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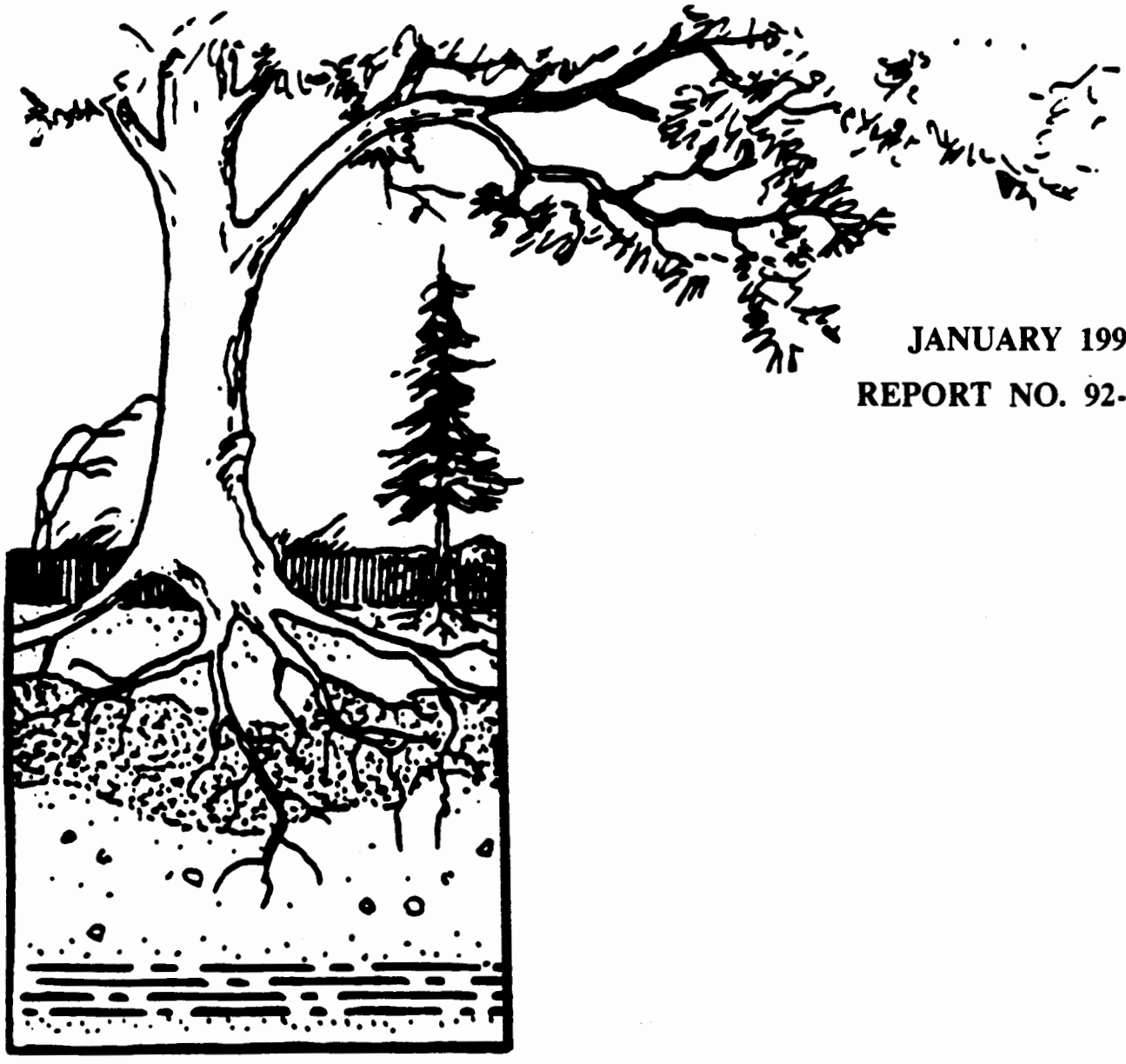
POTENTIAL FOREST PRODUCTIVITY ESTIMATES FOR THE SOIL SURVEY OF HOUGHTON COUNTY, MICHIGAN



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MICHIGAN TECHNOLOGICAL UNIVERSITY

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INTRODUCTION

Soil surveys are used for land planning and management activities. The survey describes the kinds of soils which occur in a county, and it shows the distribution of these soils on the landscape. The soil survey also contains predictions of soil behavior for selected uses which are interpreted to provide important information to user groups such as farmers, foresters, agronomists, community officials, developers, and conservationists. Soil interpretations constitute an information base for applying land management decisions and evaluating the impacts of land uses.

