F&W
SINCE 1962

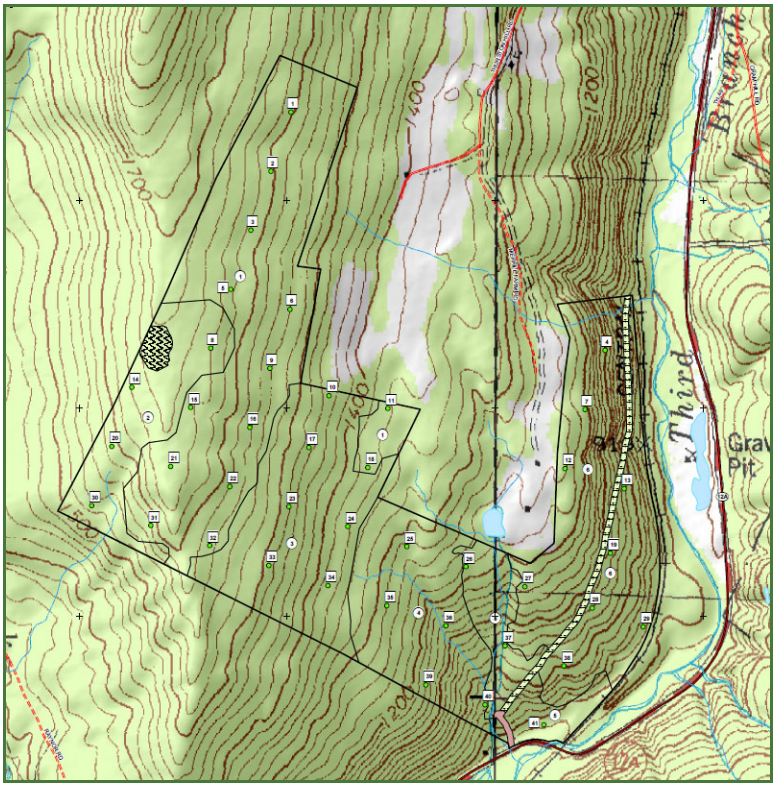
TIMBER VALUATION REPORT

G. H. Evarts & Co.
Ward Lot

Roxbury, Washington County, Vermont

244.99 Acres

November 2022



F&W Forestry Services, Inc.

79 River Street Suite 301
Montpelier, VT 05602

Tel: (802) 223 8644
Fax: (802) 229 2155

www.fwforestry.com

Timber Volume and Value

Purpose

The purpose of this timber inventory and valuation project is to determine the total capital value of the standing timber resources on 244.99 GIS acres owned by G. H Evarts & Co. and located in Roxbury, Washington County, Vermont, as requested by the owner. Capital timber value is the full market value of all the timber as it stands, reflecting all relevant access and operating considerations, but without regard to market saturation or time required for harvest. This timber report is prepared for the use of the above-mentioned entity. It is understood that it may be used by the landowner in support of decisions regarding ownership of the property.

Inventory Area

The property is nestled in the valley of the Third Branch of the White River between two ridges of the Green Mountains in central Vermont. The eastern boundary of the property has a small segment of frontage on Route 12A and then follows a railroad bed north, paralleling the river. The land climbs steeply, rising 300' vertical feet to more moderate topography that reaches to where the southwest corner of the property crests over a local ridgeline.

Internal access is already in place for timber harvesting with the short spur road to the landing on the powerline ROW.

There are 2 small streams that originate on the property and two more that cross the lot from adjacent properties. One of the latter is the outlet for a small pond just north of the property boundary near the terminus of Merrill Farm Road.

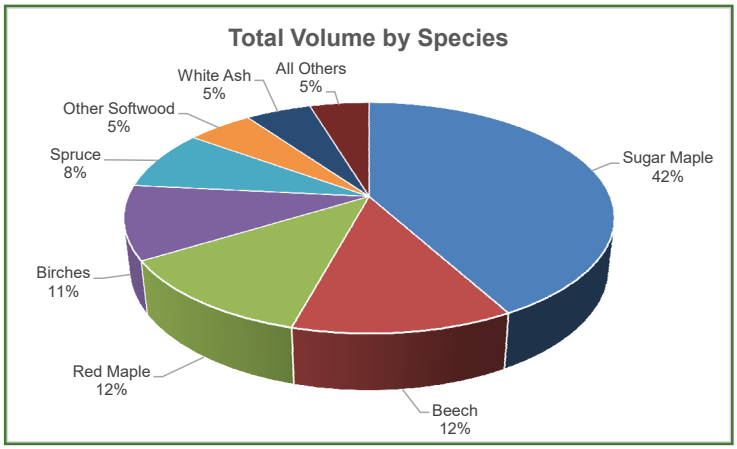
The forest is depicted in GIS files recently created during the inventory project. These files are believed to be reasonably accurate and based on GPS data collected on the property. In many areas, boundaries have been recorded with GPS, and the GIS files have been adjusted accordingly. The GIS files align with known boundaries on the ground.

