Town of Liberty - Freedom Lumber lot
Liberty, Maine
July 7, 2008

Products, Species	Volume ^{1,2}	Stumpage ³ Rate	Value ⁴
Sawtimber:	MBF	\$ per MBF	
White pine, grade	88	\$140	\$12,320
White pine, pallet	10	60	600
Hemlock	223	50	11,150
Spruce	28	110	3,080
Sugar maple	4	225	900
Red maple	12	110	1,320
White birch	1	60	60
Yellow birch	3	140	420
Red oak	28	200	5,600
Beech / Pallet	12	40	480
Totals:	409 mbf		\$35,930
Pulpwood:	Cords	\$ per cord	
Spruce-fir	130	\$20	\$2,600
White pine	80	6	480
Hemlock	625	10	6,250
Hardwood pulp*	585	12	7,020
Firewood*	510	22	11,220
Totals:	1,930 cords		\$27,570

Total Estimated Stumpage Value = \$63,500

¹ Total timber volume estimate is $\pm 8\%$ nine times in ten. Error is greater for individual species or products.

² Pulpwood volumes include topwood from sawtimber trees.

³ Stumpage price estimates based on recent local averages, Summer, 2008. They are gross values and do not reflect forester fees.

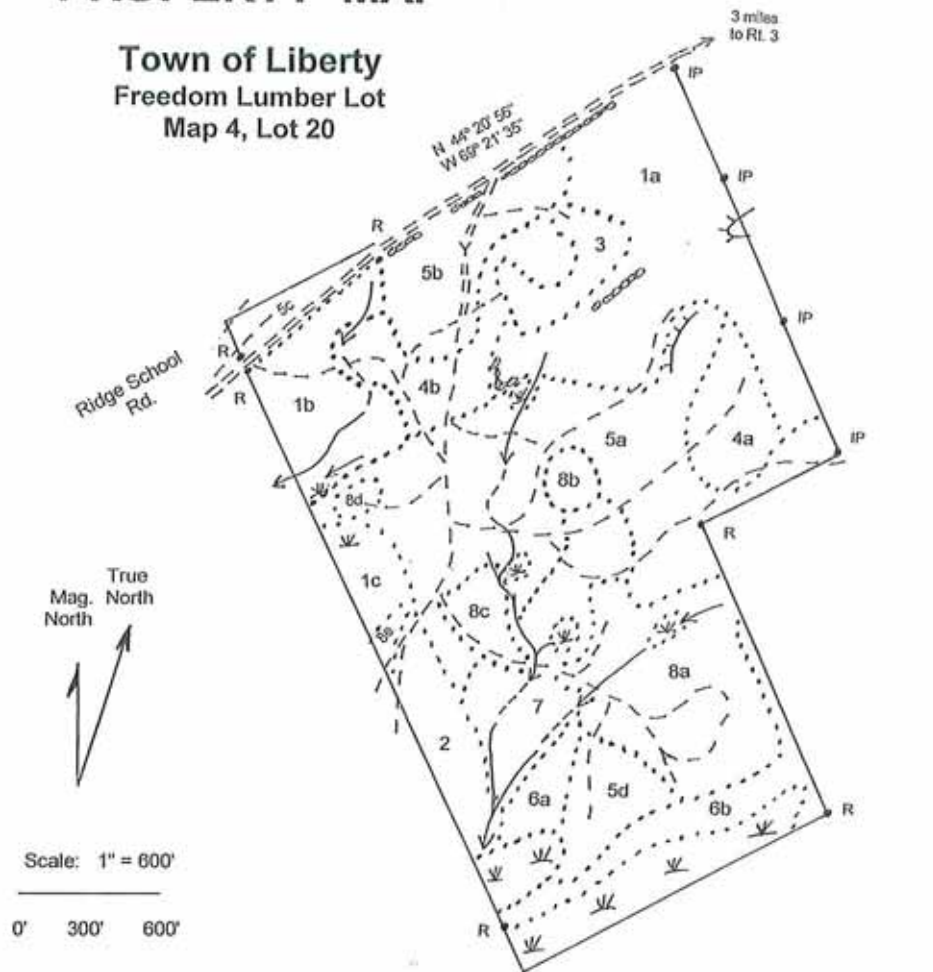
⁴ Represents the "liquidation value" if the entire property was cleared. This is presented for illustrative purposes only and is not recommended.

* Aspen and white birch is pulpwood; balance of the hardwood pulp is split evenly between firewood and pulp

Mitchell Kihn; LPF # 3206
Mid-Maine Forestry

PROPERTY MAP

Town of Liberty
Freedom Lumber Lot
Map 4, Lot 20



LEGEND

Stand number & boundary 2
Stone wall	oooooooo
Iron pipe / Rebar	IP / R
Truck road	== == ==
Wood yard	Y
Skid road	- - - -
Seasonal stream	- - - ->
Swamp	W
Ledge	

FOREST STANDS

Stand	type	Acres
1	H-2/3-A* poletimber	29
2	M-2/3-A pole/sawtimber	5
3	H-1-A saplings	3
4	M-2/3-B* saps/pole/sawtimber	11
5	M-2/3-B pole/sawtimber	34
6	HE-3-A sawtimber	7
7	HE-2/3-B sawtimber	8
8	HE-2/3-C sawtimber	17
	WOODLAND	= 114 acres
	Shrub swamp	12
	Wooded swamps	3
	NON-WOODLAND	= 15 acres
	TOTAL PROPERTY	= 129 acres

*Codes:

H = 75%+ Hardwood; HE = 75%+ Hemlock; M = Mixedwood
1 = 0-30' height; 2 = 30-60'; 3 = 60'+
A = 70-100% crown cover; B = 40-70%; C = 15-40%

sapling = trees 1-4" dbh; poletimber = trees 5"-9" dbh;
sawtimber = trees 10"+ dbh for softwoods & white birch;
12"+ dbh for hardwoods