Research findings provide the basis for developing and applying soil use interpretations. These interpretations are based on the relationship of soil and site properties to the particular use. Accordingly, as new research results become available, opportunities exist to improve specific interpretations. The purpose of this publication is to present current forest productivity interpretations for the Soil Survey of Houghton County, Michigan.

This publication is a supplement to the Soil Survey of Houghton County, Michigan. It is to be used as a source for improved forest yield information. Readers must use the Soil Survey for descriptions of the soils, map units, and other forestry interpretations. The Soil Survey is available from the Soil Conservation Service, Michigan Department of Agriculture, or the Cooperative Extension Service. Readers requiring more detailed information on forest soil uses are referred to: A Field Guide to Forest Soils by S.G. Shetron (1985).

DISCUSSION

Measures of Yield

Soil surveys provide two intepretations to estimate potential forest productivity of a soil: site index and volume. Site index is the average height of dominant and co-dominant trees at age 50. It is expressed by species, and applies to fully stocked, even-aged, unmanaged stands. Volume refers to the mean annual increment and is expressed as

merchantable cubic feet per acre. Volume is also expressed by species and applies to fully stocked, even-aged, unmanaged stands.

Site Index

The site index values used in this report are those which are presented in the Woodland Management and Productivity Table, of the Houghton County Soil Survey. These values are based on direct field measurements, soil characterization studies, and soil series interpretation records.

Volume Growth

Potential productivity interpretations for stand volume growth are based on yield tables. Yield tables are typically derived for local areas or small regions. Pflughoeft et al. (1987) developed a yield table for nine species, specifically for northern Michigan. The yields presented in that table are based on observed site indices in the region and a recognized growth model. Accordingly, those yields more accurately reflect the potential growth rates in northern Michigan, than previously reported literature.

Volume growth estimates for Houghton County soils have been determined using the site index value for the soil series and the Michigan based yield table (Pflughoeft et al., 1987). Yields for species not contained in the Michigan yield table were assigned values corresponding to those in the Survey report, which are based on the National Forestry Manual (USDA, 1981).

Volume estimates given for each soil series include volume in terms of sawtimber (bd. ft./acre), pulpwood (ft^3/acre), and fuelwood (cds/acre) - see Figure 1. An assumed average of five board feet per cubic foot for sawtimber and 79 cubic feet of solid wood per cord for fuelwood were used to convert to cubic feet per acre.

Potential Productivity Table

The potential forest productivity by soil map unit and soil series for Houghton County, Michigan is presented in Table 1. This Table is a guide to potential productivity; actual yields can be expected to vary as do actual stand conditions. Table 1 is based on the Woodlands Management and Potential Productivity Table, from the Houghton County Soil Survey. The following is a listing of the table headings and their meaning:

Map Unit(s): Soil Map unit symbol; common map units differentiated by slope class were grouped when the site index was the same.

Series: Soil Series comprising the map unit.

Species: Species which had measured site index data; considered commercially important species for the soil series.

Site Index: Site index in feet, base age = 50 years.

Volume: Average merchantable cubic feet per acre per year growth.

Habitat Types: Vegetation types developed by Coffman et al. (1987).

FOREST HABITAT TYPES

The information in this section is derived from a field guide developed for the Upper Peninsula of Michigan and for Northeast Wisconsin (Coffman et al. 1987). The system of habitat classification used in the guide is based on the concept that plants occur in predictable patterns or communities and that these communities reflect differences in site characteristics.

Besides identifying the various habitat types by means of vegetative keys, the guide also provides information on the different possible successional stages for most of the habitat types. Successional stages depend largely on how the forest has been disturbed. They include the succession after logging in climax stands, the succession after logging in second-growth stands, and the succession in stands that have been both logged and burned.

The guide gives the suggested forest management for each of the successional stages. This management includes methods of thinning and harvest, site preparation, and measures that improve regeneration of the stands. The potential productivity, in terms of a site index and the mean annual volume in cubic feet per acre per year, is given for most of the habitat types.

