

Section 480-A Real Property Tax Law

Forest Management Plan

Five Year Update

Application #

Property Owner:

Property Location:

Town of Oxford
Chenango County

July 2016

Prepared By:

General Observations

Fieldwork for this update was conducted May 8th-25th, 2016. All four designated forest stands were inventoried for this plan update. No serious health problems were noted at this time in any of the stands.

Stand 1, classified as a site III stand, does not appear to have changed from past observations. It is unlikely that it will be ready for a commercial harvest in the foreseeable future. There was a significant amount of interfering shrubby vegetation, including honeysuckle, multiflora rose, and other native wetland and old-field shrubs, as well as a large amount of graminoid species, in particular *Carex* spp.

Stand 2, classified as a site II stand, also appears to have largely unchanged, with a high percentage of white ash and concurrent honeysuckle and multiflora rose in the understory, with little regeneration present. Due to the impending threat of emerald ash borer (EAB) – there are known infestations within 30 miles of the location, this stand should be prepared for a regeneration cut. The average size of the white ash is still somewhat low, and thus a shelterwood approach combined with interfering vegetation control should allow the leave trees to gain volume, while providing for regeneration to become established.

Stand 3, classified as a site I stand, appears to also have changed little, continuing to grow with a high percentage of AGS and good quality timber. At this point, this stand has the highest timber volume per acre, with the relative density at the higher end, which should reduce continuing growth of the intermediate and overtopped trees. This stand should be evaluated for a potential regeneration strategy in the next 10-15 years. The landowner prefers retaining a forested condition, so a group selection or patch cut approach could be appropriate.

Stand 4, classified as a site II stand, has a large amount of ingrowth since the last inventory, with an increased number of saplings, poles and small sawtimber trees. This stand is now near the A-line, with likely concurrent reductions in tree growth and survival. Due to the desire of the owner to retain a forested condition throughout the property, this should be treated with a group selection strategy, which would focus on removing UGS American beech, white ash, and hophornbeam. This will allow the stand to develop a consistent uneven-aged character with multiple age classes, and allow it to be continuously harvested on a 15-20 year rotation. The group selection approach would allow for some shade-intolerant and shade-intermediate species (e.g., black cherry, pignut hickory, red maple) to regenerate in the group openings, while thinning in the closed canopy sections would allow for increased growth.

Stand 1 (3 acres)

This is a small sawtimber pioneer hardwood stand, located in the west corner of parcel. This is a wet site, with a near-surface water table, except for a small upland inclusion along the western property boundary. The total basal area of the stand is 97.5 square feet/acre with 240 stems/ac. The acceptable growing stock (AGS), if including firewood/pulpwood, is 90 square feet/acre, with the remaining 7.5 square feet/acre being unacceptable growing stock (UGS). The species composition of the stand, in order of decreasing relative dominance, is red maple (59%), sweet birch (18%), white ash (10%), quaking aspen (8%), and yellow birch (5%). As there is more than 50% of red maple in the stand, this is primarily a red maple cover type. The expected date of maturity is 2054.

The current stocking of the stand is above the "B"-level, with the stand relative density at 67% of the average maximum stocking expected in undisturbed stands of similar size and species. The growth rate should not be impeded by light competition; however, the site quality is likely to keep growth rates relatively low. Due to site classification, level of stocking, and operability restrictions, no treatments are scheduled at this time. As stocking levels increase, the landowner will have the option to schedule a pre-commercial or commercial treatment. This is unlikely to be desirable in the next 15 years.

Stand 2 (25 acres)

This is a small sawtimber northern hardwood stand located along the northern edge of the property, classified as site II, although there are fairly wet soils across sections of the stand. The stand has a basal area of 115.6 square feet per acre with 486 stems per acre (324.8 stems per acre if an outlier plot is left out). The AGS for timber is 97.8 square feet per acre and the basal area of UGS is 17.8 square feet per acre. The species composition of the stand, in order of decreasing relative dominance is white ash (69%), red maple (13%), sugar maple (7%), black cherry (6%), American elm (4%), and white pine (1%). Stocking in the stand is above the "B"-level, with the stand relative density at 72%. The expected date of maturity for the stand is 2041. There is an understory of honeysuckle and multiflora rose, and little regeneration.