F&W Forestry has delineated various non-forest cover types on the property, including roads. The remainder of the property is considered operable and productive forestland, and is the inventory area for this project. By GIS measurement, the inventory area is 239.35 acres of operable and productive forestland. The entire property measures 244.99 GIS acres. The breakdown of acreage for non-productive cover types is provided on the accompanying map and Timber Valuation sheet.

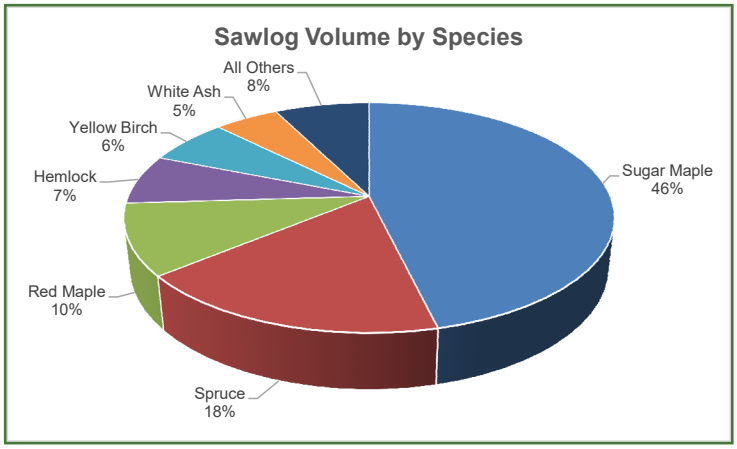
Timber Description

Timber data reveal a total sawlog volume of 1,442 MBF International ¼" scale (6.024 MBF/commercial acre) with 3,860 pulpwood cords (16.1 cords/commercial acre). Combined total commercial per acre volume is 28.1 cords, a total volume in line with or just above the regional average. Stumpage values were assigned to the volumes by F&W Forestry in November 2022, producing a property-wide Capital Timber Value (CTV) of $322,500 ($1,347 per commercial acre) (see Timber Valuation on page 5).

Species composition for the property is predominantly hardwoods, which represent 87% of total volume, while softwoods represent 13%. Species composition for all products combined is composed of sugar maple (42%), beech (12%), red maple (12%), birches (10%) and spruce (8%). All other species comprise 15% of total volume.

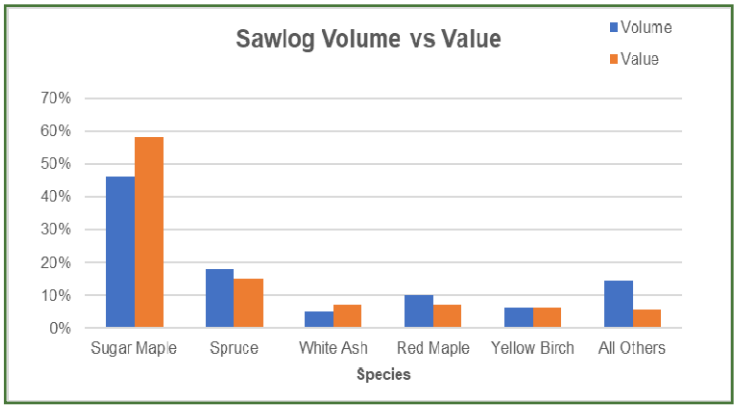


Sawlog volume differs somewhat from total volume; while sugar maple still dominates at 46% of total sawlog volume, spruce 18% and red maple 10% are now the second and third species. All other species comprise 25% of the total.