Habitat types have been determined for each map unit in the survey area. The primary habitat type is the one that is most common on the map unit. The secondary habitat type is less common. The following paragraphs describe the habitat types in the survey area. They provide information about the potential climax species, some of the common understory species, and if known, the potential productivity of the habitat type.

Forest Habitat Type Descriptions

AQVac - Acer-Quercus-Vaccinium Habitat Type This habitat type has a potential climax overstory dominated by red maple and northern red oak. Other species include eastern hemlock, eastern white pine, balsam fir, and white spruce. The dominant ground flora includes low sweet blueberry, Canada blueberry, brackenfern, wintergreen, bigleaf aster and hazelnut. The potential productivity is moderately low for northern hardwoods, moderate for aspen and moderately high for red pine and jack pine.

ATD - Acer-Tsuga-Dryopteris Habitat Type This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock and American basswood. Yellow birch, red maple and American elm are in some areas. The dominant ground flora includes spinulose shield fern, rosy twistedstalk, hairy solomon's seal, elderberry and wild lily-of-the-valley. The potential productivity is moderately high for northern hardwoods and high for aspen. The potential productivity for red pine plantations is high if plant competition is controlled.

ATD(ci) - Acer-Tsuga-Dryopteris Habitat Type: Circaea-Impatiens Phase This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock and American basswood. Yellow birch, red maple and American elm are in some areas. The dominant ground flora includes spinulose shield fern, rosy

twistedstalk, hairy solomon's seal, elderberry, wild lily-of-the-valley, jewelweed and dwarf enchanter's nightshade. The potential productivity is moderately high for northern hardwoods and high for aspen. The potential productivity for red pine plantations is high if plant competition is controlled.

ATD(dr) - Acer-Tsuga-Dryopteris Habitat Type - Dryopteris Phase This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock and American basswood. Yellow birch, red maple and American elm are in some areas. The dominant ground flora includes spinulose shield fern, rosy twistedstalk, hairy solomon's seal, elderberry and wild lily-of-the-valley. The potential productivity is moderately high for northern hardwoods and high for aspen. The potential productivity for red pine plantations is high if plant competition is controlled.

AVO - Acer-Viola-Osmorhiza Habitat Type This habitat type has a potential climax overstory dominated by sugar maple. Other species include American basswood, white ash, yellow birch, eastern hophornbeam, eastern hemlock and American elm. The dominant ground flora includes downy yellow violet, sweet cicely, spinulose shield fern, lady fern, hairy solomon's seal and rosy twistedstalk. The potential productivity is high for northern hardwoods and aspen. It also is high for red pine plantations if plant competition is controlled.

AVO(ci) - Acer-Viola-Osmorhiza Habitat Type - Circaea-Impatiens Phase This habitat type has a potential climax overstory dominated by sugar maple. Other species include American basswood, white ash, yellow birch, eastern hophornbeam, eastern hemlock and American elm. The dominant ground flora includes downy yellow violet, sweet cicely, spinulose shield fern, lady fern, hairy solomon's seal, rosy twistedstalk, jewelweed and dwarf enchanter's nightshade. The potential productivity is high for northern hardwoods and aspen. It also is high for red pine plantations if plant competition is controlled.

FI - Fraxinus-Impatiens Habitat Type This habitat type has a potential climax overstory dominated by white ash and red maple. Other species include sugar maple, black ash and balsam fir. The dominant ground flora includes jewelweed, sedge, dwarf enchanter's nightshade, spinulose shield fern, lady fern, elderberry and wild mint. The potential productivity for northern hardwoods is moderate.

FMC - Fraxinus-Mentha-Carex Habitat Type This habitat type has a potential climax overstory dominated by black ash and American elm. Other species include red maple and balsam fir. The dominant ground flora includes sedge, wild mint, tag alder and jewelweed.

PCS - Picea-Chamadaphne-Sphagnum Habitat Type This habitat type has a potential climax overstory dominated by black spruce. Other species include tamarack and northern-white cedar. The dominant ground flora includes leatherleaf, bog rosemary, pale laurel, sphagnum, Labrador tea, sedge and Canada blueberry.

QAE - Quercus-Acer-Epigea Habitat Type This habitat type has a potential climax overstory dominated by red oak and red maple. Other species are white spruce and eastern white pine. The dominant ground flora includes brackenfern, trailing arbutus, wintergreen, low sweet blueberry, reindeer moss and Canada blueberry. The potential productivity is moderately low for aspen and moderate for red pine and jack pine.