Emerald Ash Borer (EAB) is an invasive insect pest across the northeast, which has been responsible for wide-spread ash mortality in areas where it has established. Currently, New York State has multiple locations where EAB has been found, with the nearest areas approximately 30 miles away in and around the city of Binghamton, and in and around Unadilla. Due to the widespread EAB mortality and a drastic decrease in timber value after an infestation, this stand should be regenerated using a shelterwood/deferred shelterwood approach. Concurrently, all honeysuckle and multiflora rose should be treated mechanically with follow-up chemical treatment of stump sprouts and root suckers. The shelterwood seed cut would focus on removing white ash, in the preferred order of UGS first, followed by smaller trees and quality ash down to 50 square feet per acre. Other species will only have UGS removed to provide a proportionately larger seed source and maintain quality growth (residual basal area of up to 80 square feet per acre). Somewhat dependent on the progression of EAB infestation, the remaining white ash should be removed in the next 5-15 years, likely in the next 5 years. Removal of other remaining overstory species is dependent on the success of the regeneration, and may be retained for 20 years or more.

Stand 3 (19 acres)

This is a small sawtimber red maple stand located in the center of the property. The stand has a basal area of 127.8 square feet per acre with 456 stems per acre. The AGS for timber is 104.4 square feet per acre and the basal area of UGS is 23.3 square feet per acre. The species composition of the stand, in order of decreasing relative dominance is red maple (70%), sugar maple (16%), black cherry (5%), white ash (4%), and other hardwood species (5%). This stand has had a Timber Stand Improvement treatment that was fully completed around 2012-2013, and as a result, there is a concurrent increase in AGS, timber quality and size. Stocking in the stand is at 82% of the stand relative density, compared to average maximum stocking expected in undisturbed stands of similar size and species. This stocking level is likely to reduce growth rates of the intermediate and suppressed trees, and may lead to an increase in mortality for these size classes. At the same time, the quality of the larger size classes, combined with a high AGS component, should allow for continued growth. The expected date of maturity is 2029.

This stand is nearing maturity, and could reach financial maturity as soon as 15 years from now. Due to this, and the desire of the landowner to retain a forested condition across the property, it is likely that a progressive patch clear cut would be the preferred option for a regeneration strategy, with a group selection strategy also being a feasible option. This stand should be evaluated in 10 years for a commercial thinning to stimulate advance regeneration, followed by an evaluation in 5-10 years for regeneration patch clear cuts to remove the entire stand overstory over a 20-year period. In case that a group selection regeneration strategy is deemed feasible and desirable, a thinning and some groups should be removed in 10-15 years, followed by an entry every 15-20 years for an 80-year rotation. Fern is present in the understory, so a commercial thinning or other treatment entry should include mechanical or chemical means for reducing the fern cover.

Stand 4 (45 acres)

This is a northern hardwood stand adjacent to Wilcox Rd at the southern portion of the property. The stand has a basal area of 120.8 square feet per acre, with 988.1 stems per acre. The AGS for timber is 103.8 square feet per acre and the basal area of UGS is 16.9 square feet per acre. The species composition of the stand, in order of decreasing relative dominance is red maple (34%), sugar maple (22%), American beech (13%), sweet birch (10%), white ash (8%), pignut hickory (6%) and other hardwood species (7%). The stand relative density is 96%, near the "A"-line, which means that the growth rates of dominant and co-dominant trees is likely reduced, while the intermediate and suppressed trees are growing poorly, and there is potentially an increase in mortality. The expected date of maturity is 2035.

The stand has previously been high-graded and, after that, treated for UGS and cull removal in the overstory and understory, which created a somewhat multi-aged condition within the stand, with at least two and as many as three ages present in the stand. The landowner continues to cut down beech seedlings and small saplings on an annual basis. One recent development in beech control is to cut the tops of these trees at 2 feet above ground, which appears to reduce root suckering and stem density

(NYS DEC, personal communication). The landowner should continue to remove beech stems, and in places where there is little foot traffic, cut them at 2 feet above ground. The increased stand relative density suggests that a treatment is needed in the near future. A need for treatment, landowner's desire to retain a forested condition, and previous partial harvests in the stand, in combination, suggest that one of the better approaches is to apply a group selection strategy. This would allow for increased regeneration in shade intermediate and intolerant species, such as black cherry, red maple, and pignut hickory. Currently, this strategy would focus on removing UGS beech, white ash, and hophornbeam, and any mature groups, while thinning across the other species. The group size should be in the range of 0.1-0.25 ac.