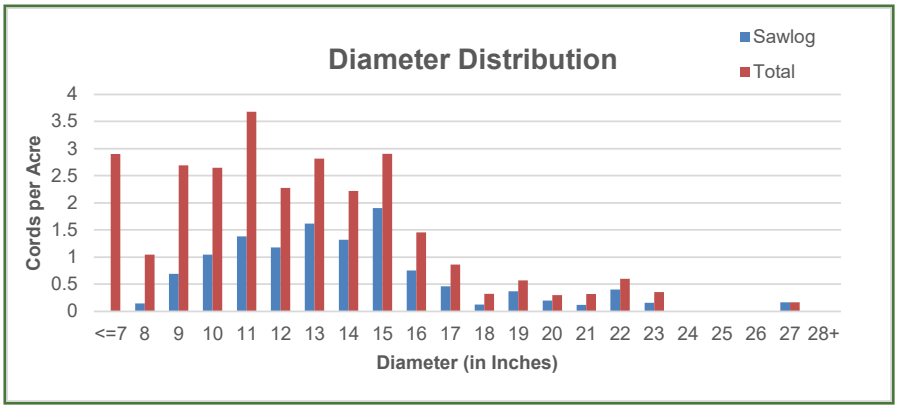


Overall, full stocking conditions prevail. The total basal area (BA) is 91.1 ft^2 on 183.1 stems/acre. The Acceptable Growing Stock BA is 62.9 ft^2 on 109 stems/acre, representing good utilization of growing space by current and future crop trees. These numbers indicate a forest resource with overall moderate to good stem quality.

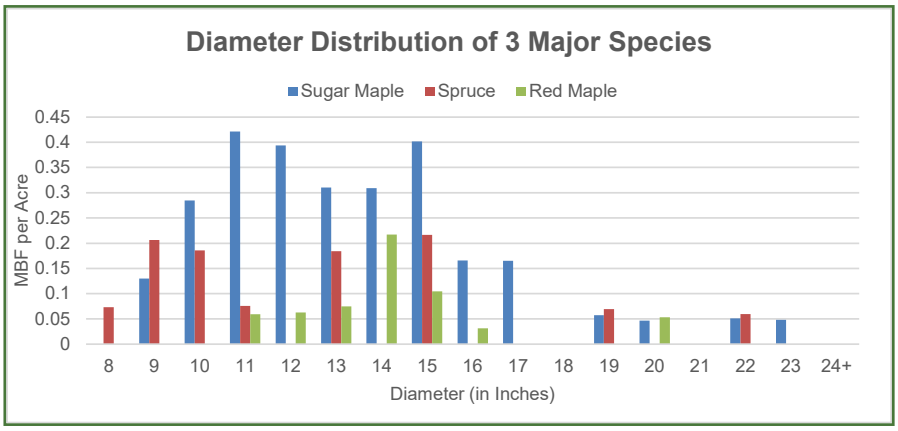
Sawlog value is dominated by sugar maple (58%). Spruce (15%), white ash (7%), red maple (7%) and yellow birch (6%) are important components of value. All other species represent 6% of value.



Average diameter (quadratic mean diameter) for all trees combined is 9.6", while the mid-point of the diameter distribution of sawlog trees is about 13", about average given the northern forest type. The average



diameter of sugar maple sawlog trees, the major species, is also 13". The diameter distribution of all species on the property, as well as the diameter distribution of the three major species (sugar maple, spruce and red maple) can be seen on the graphs above.



The property offers excellent potential multiple-use options, given the high level of stocking, slope factor and access.

Determining Volumes

The Ward Lot was inventoried in Nov 2022 by F&W Forestry. The data were processed using a computer program called Two Dog.

Cruise design was a 492' x 492' grid. A total of 41 plots were taken on commercial ground, an average of 5.84 commercial acres per plot. At a 95% confidence interval, the inventory resulted in a standard error for all sawlog volumes of ±22.5% and ±14.6% for the total volume of all products. This standard error is within the range that F&W Forestry considers to be the industry standard for properties of this size and variability. The standard error is a result of the number of plots taken and the variability of volume between those plots.

The inventory utilized a 15 factor prism. All trees were measured in one-inch diameter increments at breast height (4.5' above the ground). Merchantable forest products were tallied in 8' lengths for all trees 5" in diameter and greater.