TAM(eq) - Tsuga-Acer-Mitchella Habitat Type: Equistetum Phase This habitat type has a potential climax overstory dominated by sugar maple and eastern hemlock. Other species include black ash, American elm, red maple, American basswood, white ash and yellow birch. The dominant ground flora includes sedge, wild sarsaparilla, partridgeberry, horsetail, bigleaf aster, wild lily-of-the-valley, lady fern, American fly honeysuckle, rosy twistedstalk and northern dewberry. The potential productivity is moderately low for northern hardwoods and moderate for aspen.

TM - Tsuga Maianthemum Habitat Type This habitat type has a potential climax overstory dominated by eastern hemlock, sugar maple and red maple. Other species include yellow birch, white spruce, balsam fir, eastern white pine, northern red oak, northern white-cedar and American basswood. The dominant ground flora includes wild lily-of-the-valley, brackenfern, sedge, American starflower and wild sarsaparilla. The potential productivity is moderate for northern hardwoods, moderately high for aspen and high for red pine and jack pine.

TMC(dr) - Tsuga-Maianthemum-Coptis Habitat Type - Dryopteris Phase This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Sugar maple and yellow birch are common. Other species include balsam fir, white spruce and northern white-cedar. The dominant ground flora includes wild lily-of-the-valley,

goldthread, yellow beadlily, bunchberry dogwood, American starflower, spinulose shield fern, long beech fern, oak fern and hairy solomon's seal. The potential productivity is moderate for northern hardwoods and aspen.

TMC(vac) - Tsuga-Maianthemum-Coptis Habitat Type - Vaccinium Phase This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Sugar maple and yellow birch are common. Other species include balsam fir, white spruce and northern white-cedar. The dominant ground flora includes wild lily-of-the-valley, goldthread, yellow beadlily, bunchberry dogwood, American starflower, Canada blueberry, low sweet blueberry and spinulose shield fern. The potential productivity is moderate for northern hardwoods and aspen.

TMV - Tsuga-Maianthemum-Vaccinium Habitat Type This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Other species include sugar maple, eastern white pine, balsam fir, white spruce and northern red oak. The dominant ground flora includes Canada blueberry, wild sarsaparilla, brackenfern, wild lily-of-the-valley, low sweet blueberry, yellow beadlily and betony. The potential productivity is moderate for northern hardwoods, moderately high for aspen and high for red pine and jack pine.

TTL - Tsuga-Thuja-Lonicera Habitat Type This habitat type has a potential climax overstory dominated by eastern hemlock and northern white-cedar. Other species include red maple, sugar maple, balsam fir and eastern white pine. The dominant ground flora includes bigleaf aster, sedge, American fly honeysuckle, wild lily-of-the-valley and spinulose shield fern. The potential productivity is moderately low for northern hardwoods, high for aspen and moderate for red pine.

TTP - Tsuga-Thuja-Petasites Habitat Type This habitat type has a potential climax overstory dominated by eastern hemlock and northern white-cedar. Other species include balsam fir, red maple and sugar maple. The dominant ground flora includes palmate-leaved sweet coltsfoot, bigleaf aster sedge, barren strawberry, northern dewberry, bunchberry dogwood, wild sarsaparilla and black snakeroot. The potential productivity is moderately low for aspen.

TTS - Tsuga-Thuja-Sphagnum Habitat Type This habitat type has a potential climax overstory dominated by eastern hemlock and northern white-cedar. Other species include balsam fir, black spruce and red maple. The dominant ground flora includes sphagnum, goldthread,

bunchberry dogwood, sedge, wild lily-of-the-valley, American starflower and wood sorrel.