Stand 1, Inventory, 2016

Composition

	All spp.	red maple	sweet birch	white ash	quak. aspen	yellow birch
Basal area (sq.ft./ac.)	97.5	57.5	17.5	10.0	7.5	5.0
Percent of stand basal area (%)	100.0	59.0	17.9	10.3	7.7	5.1
Stems/area (stems/ac.)	239.7	156.3	42.7	19.7	5.1	15.9

Diameters

Medial DBH (in.)	10.6	10.3	9.7	10.3	17.0	9.0
Merchantable Medial DBH (in.)	10.9	10.8	9.7	10.3	17.0	9.0
Quadratic Mean DBH (in.)	8.6	8.2	8.7	9.6	16.5	7.6
Merchantable Quadratic DBH (in.)	9.4	9.4	8.7	9.6	16.5	7.6
Mean DBH (in.)	8.1	7.6	8.3	9.5	16.3	7.2

Structure

Q Factor	1.24	1.23	1.25	1.20	1.13	1.26
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Relative Density

Relative density (%/ac.)	66.9	40.8	12.4	5.0	4.3	4.4
Percent of stand (%)	100.0	61.0	18.5	7.5	6.5	6.5

Volumes

Gross sawtimber volume (bd.ft./ac.)	2,324	1,078	258	185	722	82
Net sawtimber volume (bd.ft./ac.)	2,324	1,078	258	185	722	82
Gross pulpwood volume (cu.ft./ac.)	1,368	851	241	170	53	54
Net pulpwood volume (cu.ft./ac.)	1,094	681	193	136	42	43
Gross total volume (cu.ft./ac.)	1,929	1,119	318	215	198	79
Net total volume (cu.ft./ac.)	1,543	895	255	172	158	63

Values

Sawlog value (\$/ac.)	514.56	323.39	51.56	101.60	21.65	16.36
Pulpwood value (\$/ac.)	21.88	13.61	3.86	2.72	0.84	0.86
Timber value (\$/ac.)	536.44	337.01	55.42	104.31	22.49	17.21

Stand 2, Inventory, 2016

Composition

	All spp.	white ash	red maple	sugar maple	black cherry	Am. elm	white pine
Basal area (sq.ft./ac.)	115.6	80.0	15.6	7.8	6.7	4.4	1.1
Percent of stand basal area (%)	100.0	69.2	13.5	6.7	5.8	3.8	1.0
Stems/area (stems/ac.)	486.0	353.2	35.7	60.7	19.9	15.9	0.6

Diameters

Medial DBH (in.)	12.3	12.3	14.2	10.4	10.5	10.8	18.0
Merchantable Medial DBH (in.)	13.1	12.8	15.8	11.8	11.6	12.7	18.0
Quadratic Mean DBH (in.)	6.6	6.4	8.9	4.8	7.8	7.2	18.0
Merchantable Quadratic DBH (in.)	11.2	11.2	12.8	11.2	9.3	8.9	18.0
Mean DBH (in.)	4.7	4.3	7.6	3.4	7.2	6.6	18.0

Structure

Q Factor	1.22	1.23	1.13	1.36	1.20	1.17	0.00
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Relative Density

Relative density (%/ac.)	72.3	46.4	10.1	7.3	3.8	4.4	0.4
Percent of stand (%)	100.0	64.1	13.9	10.0	5.3	6.1	0.5

Volumes

Gross sawtimber volume (bd.ft./ac.)	5,448	4,098	725	206	201	118	101
Net sawtimber volume (bd.ft./ac.)	5,448	4,098	725	206	201	118	101
Gross pulpwood volume (cu.ft./ac.)	1,201	800	174	91	79	48	9
Net pulpwood volume (cu.ft./ac.)	961	640	140	72	63	38	8
Gross total volume (cu.ft./ac.)	2,495	1,790	335	149	124	67	30
Net total volume (cu.ft./ac.)	1,996	1,432	268	119	99	53	24

Values

Sawlog value (\$/ac.)	2,733.97	2,253.66	217.36	133.87	110.32	10.66	8.10
Pulpwood value (\$/ac.)	19.22	12.81	2.79	1.45	1.26	0.77	0.15
Timber value (\$/ac.)	2,753.19	2,266.47	220.15	135.31	111.57	11.42	8.25