The following products were specified to be tallied during the inventory of the property:

- Veneer
- Sawlogs (grade 2 and better)
- Pallet logs
- Pulpwood

Sawlog and veneer volumes are given in units of thousand board feet (MBF) using the International ¼" Log Rule. One board foot is the measure of a piece of wood 12" x 12" x 1". Pulpwood is given in units of cords. One cord is a stack of wood measuring 4' x 4' x 8'. Specifications for all products may be found in the *Timber Cruise Specifications* section in the Appendix.

Determining Values

Once volumes have been reasonably determined, values are assigned through an analysis including both an income and comparable sale approach.

Timber Value Influences – The price of standing timber (stumpage) is essentially the price

paid at the mill less the cost of logging and trucking. Mill prices tend to be competitive with each other and driven by the market and price of lumber. Logging and trucking costs tend to be more variable according to the specific property situation.

Mills buy timber according to species and grade. Grades are based on quality and size of individual stems. Most mill price levels are based on the availability of timber and the market for the final product. Higher grade lumber is strongly influenced by export markets. Species benefiting most from the increase in export demand include red oak, sugar maple, yellow birch, spruce/fir and black cherry.

Logging costs include felling the timber and removing it from the woods. Logging costs can vary tremendously according to the type of equipment used, distance from a suitable landing area, size and distribution of the timber to be cut, topographic features of the land, and condition of access.

Trucking costs are generally a function of distance. Landings which are inaccessible to tractor trailers may require an additional short-haul on smaller trucks, and therefore an additional cost. A loading fee may be required in some cases.

The income approach starts with published mill-delivered prices (usually by grade) and then backs out all costs required to achieve that income, leaving a residual value, or “stumpage”, by grade. All mills within a reasonable geographic region are surveyed for published prices and specifications. Distances to these mills from the forest are then determined and a reasonable trucking cost is estimated. The mill price less trucking costs produces a value of the timber “roadside”. Based on the physical characteristics of the property, including terrain and access, and based on the distribution, quality, and size of the timber, a logging cost is determined and subtracted from the roadside price to produce a range of stumpage values by grade from a variety of mills. From this analysis, a reasonable average unit value can be determined.

In addition to this income-based approach, considerable weight is given to comparable timber sales, primarily from F&W Forestry’s own experience, and including harvests on the property. Different sales are weighted according to how directly comparable they are to the subject property in terms of a variety of factors, including but not limited to terrain, distance to the road, logging chance (size, quality and distribution of the timber), type of cut (thinning versus clearcut), and distance to mills. Finally, any independent source of comparable stumpage price data is also examined.

Final determination of unit values is then a weighted and measured opinion of both the prices indicated by the income approach, and prices indicated by comparable sales. Key factors influencing these opinions include the quality of the timber, logging costs, access issues, and the current condition of markets.

Timber Value

The following table combines the volumes determined by the inventory with the unit prices developed to produce the current full capital valuation of the timber.

TIMBER VALUATION

Ward Lot

Prepared for the G. H. Evarts & Co.

Estimated Timber Valuation

Prepared By

F&W FORESTRY SERVICES INCORPORATED

Roxbury, Washington County, Vermont
November 2022

236 Town-Listed Acres
245.0 Total GIS Acres
239.4 Commercial GIS Acres

Species	Volume MBF/CD	Unit Price Range Low	High	Likely	Total Value Likely
Sawtimber - MBF					
Sugar Maple	358	325.00	450.00	375.00	**134,200**
Spruce	257	125.00	175.00	165.00	**42,300**
Sugar Maple Pallet	305	50.00	100.00	75.00	**22,900**
White Ash	73	225.00	325.00	275.00	**20,100**
Red Maple	77	175.00	300.00	225.00	**17,300**
Yellow Birch	54	250.00	350.00	300.00	**16,100**
Hemlock	101	30.00	75.00	60.00	**6,100**
Sugar Maple Veneer	4	1,000.00	1,400.00	1,250.00	**4,700**
Hardwood Pallet	95	30.00	60.00	40.00	**3,800**
White Birch Veneer	4	550.00	750.00	650.00	**2,400**
White Pine	14	120.00	160.00	140.00	**2,000**
Yellow Birch Pallet	39	30.00	60.00	40.00	**1,600**
Basswood	18	50.00	100.00	75.00	**1,300**
White Birch	14	50.00	125.00	75.00	**1,000**
Aspen	21	30.00	50.00	40.00	**900**
Black Cherry	3	150.00	275.00	225.00	**700**
White Pine Pallet	6	15.00	25.00	20.00	**100**
Pulpwood - Cords					
Hardwood	3,702	10.00	15.00	12.00	**44,400**
Hemlock	100	3.00	5.00	4.00	**400**
Spruce	51	3.00	4.00	3.00	**150**
White Pine	7	2.00	4.00	3.00	**20**