Mitchell Kihn, LPF #3206
Mid-Maine Forestry
September, 2008

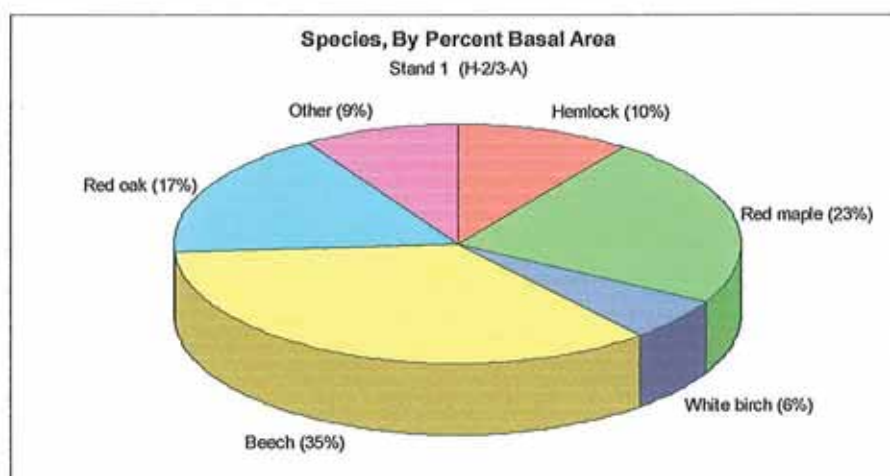
Map details are approximate and based on survey, topographic and soil maps and personal reconnaissance in July, 2008. For forest management purposes - not a boundary survey.

STAND DESCRIPTIONS AND RECOMMENDATIONS

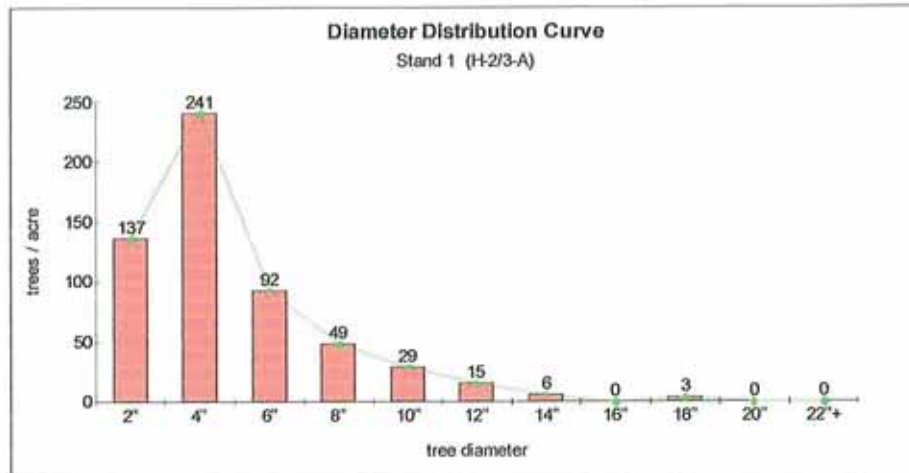
STAND 1 - HARDWOOD POLETIMBER (H-2/3-A)

29 acres

Stand 1 is in 3 sections. Stands 1a and b are along Ridge School Rd., in the north and west corners, respectively. They are easily accessible from the road, though a bit away from the wood yard, which is between the two. The east and middle sections of stand 1a are actually best accessed from skid roads that swing around from the main skid road and come up from the south. Stand 1c is along the southwest boundary. It is not far from the main skid road in stand 5a. Slopes are moderate – gentler in stands 1b and c and steeper and ledgy on the knoll along the northeast boundary in stand 1a. Except for drainages and small swampy pockets, the soil is dry and is shallow to bedrock with occasional ledge. Site quality is fair to good for white pine. Operability with machines is good, except for the ledges in stand 1a and assorted wet spots. The stand was cut in the 1993-5 harvest. For the most part, it escaped damage from the 2007 microburst; only the north corner of stand 1a needed some salvaging.



Stand 1 is a hardwood poletimber stand. Beech is the most common tree, with 1/3 of the growing space. Associates are red maple, red oak, hemlocks and white birch, plus minor amounts of spruce, white pine, sugar maple, aspen and hophornbeam. Trees range up to 24" in diameter, but most are 16" or less. Average diameter is 8". Because of the 1993-5 harvest, saplings and young sprouts are a strong component and take up as much growing space as sawtimber. With a basal area of 75 ft²/acre, stocking is adequate and close to the recommended level. Canopy height is moderate to tall, with occasional openings containing shorter saplings. Closure of tree crowns is high.



Tree quality is fair. Most of the beech is diseased and many red maples are poor. The other species are a mix of acceptable and unacceptable quality. Most of the oak is nice. Snags are present. The growth rate is good at $\frac{1}{2}$ cord per acre per year. Volume per acre is average with 1.8 mbf of sawtimber and 20 cords of pulp. Sawtimber volume is 15% of the total volume of commercial wood, which is a bit below average. It is mostly hemlock, oak and pine. Beech dominates the regeneration, especially in the shady understory. Others include fir, hemlock, striped maple, pine, oak and sugar maple. Blueberry is present. Evidence of moose is common.

RECOMMENDATIONS

Long-term objective is wildlife habitat, recreation and timber production. Maintain an uneven-aged structure with a minimum stocking of 70 ft²/acre basal area for 6"+ dbh stems. Strive for some large trees. Favor oak and beech for their nut production. In the future, continue a combination of patch cuts (group selection) and crop tree release cutting methods. Although small groups can be thinned now, a minimum volume is not there for a commercial harvest at this time. Let grow and re-evaluate in 10 years.