Stand 3, Inventory, 2016

Composition

	All spp.	red maple	sugar maple	black cherry	white ash	Other hardwood
Basal area (sq.ft./ac.)	127.8	88.9	20.0	6.7	5.6	6.6
Percent of stand basal area (%)	100.0	69.6	15.7	5.2	4.3	5.2
Stems/area (stems/ac.)	456.0	88.2	332.6	7.5	6.3	21.3

Diameters

Medial DBH (in.)	14.6	16.0	8.2	17.3	13.8	15.4
Merchantable Medial DBH (in.)	15.3	16.0	10.8	17.3	13.8	16
Quadratic Mean DBH (in.)	7.2	13.6	3.3	12.7	12.7	14.6
Merchantable Quadratic DBH (in.)	12.7	13.6	9.8	12.7	12.7	15.5
Mean DBH (in.)	4.8	12.9	2.3	11.8	12.4	14.4

Structure

Q Factor	1.20	1.18	1.38	1.11	1.17	1.25
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Relative Density

Relative density (%/ac.)	82.0	50.7	21.5	2.7	2.3	4.9
Percent of stand (%)	100.0	61.8	26.2	3.2	2.8	6.0

Volumes

Gross sawtimber volume (bd.ft./ac.)	6,539	5,191	268	476	362	241
Net sawtimber volume (bd.ft./ac.)	6,539	5,191	268	476	362	241
Gross pulpwood volume (cu.ft./ac.)	1,590	1,162	210	90	57	72
Net pulpwood volume (cu.ft./ac.)	1,272	929	168	72	46	57
Gross total volume (cu.ft./ac.)	3,029	2,303	283	178	140	124
Net total volume (cu.ft./ac.)	2,423	1,843	227	143	112	99

Values

Sawlog value (\$/ac.)	2,218.33	1,557.39	174.01	261.53	199.33	26.06
Pulpwood value (\$/ac.)	24.91	18.59	3.36	1.44	0.92	0.61
Timber value (\$/ac.)	2,243.24	1,575.98	177.37	262.97	200.25	26.67

Stand 4, Inventory, 2016

Composition

	All spp.	red maple	sugar maple	Am. beech	sweet birch	white ash	Other hardwood
Basal area (sq.ft./ac.)	120.8	41.5	26.2	15.4	12.3	9.2	16.2
Percent of stand basal area (%)	100.0	34.4	21.7	12.7	10.2	7.6	13.4
Stems/area (stems/ac.)	988.1	36.8	255.4	258.7	155.9	35.8	245.5

Diameters

Medial DBH (in.)	12.4	15.8	12.2	11.3	7.2	11.6	9.9
Merchantable Medial DBH (in.)	14.6	15.8	14.2	14.9	12.0	13.1	9.1
Quadratic Mean DBH (in.)	4.7	14.4	4.3	3.3	3.8	6.9	9.1
Merchantable Quadratic DBH (in.)	11.9	14.4	10.9	10.8	10.2	9.9	8.6
Mean DBH (in.)	3.1	14.0	2.7	2.2	3.2	5.7	8.9

Structure

Q Factor	1.26	1.18	1.21	1.26	1.40	1.22	1.46
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Relative Density

Relative density (%/ac.)	96.1	23.4	24.8	16.3	11.8	5.7	14.1
Percent of stand (%)	100.0	24.3	25.8	17.0	12.2	5.9	14.9

Volumes

Gross sawtimber volume (bd.ft./ac.)	5,128	2,445	1,056	562	157	440	467
Net sawtimber volume (bd.ft./ac.)	5,128	2,445	1,056	562	157	440	467
Gross pulpwood volume (cu.ft./ac.)	1,187	528	246	126	70	88	131
Net pulpwood volume (cu.ft./ac.)	950	422	197	101	56	70	105
Gross total volume (cu.ft./ac.)	2,353	1,093	491	226	113	177	254
Net total volume (cu.ft./ac.)	1,882	874	393	181	90	141	203