Totals				
Sawtimber Total	1,442	MBF		**$277,500**
Sawtimber Per Acre	5.886	MBF		**$1,132.70**
Sawtimber Per Comm. Acre	6.024	MBF		**$1,159.39**
Cordwood Total	3,860	Cords		**$44,970**
Cordwood Per Acre	15.8	Cords		**$183.56**
Cordwood Per Comm. Acre	16.1	Cords		**$187.88**
			Total Per Comm. Acre	**$1,347.27**

Total Value	Low	High	Likely
	$262,000	$390,000	**$322,500**

BASED ON AN OCTOBER 2022 TIMBER INVENTORY CONDUCTED BY F&W FORESTRY SERVICES, INC.
Volume data were taken on 41 cruise plots on a 492' x 492' grid using a 15 factor prism on 10/20/2022
Statistical Error: ±22.5% for all saw log products and ±14.6% for all products combined at the 95% Confidence Level
The volumes and values reflect estimated total value of merchantable timber.
The volumes and values are not a liquidation value.
Prices are averages for the area and are adjusted to reflect, access, quality and operability of the site.

TIMBER REPORTS AND INVENTORY DOCUMENTS

2022 Final Cruise Map

Ward Forest

Owned By: Owen M. Ward
Roxbury, VT
236.00 Town Listed Acres
244.99 GIS Acres
239.35 Productive Forest Acres
5.64 Non-Productive Acres
41 Cruise Plots
492' x 492' Cruise Grid
Drawn by: Rhys Williams
October, 2022

417 208.5 0 417 Feet

Legend

- 492' x 492' Cruise Grid
- Tract Boundary
- Forest Stand Boundary
- Gravel Road
- Ledge/Inoperable
- Power Line ROW
- Open Water
- Stream
- Interstate
- US Highway
- State Highway
- Maintained Town RD
- Other

THURSTON HILL RD
CRAM HILL RD
TH 49
MERRILL FARM RD
RAYNOR RD
12A

173000
172500
172000
171500
171000
479000
479500
480000
480500

F&W
SINCE 1962

WARREN
W. HILL RD
OXBOW RD
ROXBURY
3066
CRAM HILL RD
12A
Lost Mountain
2617
GRANVILLE
Belcher Hill
2400
BRAINTREE
East Granville

2022 Final Cruise Map

Ward Forest

Owned By: Owen M. Ward
Roxbury, VT
236.00 Town Listed Acres
244.99 GIS Acres
239.35 Productive Forest Acres
5.64 Non-Productive Acres
41 Cruise Plots
492' x 492' Cruise Grid
Drawn by: Rhys Williams
October, 2022

417 208.5 0 417 Feet

Legend

- 492' x 492' Cruise Grid
- Tract Boundary
- Forest Stand Boundary
- Gravel Road
- Ledge/Inoperable
- Power Line ROW
- Open Water
- Stream
- Interstate
- US Highway
- State Highway
- Maintained Town RD
- Other

THURSTON HILL RD
MERRILL FARM RD
CRAM HILL RD
TH 49
RAYNOR RD
Gravel Pit
Third Branch
Roaring Branch
WARREN
ROXBURY
GRANVILLE
BRAINTREE
East Granville
Lost Mountain' 2617
Belcher Hill' 2400
3066
W HILL RD
OXBOW RD

F&W SINCE 1962

479000 479500 480000 480500
171000 171500 172000 172500 173000

Legend

- 492' x 492' Cruise Grid
- Tract Boundary
- Forest Stand Boundary
- Gravel Road
- Ledge/Inoperable
- Power Line ROW
- Open Water
- Stream
- Interstate
- US Highway
- State Highway
- Maintained Town RD
- Other

2022 Final Cruise Map

Ward Forest

Owned By: Owen M. Ward
Roxbury, VT
236.00 Town Listed Acres
244.99 GIS Acres
239.35 Productive Forest Acres
5.64 Non-Productive Acres
41 Cruise Plots
492' x 492' Cruise Grid
Drawn by: Rhys Williams
October, 2022