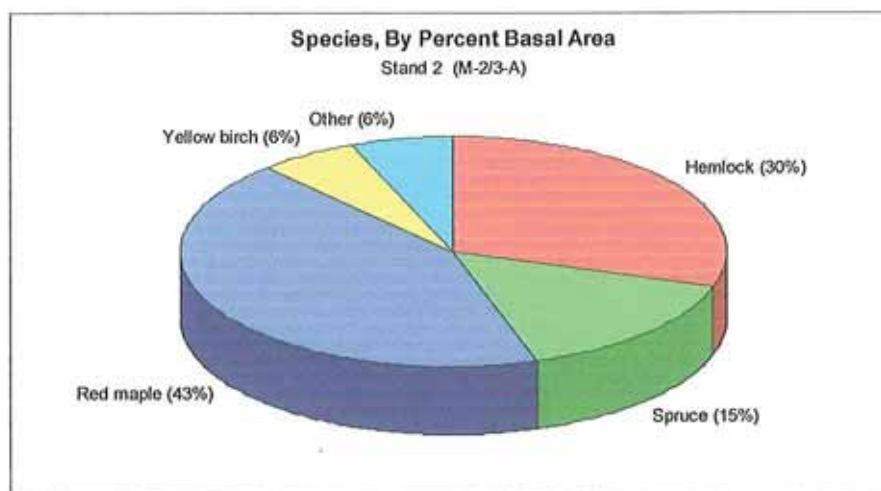
Maintain 25' no-cut buffers plus an additional 50' in which only light selection harvests can occur along the seasonal streams and small swamps.

Consider establishing a trail onto the knoll along the northeast boundary, connecting with selected existing skid roads for a property-wide trail system. This can be used for both recreational use and wildfire training.

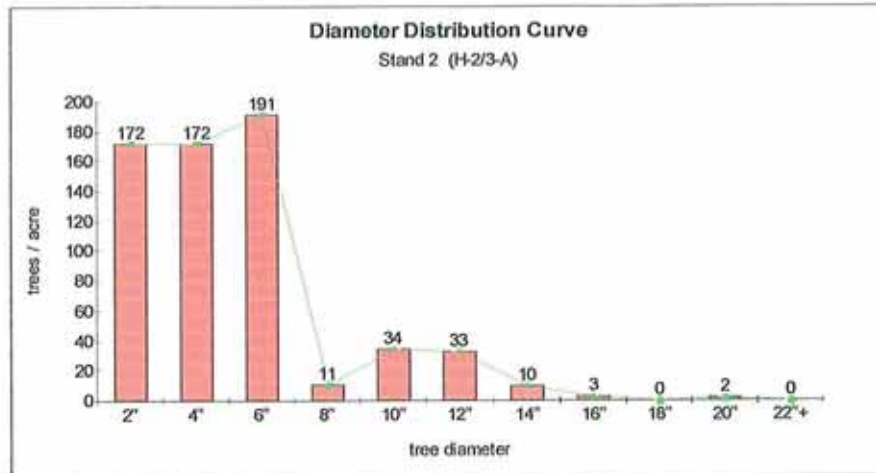
STAND 2 - MIXEDWOOD POLE/SAWTIMBER (M-2/3-A)

5 acres

Stand 2 is along the southwest boundary, further east than stand 1c and next to the lightly wooded swamp. A branch of the main skid road, running along its northwest end, provides excellent access. Slopes are moderately gentle. The soil is dry and shallow to bedrock with occasional ledge. Two seasonal streams merge in the southeast end before draining into the lightly wooded swamp. Site quality is fair to good for white pine. Operability with machines is good, except for the drainage. Like stand 1, this stand was cut in an older harvest but not in the recent salvage.



Stand 2 is a mixedwood stand. Red maple is the dominant species, taking up 4/10 of the growing space. Hemlock takes up 1/3. Spruce and yellow birch are also significant, with minor amounts of fir and beech. Poles and sawtimber size trees take up an equal amount of growing space. As a result of the past harvest and natural mortality, the stand is uneven-aged with stems of all sizes and variable stocking. Trees range up to 20" in diameter, with an average of 8". The total basal area is 105 ft²/acre, the recommended level for mixedwood. Canopy height is moderate to tall and crown closure is full.



Tree quality is good. The softwoods and some hardwoods, even red maple, are acceptable growing stock. Growth rate is 0.8 cord per acre per year. Volume per acre is average with 4.3 mbf of sawtimber and 24 cords of pulp. Sawtimber volume, mostly hemlock and red maple, is a high 26% of the total volume of commercial wood. Regeneration is mostly the shade-tolerant beech and fir, plus some spruce, pine, red, striped and sugar maple and oak. Poison ivy is growing along the swamp.

RECOMMENDATIONS

Long-term objective is timber production and wetland protection. Maintain an uneven-aged structure with a stocking of 100 ft²/acre basal area. Favor spruce and discriminate against poor quality individuals. Let grow and re-evaluate in 10 years.

Maintain a 25' no-cut buffer plus an additional 50' in which only light selection harvests can occur along the swamp and stream.

STAND 3 - HARDWOOD SAPLINGS (H-1-A)

3 acres

Stand 3 is a "U"-shaped area a bit northeast of the wood yard. Two side skid roads from the main road provide good access to both ends of the "U". The terrain is a moderately gentle slope. The soil is deep to a hardpan and is well drained. No streams or wetlands are present. Both site quality and operability are excellent. The stand was cut hard in 1993-5 and only lightly in the recent salvage.

Stand 3 is dominated by hardwood saplings that regenerated after the harvest 14 years ago. They are primarily beech and red maple, with some white birch, sugar maple and pine. A few high canopy sugar maple sawtimber trees are scattered. They were probably left as a seed source. The saplings average 2" in diameter while the older trees are 12-18". The saplings are dense and adequately stocked. The canopy height is low and crown closure is full. The basal area for the sparse high canopy is only 15 ft²/acre.

It is premature to judge tree quality and growth rate in a sapling stand. Volume per acre from the scattered larger trees is about 0.7 mbf of sawtimber and 4 cords of pulpwood. The stand's structure contrasts with neighboring stands and provides a varied habitat for birds and mammals that utilize sapling stands.