Values

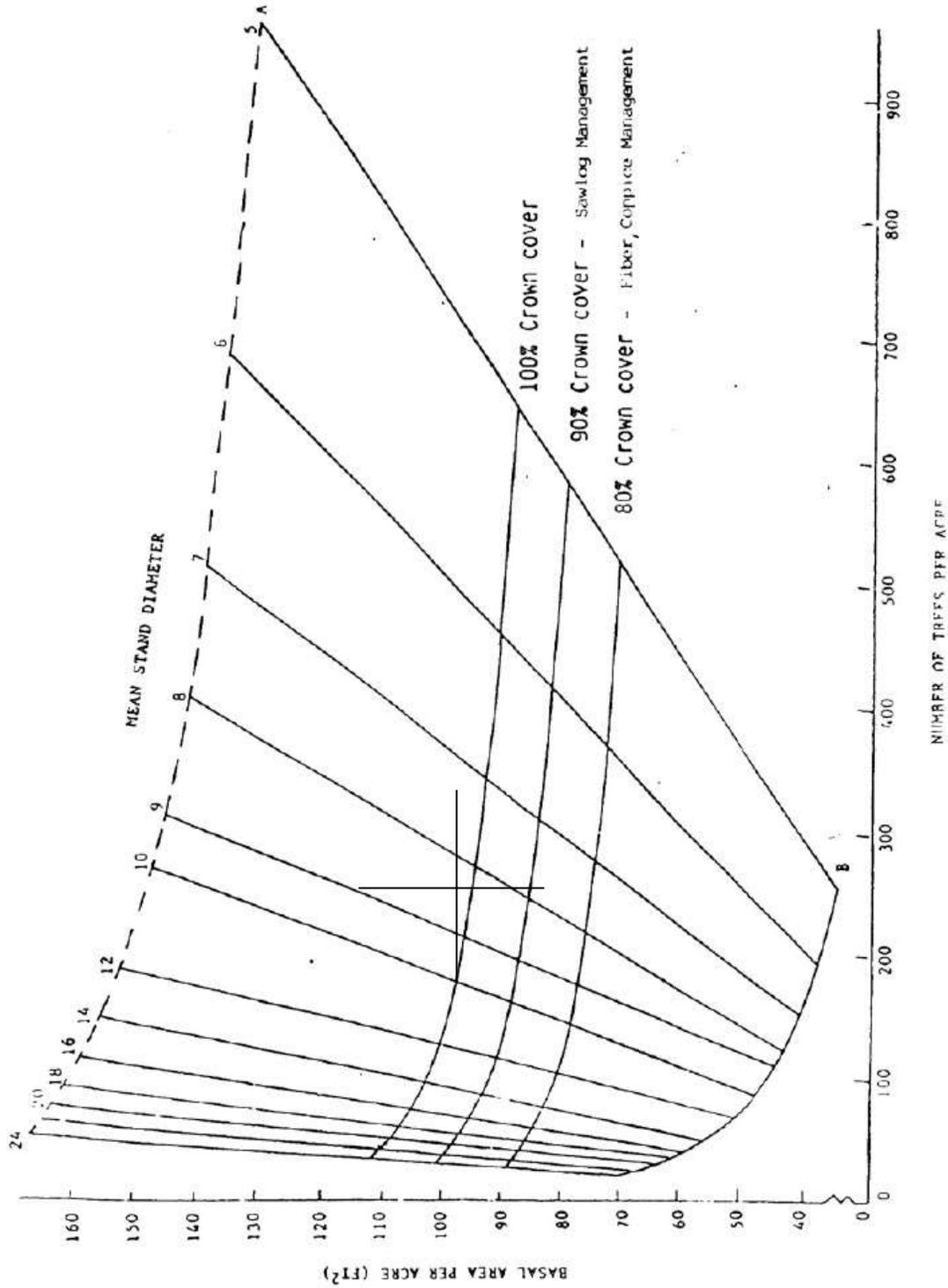
Sawlog value (\$/ac.)	1,848.46	733.60	686.38	28.11	31.37	242.09	126.91
Pulpwood value (\$/ac.)	18.99	8.45	3.94	2.01	1.12	1.40	2.08
Timber value (\$/ac.)	1,867.46	742.05	690.32	30.12	32.49	243.49	128.99