417 208.5 0 417 Feet

THURSTON HILL RD
TH 49
CRAM HILL RD
MERRILL FARM RD
RAYNOR RD
12A

173000
172500
172000
171500
171000
479000
479500
480000
480500

WARREN
W HILL RD
OXBOW RD
ROXBURY
3066
CRAM HILL RD
Lost Mountain'
2617
GRANVILLE
Belcher Hill'
2400
BRAINTREE
East Granville

F&W SINCE 1962

INVENTORY INSTRUCTIONS

PROJECT NAME: Evarts – Ward Lot Timber Inventory 2022

DATE: October, 2022

OBJECTIVE

The main objective of this cruise is to gather accurate volume data for the Ward Lot Forest. We will be gathering information on plots laid out on a grid system designed to meet precision goals. The information gathered on each plot will be input into TwoDog software for processing. In addition to timber data collection, necessary plot specific information needs to be recorded. General comments will most certainly be appreciated.

GENERAL INFORMATION

This cruise will use a 15 Factor Prism and diameters will be measured with calipers.

USE METHOD SET BAF 15 Two Foot Cull on handheld data loggers

Since this is a cruise for value, product calls, diameter and height are very important, as is to ensure that "in" trees are tallied and "out" trees are not.

Regeneration will be tallied using a sub plot with 5.3 foot radius.

Navigation from plot to plot will be accomplished by handheld GPS, with an accuracy of 5 meters or better. The cruiser should only resort to pacing/hip chaining from plot to plot with a handheld compass in the event of GPS failure. This method of navigation will require carefully calculating bearings and distances, using a protractor and engineer's scale. Methods other than GPS navigation should only be used as a last resort, with the exception of the unbiased plot center location procedure described below.

When measuring trees, start at magnetic north and move around the plot in a clockwise direction.

SAMPLE POINT LOCATION

The cruise maps include the plots on a topo and photo background. No plots were distributed in mapped non-commercial ground. If a plot shows as falling just off, or on the boundary of, the

mapped non-commercial type, move the plot one chain (66') in a cardinal direction away from the non-commercial type and take the plot.

It is possible that a plot may fall in a non-mapped non-forested area. Non-mapped non-commercial areas may also be encountered, and may include inoperable wetlands or steeps and/or excessively rocky ground. Slopes above 80% with an absence of skid trails and stumps may be inoperable. Evidence of logging indicates that the area is commercial ground.

If the plot falls on a non-mapped non-forest or non-commercial area greater than 2 acres, map the area to the best of your abilities, and do not take the plot. If a plot falls just off, or on the boundary of, the non-mapped non-forest or non-commercial area greater than 2 acres, move the plot 1 chain in a cardinal direction away from the area and take the plot. Make clear notes on the map regarding any unmapped non-commercial plots, and how these issues were resolved.

If the plot falls on an unmapped non-commercial area (inoperable or non-productive) less than 2 acres, take the plot where it falls. If there are trees within the plot, those trees would be tallied as usual, but with a notation on the map and in the Comments section of the Pocket Dog data entry screen such as "Inoperable, less than 2 acres" . Make ample notes on the map to describe the situation and reason for calling the area Inoperable or Non-Commercial. (A judgment call will be made as to whether or not these plots will be included in the data, based on all available information.)

If a plot falls just off, or exactly on the boundary of the property, so that the proximity of the boundary will affect the plot, move the plot 1 chain in a cardinal direction away from the boundary and take the plot. Make clear notes on the map regarding how these issues were resolved.

Please record GPS location for any plot which is moved.

When in doubt, take the plot and sort it out later. It is easier to take a plot and throw it out later than it is to go back to sample one plot.

At the end of the day, summarize any thoughts you have during the day and check off the plots done during the day on the master map. Clearly transfer all your map notations to a clean copy of the cruise map.

Be sure to:

- Describe notable features on the map including cultural features, vernal pools, etc.
- Describe inoperable lands, unmapped non-forest types on the map
- Ground truth the boundaries where encountered and collecting GPS data where possible to refine the accuracy of the map.