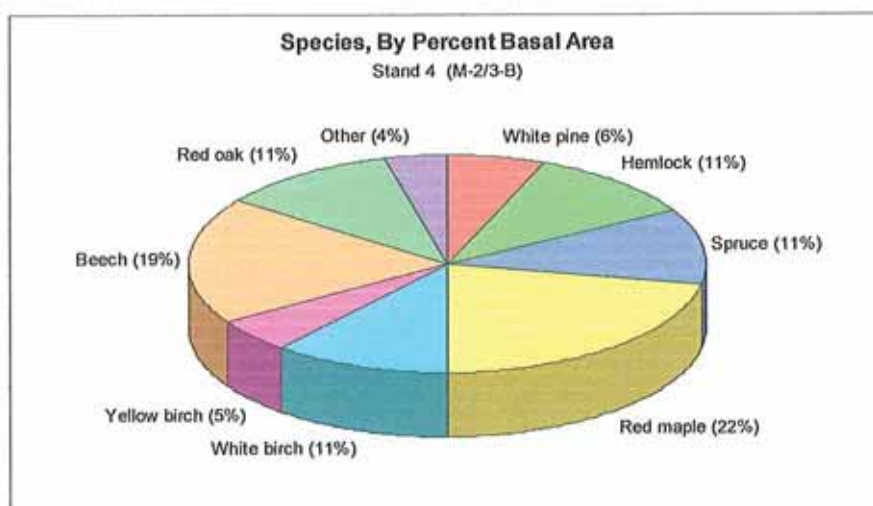
RECOMMENDATIONS

Long-term objective is timber production. It will develop into an even-aged stand with residuals. Aim for a minimum stocking of 70 ft²/acre basal area. Favor sugar maple, pine and oak and discriminate against poor quality individuals. Let grow and re-evaluate in 10 years.

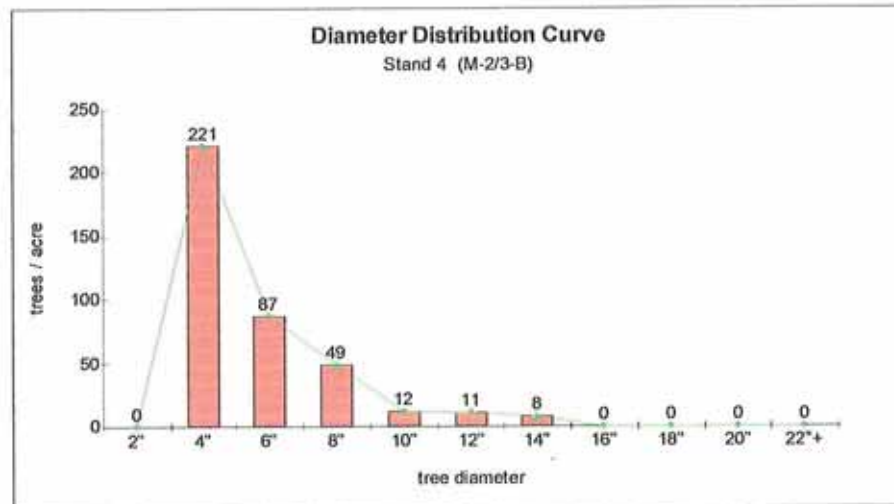
STAND 4 - MIXEDWOOD SAPLING/POLE/SAWTIMBER (M-2/3-B)

11 acres

Stand 4 is in 2 units. Stand 4a near the northern of the 2 east corners (north of the cut out rectangle). Two skid roads entering it from the south provide access. Terrain is a moderate slope and soils are shallow to bedrock with occasional ledge. Site quality is fair for pine. Operability with machines is good to fair, limited by ledge in spots. Stand 4b is on both side of the main skid road, just south of the wood yard. Side roads reach into parts of the stand. The skid road entering the stand's west end comes out to Ridge School Rd. at the lot's west corner. It seems that wood removed on this road is brought to the abutter's wood yard. Slopes are moderately gentle. Soils are moderately deep to a hardpan and are moderately well drained. A seasonal stream runs through its west side. Site quality is excellent for pine. Operability with machines is good, limited by seasonal ground wetness. In addition to the 1993-5 harvest, storm damaged trees were mostly salvaged from stand 4 in 2008. Additional salvage is scheduled to occur in the fall of 2008.



Stand 4 is a mixedwood stand that is dominated by hardwood. Red maple and beech are the most common species with 1/5 of the growing space for each. Spruce, hemlock, white birch and red oak all have 1/10 each. Also present are white pine, yellow birch and fir. Although poles dominate, significant numbers of trees in the sapling and sawtimber categories are also part of the stand structure. The saplings include fir and beech in the understory, but also other species, such as pine, red maple and yellow birch, which have been released. Trees range from 4" to 14" in diameter, with an average of 6". The larger trees were cut either in the older harvest or the recent moderate salvage operation. The resulting basal area is 77 ft²/acre for all stems. Even with the saplings, stocking is sub-optimal. Crown closure is only moderate due to the recent salvage. Canopy height is irregular, but is generally moderate to tall.



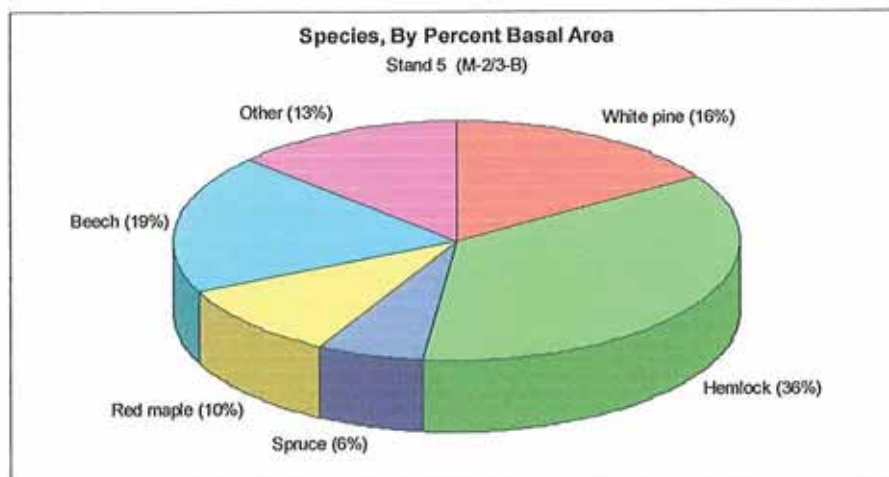
Quality of the canopy trees is mixed. The beech is diseased and white birch are declining. Snags and cavity trees are common. There are some acceptable stems of spruce, oak and hemlock. The growth rate is good, at 0.8 cord per acre per year. Volume per acre is low with only 1.3 mbf of sawtimber and 14 cords of pulp. Sawtimber volume is oak, spruce, hemlock and red maple. It is 16% of the total volume of commercial wood, which is average. Regeneration is abundant, mostly beech, plus some fir, pine, hemlock, red and striped maple. Shrubs are lacking. Moose is common.