15 Year Work Schedule

2017-2018	Stand 2 – Shelterwood Seed Cut; Stand 4 – Group Selection and thinning; Repaint boundary lines
2018-2019	No treatment required
2019-2020	No treatment required
2020-2021	No treatment required
2021-2022	5 year update; Assess EAB proximity/need for overstory removal –Stand 2; Repaint boundary lines
2022-2023	No treatment required
2023-2024	No treatment required
2024-2025	No treatment required
2025-2026	No treatment required
2026-2027	5 year update; Assess Stand 3 for commercial thinning; Repaint boundary lines
2027-2028	No treatment required
2028-2029	No treatment required
2029-2030	No treatment required
2030-2031	No treatment required
2031-2032	5 year update; Repaint boundary lines

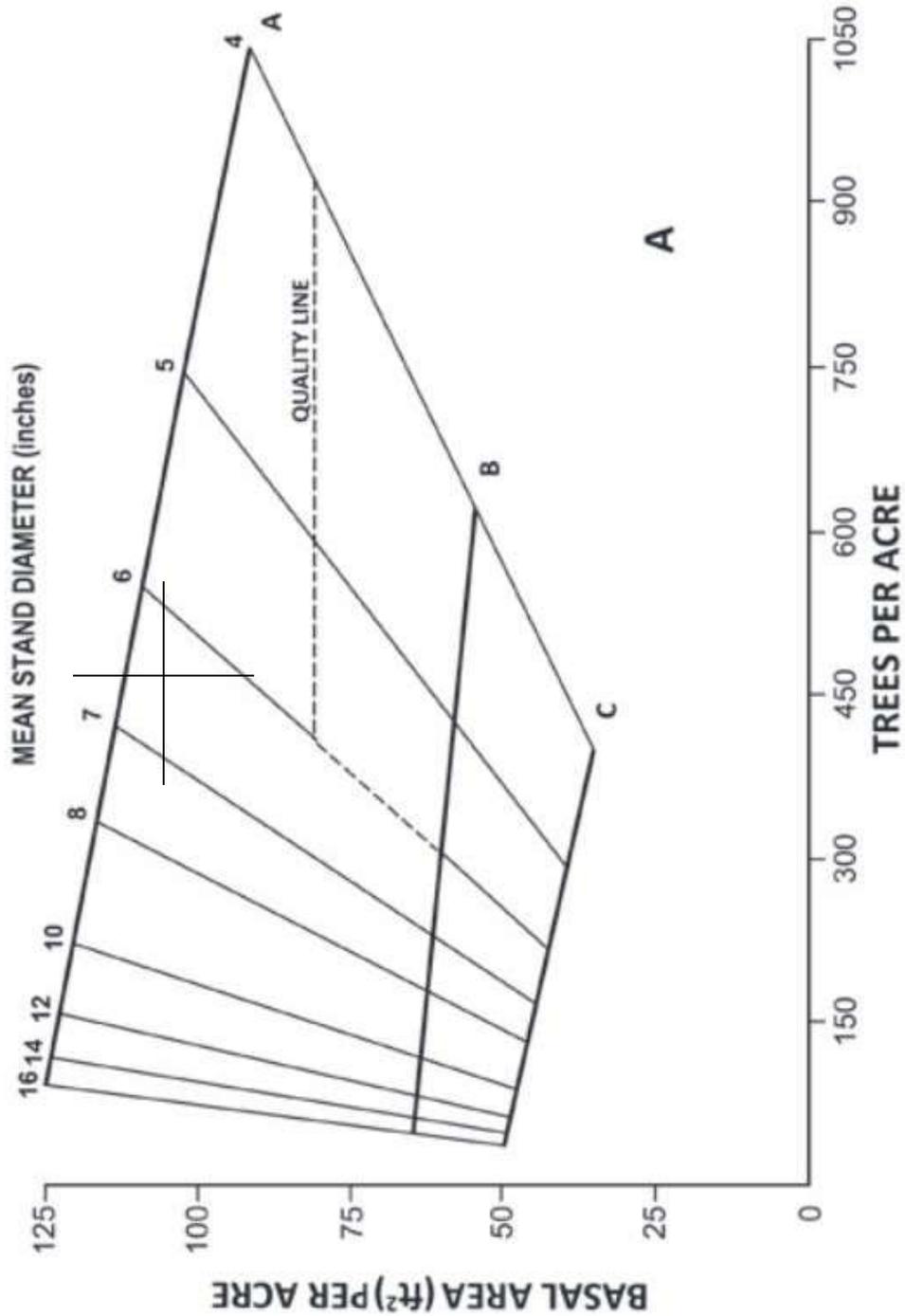
Stand 1 Stocking Guide

Figure 51.7 Red maple stocking chart



Wisconsin Department of Natural Resources publication 2431.5, accessed 2016.