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TABLE 1. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
10 B,D,E	Munising	Sugar Maple	63	105	ATD	TM
11 A	Skanee	Red Maple	60	76	TMC	
		Sugar Maple	60	101		
12	Gay	Balsam Fir	53	102*	FI	TTS
		Red Maple	62	78		
14A	Assinins	Red Maple	65	80	TMC	
15 B,D,E	Kalkaska	Sugar Maple	64	107	ATD(dr)	TM
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
16 B,D	Rubicon	Quaking Aspen	60	62	AQVac	TMV
		Jack Pine	53	61		
		Red Pine	53	134		
		Bigtooth Aspen	66	75		
		Red Maple	57	74		
		Eastern White Pine	45	75*		
17 A	Croswell	Quaking Aspen	68	64	TMV	QAE
		Jack Pine	53	61		
		Red Pine	55	137		
18 A	AuGres	Quaking Aspen	70	65	TMC	TMC(vac)

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
21 B,D	Keweenaw	Sugar Maple	61	102	ATD(dr)	TM
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
22 B	Abbaye	Sugar Maple	62	104	ATD	TM
	Munising	Sugar Maple	63	105		
23 A	Zeba	Red Maple	55	73	TMC(dr)	TMC
	Jacobsville	Red Maple	55	73		
24 B	Deerton	Sugar Maple	60	101	ATD	TM
25	Lupton	Black Spruce	20	29*	TTS	
		Balsam Fir	46	86*		
	Cathro	Balsam Fir	40	71*		
		Tamarack	35	23*		
		Black Spruce	15	23*		
26	Dawson	Black Spruce	15	23*	PCS	
	Loxley	Black Spruce	15	23*		
29B	Waiska	Sugar Maple	61	102	ATD	AVO
		Quaking Aspen	71	65		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
30 B	Munising	Sugar Maple	63	105	ATD	TMC
	Skanee	Red Maple	60	76		
		Sugar Maple	60	101		
31 A	Skanee	Red Maple	60	76	TMC	FI
		Sugar Maple	60	101		
	Gay	Balsam Fir	53	102*		
		Red Maple	62	78		
32 B	Alcona	Sugar Maple	61	102	ATD	TM
33 B,D	Munising	Sugar Maple	63	105	ATD	TM
	Yalmer	Sugar Maple	61	102		
		Red Maple	61	77		
34 B,D,E	Munising	Sugar Maple	63	105	ATD	TM
35 B,D,E	Graveraet	Sugar Maple	60	101	ATD	AVO
36A	Sturgeon	Red Maple	65	80	AVO(ci)	ATD(ci)
37	Arnheim	White Spruce	38	68*	FMC	FI
38A	Pelkie	Sugar Maple	65	108	AVO	
41A	Misery	Red Maple	60	76	TMC	