RECOMMENDATIONS

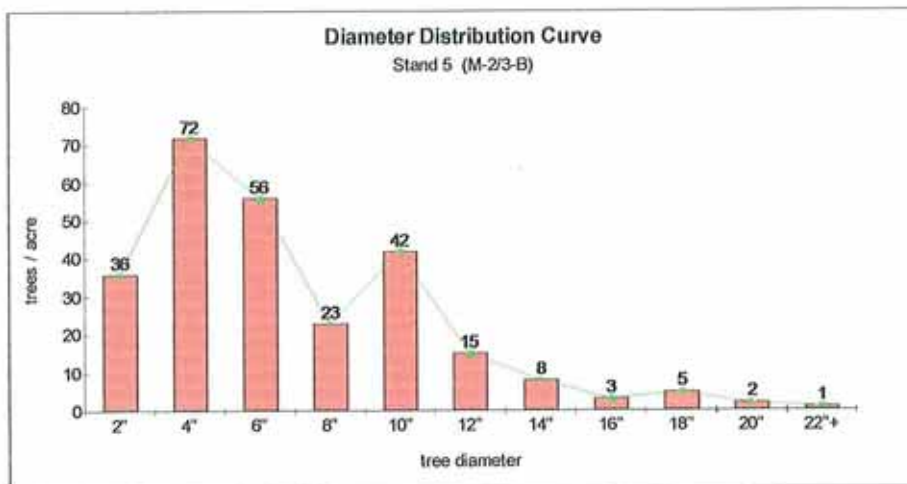
Long-term objective is recreation, timber production and wetland protection. Maintain an uneven-aged structure with a stocking of 100 ft²/acre basal area. Favor oak, beech and spruce for wildlife food production.

With the current low stocking, let grow and re-evaluate in 10 years. Maintain a 25' no-cut buffer plus an additional 50' in which only light selection harvests can occur along the stream. Clear and maintain selected skid roads for property-wide trail system for recreational use and access for wildfire training.

The largest stand of the lot, stand 5 contains 4 units. The largest is stand 5a, located in the middle of the property. The main skid road goes through its west side and 3 secondary roads branch off through the northeast half. Stand 5b is up against the town road and surrounds the wood yard. Besides the main skid road, several others branch off. Stand 5c is the thin triangle in the west corner, northwest of the town road. A skid road enters it from the southwest and has taken wood onto the abutters' wood yard. Stand 5d is in the southeast section, up against the lightly wooded swamp and near the shrub swamp. It is at the back end of the salvage cut and is accessed by one of the last skid trails. The terrain is moderate to moderately gentle, but some steeper ledges are in the northeast side of 5a. This same area of stand 5a also has shallow and dry soils, as does stand 5c. Soils in stand 5b and the balance of 5a are moderately deep to a hardpan, are moderately well drained and are seasonally wet. One of the 2 main seasonal streams flows through stand 5a. It is crossed in 2 spots by skid roads. Attached to the stream are 2 of the 4 heavily wooded swamps identified on the property. Site quality is excellent for pine on the moister ground and fair on the drier slopes. Operability with machines is good, but limited by seasonal wetness and ledgy spots. The southeast side of stand 5d is in the Shoreland Zone that runs along the shrub swamp. It was logged in 1993-5 and storm damaged trees were partially salvaged in 2008. Additional salvage is scheduled to occur in the fall of 2008.



Stand 5 is a mixedwood stand that is dominated by softwood. Hemlock is the most common species with 1/3 of the growing space. Associates are beech, white pine, red maple and spruce. Minor species are red oak, white ash, yellow and white birch, sugar maple and fir. The stand contains both poles and sawtimber. Trees range up to 24" in diameter, with an average of 10". With a basal area of 82 ft²/acre, it is understocked. Crown closure is only moderate due to the recent light to moderate salvage. Canopy height is moderate to tall.



Tree quality in the stand is good. Most of the hemlock, pine and oak are good. All the beech and most of the maple are poor. Snags are common, as well as broken upper limbs. The growth rate is good, at 350 board feet per acre per year. Volume per acre is low with only 5.2 mbf of sawtimber and 14 cords of pulp. Sawtimber volume, though, is a very high 69% of the total volume of commercial wood. It is mostly hemlock and pine. Regeneration is abundant, mostly beech and striped maple, plus some fir, pine, hemlock, red and sugar maple, white birch and cherry. Shrubs are mostly lacking; just some hazelnut and dogwood by the wood yard and alder and winterberry in the swamps. Moose are common.