At plot center, hang a foot long flag at eye level with plot number, date and cruiser initials written on it. Mark plot center on the ground by tying a small piece of flagging on a stick and putting it in the ground, or tying it on a sapling with a clear point of entry into the ground. The stick/sapling should be no less than 12" tall. Plot center is defined as the point on the ground at which the stick or sapling enters the ground. Therefore, the monumentation of plot center should provide an unambiguous indication of plot center. (Leaning saplings, herbaceous plants, and small sticks may result in an ambiguous plot center)

TREE DATA

Record the following information for all trees that fall within the plot as determined by the prism. Horizontal limiting distance will be measured for any tree that cannot definitely be determined to be in or out with the prism. Diameter will be measured to 0.1" with calipers for limiting distance calculations. Distance from plot center will be measured with a tape. Limiting distances and slope correction tables are included in the appendix for the appropriate BAF prisms. Use slope correction only if the slope exceeds 20%.

Tally trees in a clockwise sequence starting from magnetic north.

Mark each tree with a dot of spray paint at the appropriate height, and on the appropriate face at DBH.

The codes described below are contained in the appendix.

- Species codes 1-30 as on the specification sheet in the appendix. When using codes 13 (NC Hdwds.), 19 (Other Hdwd.) and 21 (Other Pine) it would be helpful later to indicate what the tree is by writing it in the margins. These are the official Fountains species codes.
- DBH is recorded in 1" size classes, i.e. a 10" tree is measured from 9.51" to 10.50. Measure, and tally products for trees at or larger than the minimum DBH for the cruise. DBH is measured at 4.5' above the ground on the uphill side of the stem. A guide to DBH measurement location is provided at the end of this document. Calipers should be pointed exactly at plot center for diameter measurements. Deformities on the stem will require the measurement be made as far as practical up the stem to a point where the deformity no longer effects the measurement. If it is not practical to measure above the swell, then the measurement will be made at the first point below the swell that is free of the effect of the swell.
- Trees that fork at a pith intersection point 1.0 feet to 4.5 feet from the ground on the uphill side of the tree will be treated as two trees and DBH will be measured 3.5 feet above the pith intersection. Trees with a Pith Intersection above 4.5 feet will be treated as one stem. Trees with a Pith Intersection less than 1.0 feet above the ground will be treated as two separate stems, and DBH will be taken as usual. Compensate for snow depth in the winter. Note that the determination of in/out trees is made with the prism at DBH. If DBH is moved from its usual position of 4.5 feet above the ground (due to one of the reasons above), then the location of determination of in/out is also moved to the location of DBH measurement. Trees with two stems which extend into the stump will be considered two separate trees.
- Quality is either AGS or UGS. The specification sheet describes these. An AGS tree only needs to be able to produce a log with 2 faces clear or better now or some time in the future and be able to live for at least another 15 years.
- The intent of product calls is to enumerate real products contained within the tree. Products are called in 8 foot sections, starting at the lowest possible stump height. Trees with only one eight foot sawlog or veneer log must contain a salable sawlog (a full 8 feet plus 6" trim in the first piece). Trim allowance will be difficult to estimate above the first stick, and subsequent sticks will be tallied in 8 foot sticks. A cull portion of the tree may be entered in 2 foot sections. It is strongly recommended that cruisers familiarize themselves with an 8'6" height with a measured pole laid against the tree. Each 8' stick is graded individually. A tree that looks to be sawlog quality from plot center may have a very bad defect on the other side. Look at all

sides of a tree before grading it. It is recommended that cruisers periodically check height calls with the aid of a clinometer or rangefinder to ensure that height estimates are consistently accurate. The specification sheet outlines the specifications for the different products.

- A single log product call (one 8 foot stick of pallet, sawlog, or veneer) indicates that the full length of the product is present in the tree. However, for log product calls of two or more sticks, and for all pulpwood calls, the cruiser will round up to the next full product, if the height/length of the last product clearly exceeds 50% of the required height/length. The cruiser will round down, if the height/length of the last product is less than or equal to 50% of the required height length.
- Recently critically damaged trees: Trees which are broken, uprooted or otherwise damaged to the point of expected mortality in the near future should be inventoried at the products no greater than pulpwood. Some cruises, especially those designed to quantify salvage volumes, may provide other specific accounting of damaged trees.

CHECK CRUISING

In-house and third party verification may be necessary, and should be assumed, in all cases. Consequently, it is important that data points be easily and unambiguously re-located, and all data collected be collected in an accurate and systematic manner.