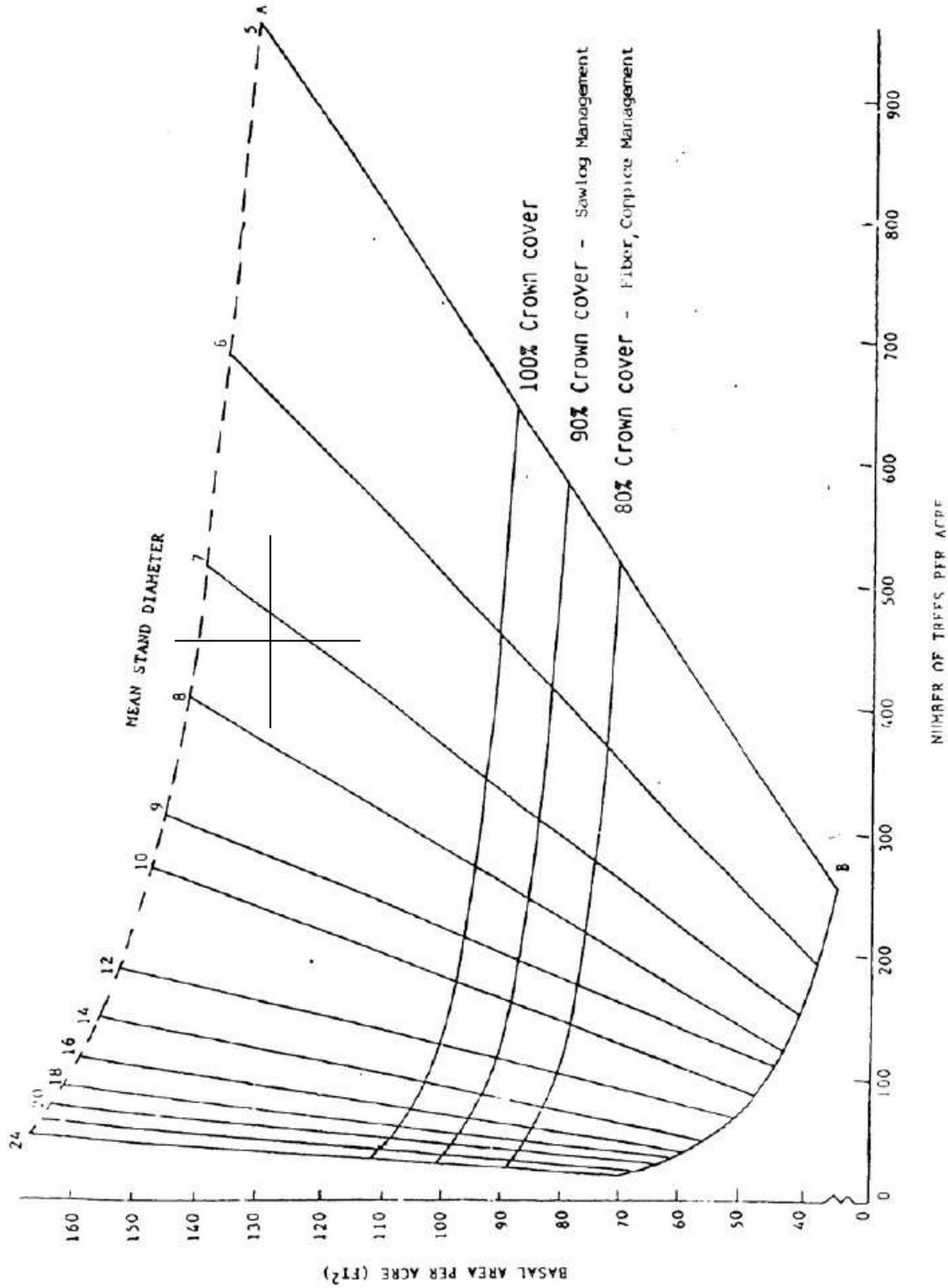
Stand 2



Leak W.B., Yamasaki M., and Holleran R. 2014. Silvicultural guide for northern hardwoods in the northeast. Gen. Tech. Rep. NRS-132. Newton Square, PA: USDA, Forest Service, Northern Research Station. 46 p.