RECOMMENDATIONS

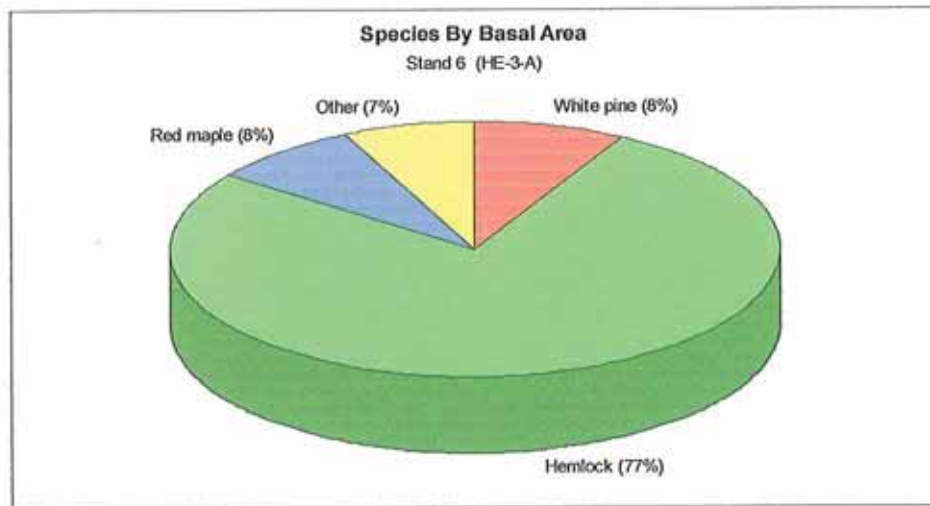
Long-term objectives include recreation, timber production, wildlife habitat and wetland protection. Maintain an uneven-aged structure with a stocking of 100 ft²/acre basal area. Favor oak, beech and spruce for wildlife food production and pine for sawtimber.

With the stand currently understocked, let grow and re-evaluate in 10 years. Maintain a 25' no-cut buffer plus an additional 50' in which only light selection harvests can occur along the stream and swamps. Clear and maintain selected skid roads for property-wide trail system for recreational use and access for wildfire training.

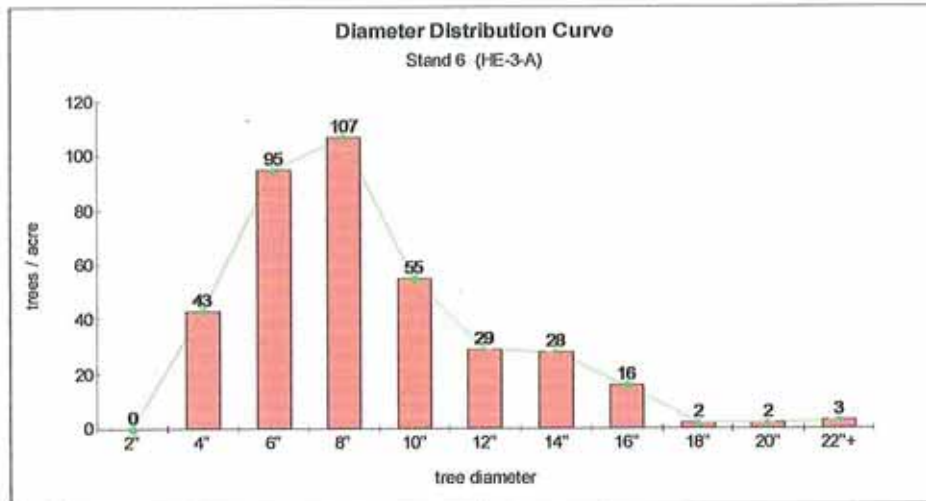
STAND 6 - HEMLOCK SAWTIMBER (HE-3-A)

7 acres

Stand 6 has 2 units, separated by the lightly wooded swamp. Stand 6a is north of it and 6b is south of it and adjacent to the shrub swamp. They are accessed from existing skid roads through stands 5a and 8. Stand 6a has gentle slopes and seasonally wet soils. A seasonal stream forms its northwest border. Site quality is excellent for pine. Slopes are more moderate in stand 6b. It has dry soils that are shallow to bedrock with occasional ledge. Operability with machines is fair, limited by wetness. The edge of the shrub swamp is Shoreland Zone. Stand 6a was harvested in 1993-5 but not on the bank above the shrub swamp in 6b, evidently left as a buffer zone.



This softwood stand is dominated by hemlock, with $\frac{3}{4}$ of the growing space. White pine and red maple are each $\frac{1}{12}$ while beach and spruce are minor species. With an average diameter of 10", it is a sawtimber stand. Trees range from 4" to 22" in diameter. Stocking is high but adequate. The basal area is 176 ft²/acre. Canopy height is tall and crown closure is full.



Tree quality is generally good. Most of the hemlocks and pines are good and most of the hardwoods are poor. Hardwood snags are in stand 6b. The growth rate is 200 board feet per acre per year. Volume per acre is high with 10.6 mbf of sawtimber and 37 cords of pulp. Sawtimber volume is also a high 36% of the total volume of commercial wood. It is mostly hemlock and pine. Regeneration is mostly beech, hemlock, striped maple and fir, plus some pine and oak. Shrubs are mostly lacking, just some blueberry in exposed spots of stand 6b. With the dense hemlock, the stand has potential for serving as a wintering deer yard.

RECOMMENDATIONS

Long-term objective is water protection, wildlife habitat and aesthetics. Resist the temptation to cut the timber and keep it intact as a natural area. The exception is the thin strip along the northeast boundary, which at some time in the future can be included in a commercial harvest.

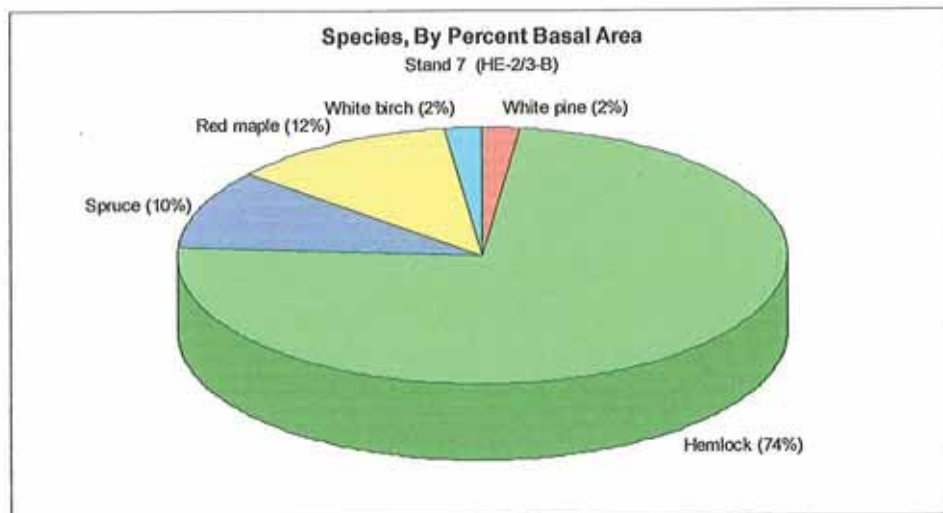
Leave along and let grow.