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
46 B D	Karlin	Sugar Maple	61	102	ATD(dr)	TMV
		Red Pine	65	80		
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
47 B	Ocqueoc	Sugar Maple	63	105	ATD(dr)	TMC
	Halfaday	Sugar Maple	62	104		
		Jack Pine	63	67		
		Bigtooth Aspen	80	94*		
		Red Maple	60	76	ATD	TMC
51 A	Allendale	Quaking Aspen	60	62	TM	TP
	Rudyard	White Spruce	45	84		
		Balsam Fir	45	83		
52 B	Allouez	Sugar Maple	65	108	AVO	
56	Jacobsville	Red Maple	55	73	TTS	FI
58 B	Manistee	Sugar Maple	61	102	ATD	TM
	Ontonagon	Red Maple	55	73		
		Eastern White Pine	44	72*		
		Red Pine	46	67*		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
59 B	Graveraet	Sugar Maple	60	101	ATD	AVO
	Ocqueoc	Sugar Maple	63	105		
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
60 B,D,E	Nunica	Sugar Maple	62	104	TTL	
	Fence	Sugar Maple	65	108		
61 B,D,E	Ontonagon	Red Maple	55	73	TTL	TM
		Eastern White Pine	44	72*		
		Red Pine	46	67*		
65 A	Rudyard	White Spruce	45	84*	TTP	TAM(eq)
		Balsam Fir	45	83*		
66 B,D,F	Munising	Sugar Maple	63	105	ATD	TM
	Abbaye	Sugar Maple	62	104		
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
67	Roscommon	Quaking Aspen	74	86*	TMC	TTS
69 B	Watton	Sugar Maple	62	104	ATD	TMC
	Alstad	Red Maple	65	80		
		Northern Red Oak	64	86		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
70 B	Watton	Sugar Maple	62	104	ATD	AVO
71 A	Richter	Sugar Maple	61	102	TMC	
		Red Maple	65	80		
		White Birch	65	90		
72 A	Halfaday	Sugar Maple	62	104	ATD(dr)	TMC
		Jack Pine	63	67		
		Bigtooth Aspen	80	94*		
		Red Maple	60	76		
73 B	Froberg	Sugar Maple	60	101	TTL	TTP
	Rudyard	White Spruce	45	84*		
		Balsam Fir	45	83*		
75 A	Croswell	Quaking Aspen	68	64	QAE	TMC(vac)
		Jack Pine	53	61		
		Red Pine	55	137		
	AuGres	Quaking Aspen	70	65		
76 A	AuGres	Quaking Aspen	70	65	TMC(vac)	PCS
	Kinross	Quaking Aspen	45	32*		
77	Tawas	Balsam Fir	40	71*	TTS	FI
	Roscommon	Quaking Aspen	74	86*		
78 B	Deer Park	Red Pine	45	64*	QAE	ACVac
		Jack Pine	46	58		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
79 B	Yalmer	Sugar Maple	61	102	ATD	TMC
		Red Maple	61	77		
	Assinins	Red Maple	65	80		
84 B,D,E	Graveraet	Sugar Maple	60	101	ATD	AVO
86 B,D,E	Trimountain	Sugar Maple	63	105	ATD	AVO
89 B,D,E	Trimountain	Sugar Maple	63	105	ATD	AVO
	Paavola	Sugar Maple	63	105		
90 Witbeck	Black Spruce	33		44*	TMC	TTS
		Quaking Aspen	50	43*		
		Balsam Fir	48	90*		
92 B,D,E	Arcadian	Sugar Maple	63	105	AVO	ATD
	Michigamme	Sugar Maple	60	101		
	Rock Outcrop					
95 A	Assinins	Red Maple	65	80	TMC	
	Skanee	Red Maple	60	76		
		Sugar Maple	60	101		
96 B,D,E,F	Liminga	Sugar Maple	60	101	ATD(dr)	TM
98 B,D,E	Munising	Sugar Maple	63	105	ATD	TM
	Yalmer	Sugar Maple	61	102		
		Red Maple	61	77		
100 A	Au Gres	Quaking Aspen	70	65	TMC	TTS
	Roscommon	Quaking Aspen	74	86*		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
101 A	Net	Red Maple	60	76	ATD(ci)	TMC
		Balsam Fir	58	113*		
		White Spruce	49	94*		
		White Birch	53	78		
102 A	Net	Red Maple	60	76	TMC	FI
		Balsam Fir	58	113*		
		White Spruce	49	94*		
		White Birch	53	78		
	Witbeck	Black Spruce	33	44*		
		Quaking Aspen	50	43*		
		Balsam Fir	48	90*		
103 B	Trimountain	Sugar Maple	63	105	ATD	TMC
	Net	Red Maple	60	76		
		Balsam Fir	58	113*		
		White Spruce	49	94*		
		White Birch	53	78		
107 B,D,E	Kalkaska	Sugar Maple	64	107	ATD(dr)	TM
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
	Waiska	Sugar Maple	61	102		
		Quaking Aspen	71	65		
108 B	Freda	Sugar Maple	64	107	ATD	AVO

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1, continued. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
110 D,E	Kalkaska	Sugar Maple	64	107	ATD(dr)	AVO
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
	Waiska	Sugar Maple	61	102		
		Quaking Aspen	71	65		
115 B,D,E	Trimountain	Sugar Maple	63	105	ATD	AVO
	Paavola	Sugar Maple	63	105		
116 B,D,E	Trimountain	Sugar Maple	63	105	ATD	AVO
	Paavola	Sugar Maple	63	105		
	Michigamme	Sugar Maple	60	101		
119 A	Net	Red Maple	60	76	TMC	FI
		Balsam Fir	58	113*		
		White Spruce	49	94*		
		White Birch	53	78		
	Witbeck	Black Spruce	33	44*		
		Quaking Aspen	50	43*		
		Balsam Fir	48	90*		
125	Kinross	Quaking Aspen	45	32*	PCS	TMC(vac)
	Dawson	Black Spruce	15	23*		
127 B,D,E	Keweenaw	Sugar Maple	61	102	ATD(dr)	TM
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
130 B,D,F	Munising	Sugar Maple	63	105	ATD	AVO
	Alcona	Sugar Maple	61	102		
	Liminga	Sugar Maple	60	101		
131 B	Graveraet	Sugar Maple	60	101	ATD	TMC
	Misery	Red Maple	60	101		
132 B,D,F	Kalkaska	Sugar Maple	64	107	ATD(dr)	TM
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
	Alcona	Sugar Maple	61	102		
133 B,D,E	Liminga	Sugar Maple	60	101	ATD(dr)	TM
	Alcona	Sugar Maple	61	102		
134 A	Halfaday	Sugar Maple	62	104	ATD(dr)	TMC
		Jack Pine	63	67		
		Bigtooth Aspen	80	94*		
		Red Maple	60	76		
	AuGres	Quaking Aspen	70	65		
135 D	Deer Park	Red Pine	45	64*	QAE	PCS
		Jack Pine	46	58		
	Kinross	Quaking Aspen	45	32*		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