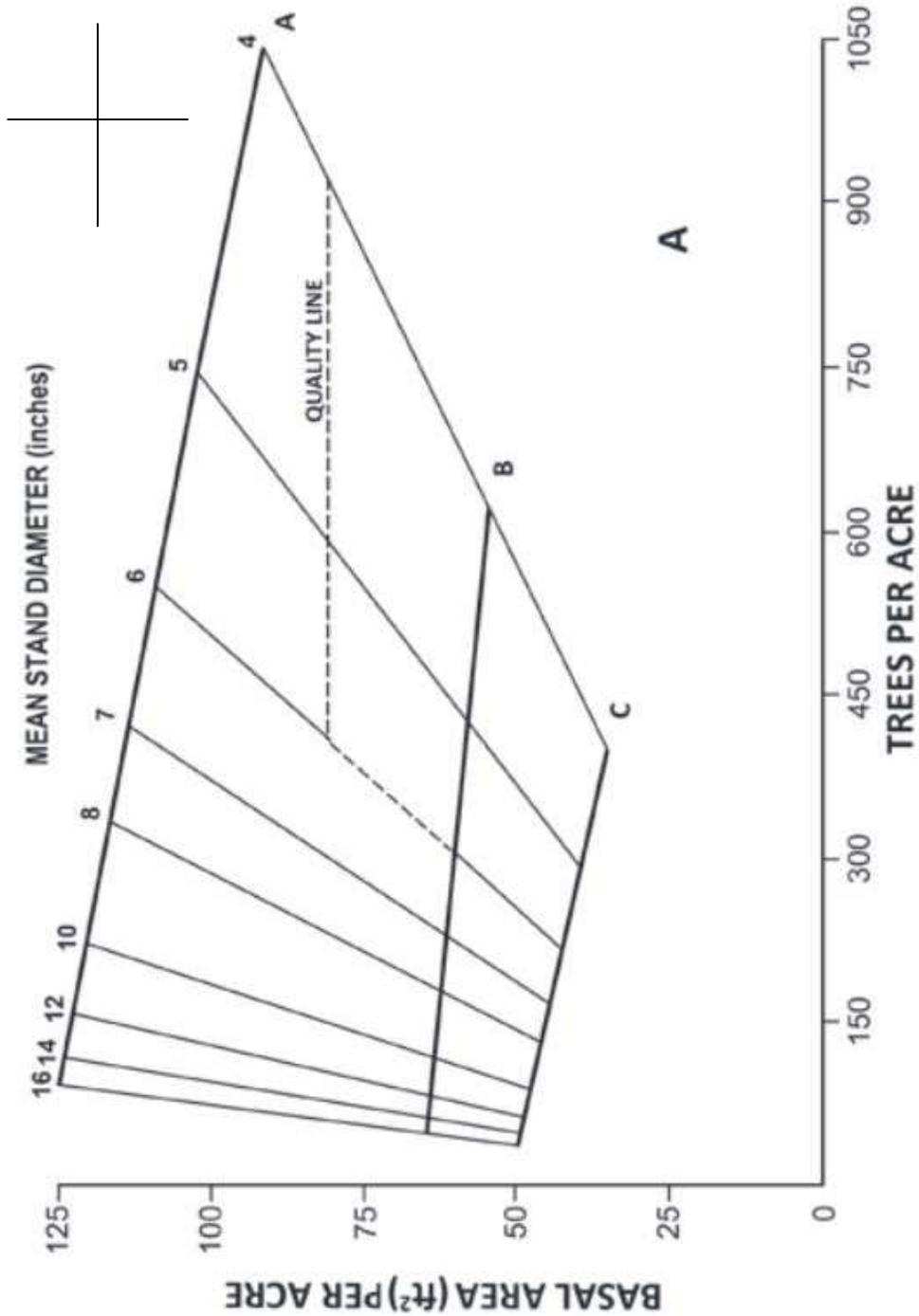
Figure 51.7 Red maple stocking chart

Stand 3 Stocking Guide



Wisconsin Department of Natural Resources publication 2431.5

Stand 4



Leak W.B., Yamasaki M., and Holleran R. 2014. Silvicultural guide for northern hardwoods in the northeast. Gen. Tech. Rep. NRS-132. Newton Square, PA: USDA, Forest Service, Northern Research Station. 46 p.