With its proximity to the shrub swamp, stand 6b would serve as a nice hike destination, utilizing the existing skid roads in stand 5d and 8.

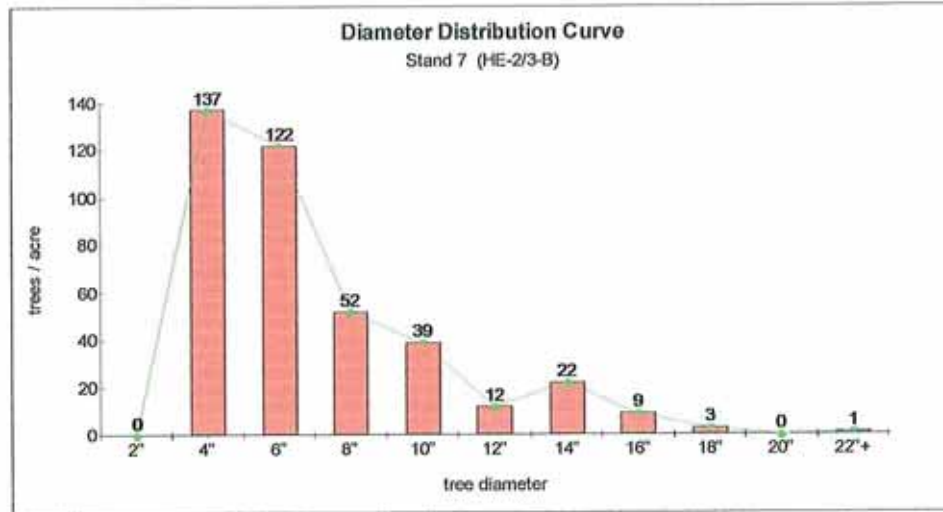
STAND 7 - HEMLOCK SAWTIMBER (HE-2/3-B)

8 acres

Stand 7 is in the south half of the lot, just uphill from the lightly wooded swamp. Three major skid roads cut through its northern half and provide very good access. Slopes are gentle to moderate. The soils are moist, ranging from somewhat poorly to moderately well drained. The 2 main seasonal streams form parts of the stand's boundary. One of the streams flows through the stand in one section. A wooded swamp is embedded in the middle of the stand. Site quality is excellent for pine. Operability with machines is good, limited by the seasonally wet ground to frozen or very dry conditions. Stand 7 was logged 1993-5 and again partially in 2008 as part of the storm salvage. Additional salvage is scheduled to occur in the fall of 2008.



Like stand 6, stand 5 is also a softwood stand that is heavily dominated by hemlock ($\frac{3}{4}$ of the growing space). Associates are limited to spruce, red maple and white pine. The stand is equally divided between poles and sawtimber. Trees range from 6" to 26" in diameter, though most are 18" or less. The average diameter is 9". With a basal area of 117 ft²/acre, stocking is just at the recommended level. Crown closure is only moderate due to the recent light to moderate salvage. It probably resembled stand 6 before being logged. Canopy height is moderate to tall.



Tree quality in the stand is good, with only a few pulp-grade stems. The growth rate is good, at 350 board feet per acre per year. Volume per acre is a bit low for a hemlock stand, with 6.5 mbf of sawtimber and 22 cords of pulp. Sawtimber volume (mostly hemlock) is 37% of the total volume of commercial wood, which is high. Regeneration is mostly beech, plus some fir, hemlock, red and striped maple, spruce and oak. Shrubs are lacking. Moose are common.

RECOMMENDATIONS

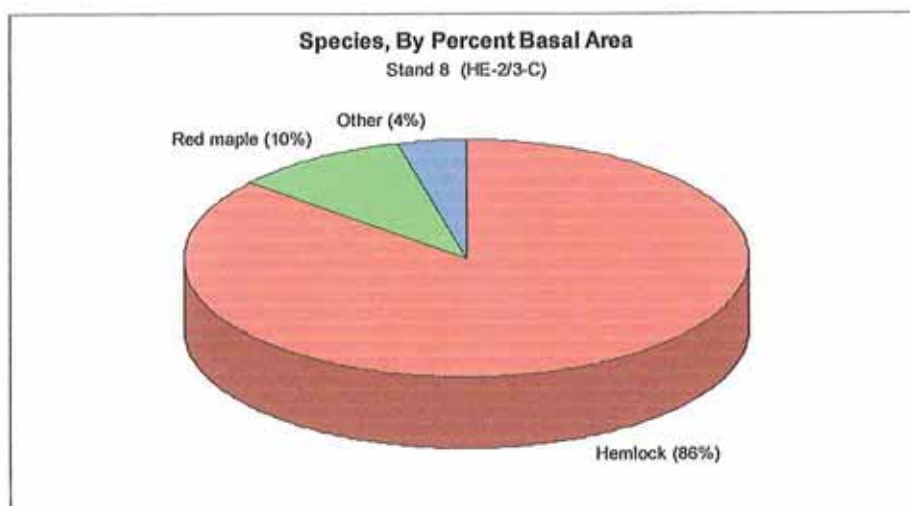
Long-term objectives include recreation, timber production, wildlife habitat and wetland protection. With the release of previously suppressed hemlock, an uneven-aged structure will develop over time. Maintain a minimum stocking of 110 ft²/acre basal area, which will rise over time with increasing average diameter. As the hemlock becomes denser, the stand has potential for serving as a wintering deer yard.