** Habitat types are assigned to the map unit as a whole, not to individual soil series.

TABLE 1. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
136 B	Michigamme	Sugar Maple	60	101	ATD	TMC
	Net	Red Maple	60	76		
		Balsam Fir	58	113*		
		White Spruce	49	94*		
		White Birch	53	78		
137 A	Sturgeon	Red Maple	65	80	AVO(ci)	FMC
	Arnheim	White Spruce	38		68*	
	Pelkie	Sugar Maple	65	108		
138	Bergland	White Spruce	45	84*	FI	TTS
		Balsam Fir	45	83*		
		Quaking Aspen	74	86*		
139 B,D,E	Trimountain	Sugar Maple	63	105	ATD	AVO
	Paavola	Sugar Maple	63	105		
	Waiska	Sugar Maple	61	102		
		Quaking Aspen	71	65		
140 B,D,E	Trimountain	Sugar Maple	63	105	ATD	AVO
	Paavola	Sugar Maple	63	105		
	Waiska	Sugar Maple	61	102		
		Quaking Aspen	71	65		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

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TABLE 1. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
142 F	Keweenaw	Sugar Maple	61	102	ATD(dr)	TM
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
	Waiska	Sugar Maple	61	102		
		Quaking Aspen	71	65		
144 F	Graveraet	Sugar Maple	60	101	ATD	AVO
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
145 B	Kalkaska	Sugar Maple	64	107	ATD(dr)	TM
		Red Maple	63	78		
		Bigtooth Aspen	80	94*		
		Jack Pine	63	67		
	Halfaday	Sugar Maple	62	104		
		Jack Pine	63	67		
		Bigtooth Aspen	80	94*		
		Red Maple	60	76		
146	Cathro	Balsam Fir	40	71*	TTS	FI
		Tamarack	35	23*		
		Black Spruce	15	23*		
	Gay	Balsam Fir	53	102*		
		Red Maple	62	78		

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

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TABLE 1. Potential forest productivity estimates for Houghton County, Michigan.

Map Units(s)	Series	Species	Site Index	Volume	Habitat Type** Primary	Secondary
147 B	Munising	Sugar Maple	63	105	ATD	
	Alcona	Sugar Maple	61	102		
	Liminga	Sugar Maple	60	101		
148 B,D	Graveraet	Sugar Maple	60	101	ATD	AVO
	Kalkaska	Sugar Maple	64	107		
		Red Maple	63	78		
		Bigtooth Aspen	80	94		
		Jack Pine	63	67		
	Ocqueoc	Sugar Maple	63	105		
150 B	Richter	Sugar Maple	61	102	TMC(dr)	ATD
		Red Maple	65	80		
		White Birch	65	90		
	Alcona	Sugar Maple	61	102		
151 B	Champion	Sugar Maple	60	101	ATD	
152 B	Kallio	Sugar Maple	62	104	ATD	AVO
153 B,D,E	Champion	Sugar Maple	60	101	ATD	
	Karlin	Sugar Maple	61	102		
		Red Maple	65	149		
	Fence	Sugar Maple	65	108		
154 B,E	Vilas	Red Pine	57	139	AQVac	TMV
		Jack Pine	65	69		
		Eastern White Pine	56	120		
	Rubicon	Quaking Aspen	60	62		
		Jack Pine	53	61		
		Red Pine	50	130		
		Eastern White Pine	45		75*	

* Yield from Woodland Management and Potential Productivity Table, Houghton County, Michigan Soil Survey Report.

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