With the stand currently at the proper stocking, let grow and re-evaluate in 10 years. Maintain a 25' no-cut buffer plus an additional 50' in which only light selection harvests can occur along the stream and swamps. Clear and maintain selected skid roads for property-wide trail system for recreational use and access for wildfire training.

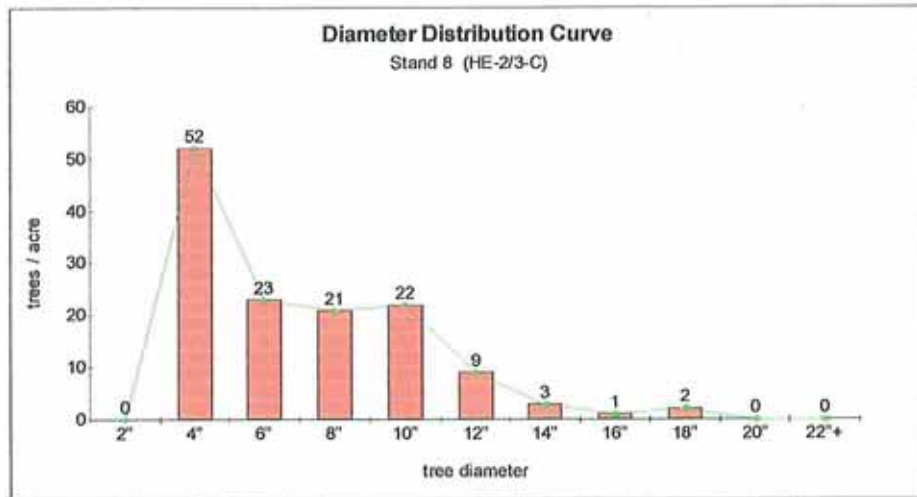
STAND 8 - HEMLOCK SAWTIMBER (HE-2/3-C)

17 acres

Stand 8 is in 5 separate units. The biggest is stand 8a, in the southeast corner. It is at the end of the main skid road and has many secondary roads scattered throughout. Slopes are gentle to moderate. The soils are mostly dry and ledgy, but a wet trough is in the west half that contains a seasonal stream and wooded swamp. The other 4 are small areas (ranging from ½ to 2 acres) adjacent to stand 5, in the middle of the lot. All are access by primary or secondary skid roads. The are moderately well to well drained. Site quality for pine is excellent in the moister ground and fair in the shallow soil. Operability with machines is good, limited by seasonally wet ground. The southeast edge of stand 8a is in the Shoreland Zone of the shrub swamp. All 5 units were logged 1993-5 and partially again in 2008 as part of the storm salvage. What distinguishes this stand from stand 7 is the heaviness of the recent salvage here. The damage must have been quite heavy, which resulted in a much more open condition. Additional salvage is scheduled to occur in the fall of 2008.



Like stands 6 and 7, this stand is dominated by hemlock. Other trees present include red maple plus small amounts of yellow and white birch and white ash. Trees range from 4" to 18" in diameter, with an average of 9". Sawtimber takes up the most growing space. Stocking is very low, with an average basal area of only 39 ft²/acre variable. It ranges from moderately dense pockets to open areas. Crown closure is sparse. Canopy height is moderate to tall.



Quality is good for the remaining trees. The 2 past cuts have spurred the growth rate. However, with the low base volume the wood accrual is low at 100 board feet per acre per year. Volume per acre is very low, with only 2.1 mbf of sawtimber and 7 cords of pulp. Sawtimber volume (mostly hemlock) is 38% of the total volume of commercial wood, which is high. Regeneration is mostly beech and red maple sprouts, plus fir, hemlock, striped maple, white and yellow birch. Shrubs are raspberry and blackberries, thick in spots. With the open canopy and young growth becoming established, stand 8's wildlife habitat is distinctly different from neighboring stands. Those animals that prefer these conditions will thrive. Moose are common.

RECOMMENDATIONS

Long-term objectives include wildlife habitat, wetland protection, recreation and timber production. Ultimately, a minimum stocking of 110 ft²/acre basal area should be maintained. However, this will take several decades. With a new generation becoming established, an uneven-aged structure (or at least 2-aged) will develop over time.

With the stand currently at the proper stocking, let grow and re-evaluate in 10 years. In the meanwhile, it will be utilized by a variety of birds and mammals.

Maintain a 25' no-cut buffer plus an additional 50' in which only light selection harvests can occur along the stream and swamps. Clear and maintain selected skid roads for property-wide trail system for recreational use and access for wildfire training.

CONCLUSIONS

The Freedom Lumber lot contains excellent sites for timber production. The exception is where the soil is shallow to bedrock, which limits rooting space and water availability. The established skid roads system and wood yard provides excellent access and operability. Recreational use and aesthetic enjoyment of the property by the public should continue and possibly encouraged.

No management activities are recommended for the next 10 years. Except for road maintenance and/or trail building and boundary line maintenance, the lot should be left alone and re-evaluated in 10 years. The lot would lend itself well for a place where the Liberty Volunteer Fire Department can practice their wildfire fighting maneuvers. It could also be a destination for Boy Scout activities (or other organized groups), both day use and overnight camping.

Riparian zones should not be cut to protect the integrity of the wetlands and associated wildlife habitat. This could be a 25' no-cut buffer around the swamps and streams, plus an additional 50' in which only light selection harvests can occur.

SUMMARY OF MANAGEMENT PRIORITIES 2008-2018			
Year	Stand	Activity	Estimated Income/(cost)
2008-12	All	Blaze and paint boundaries, except along town road and shrub swamp; (~7,300')	(\$435)
2008-18	All	Let grow	
2008-18	All	Clear and maintain trail road/system	
2018	All	Update management plan	(\$?)