All errors will be reported to the cruiser. Problem areas will be explained to the cruiser. An unacceptable error rate will result in the cruise plots being returned to the cruiser for review and correction. Plots may then be re-inspected for accuracy.

EQUIPMENT LIST

- Compass (having a spare is desirable)
- Appropriate 10 BAF Prism (having a spare is desirable)
- 100' Loggers Tape
- Calipers or Diameter Tape
- GPS Unit capable of 5 meter accuracy or better
- Clinometer/Rangefinder
- Orange or Pink Arctic Grade Flagging
- Permanent Markers
- Pencils
- Spray Paint
- Plot Maps
- PDA or Tally Book
- Large Zip Lock Baggies

PRODUCT SPECIFICATIONS

SPECIES

Code	Species	Code	Species	Code	SPECIES
1	White Pine	11	Beech	21	Other Pine
2	Red Pine	12	Red Oak	22	Butternut
3	Spruce	13	NC Hdwds.	23	Norway Spruce
4	Fir	14	White Ash	24	Hickory spp.
5	Hemlock	15	Aspen	25	Black Ash
6	Cedar	16	Black Cherry	26	White Oak
7	Sugar Maple	17	Black Birch	27	Chestnut Oak
8	Red Maple	18	Basswood	28	Scarlet Oak
9	White Birch	19	Other Hdwd.	29	Black Oak
10	Yellow Birch	20	Tamarack	30	Elm

QUALITY

Code	Description
1	**AGS** – commercial species that has or has the potential to produce a Grade #2 sawlog or better and will survive for at least 15 years.
2	**UGS** - Live trees of any size that do not qualify as AGS. Includes live culls.
3	**UGS-Dieback –** Live sugar maple trees of any size that do not qualify as AGS because of more than 35% dieback in the crown.

PRODUCT SPECIFICATIONS

Code	Product	Species	Min. DBH*	Min. Top (IB)	Min. Length	Description
9	Veneer	Hardwood	14”	12"	8 feet	4 sides clear w/ **no** defects or rot, Straight & sound
2	Sawlogs	Hardwood	11"	10"	8 feet	2 sides clear, Straight & sound, <2”sweep in 8’
		Spruce/Fir	7"	5"	12 feet (tally as 16)	Straight & sound, free of excessive or large knots
		White Pine,	10"	8"	12 feet (tally as 16)	Straight & sound , Free of excessive (>3" red, 2” black) knots
		Red Pine	8"	6"	12 feet (tally as 16)	Straight & sound, free of excessive or large knots
		Hem. & other Sftwd.	10”	8”	12 feet (tally as 16)	Straight & sound, free of excessive or large (<3”) knots
4	Pallet logs	Hardwood (no aspen, basswood) Sugar Maple, Birches & Red Oak	11" 9”	10" 8”	8 feet 8 feet	<2 sides clear & sound or otherwise not meeting Gr. 2 spec. (<2” sweep in 8’)
		W. Pine	10"	8"	8 feet	Excessive large (6”) knots or otherwise not meeting above specs.

6	Pulpwood	All (include 13)	5"	4"	8 feet	Less than above sawlog specs.
8	Cull	All	5"		2’	Over 50% rot or void in bole.

HEIGHTS RECORDED IN # OF 8' STICKS. (EXCEPT CULL)
***MIN DBH REFERS TO THE SIZE CLASS**

HORIZONTAL LIMITING DISTANCE TABLE IN FEET Basal Area Factor 15

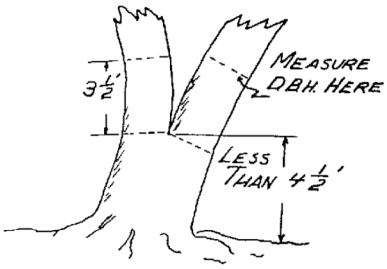
Distance in feet to center of tree = DBH in inches x 2.2453

DBH	DBH Tenths of Inches									
Inches	**0**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
5	11.2	11.5	11.7	11.9	12.1	12.3	12.6	12.8	13.0	13.2
6	13.5	13.7	13.9	14.1	14.4	14.6	14.8	15.0	15.3	15.5
7	15.7	15.9	16.2	16.4	16.6	16.8	17.1	17.3	17.5	17.7
8	18.0	18.2	18.4	18.6	18.9	19.1	19.3	19.5	19.8	20.0
9	20.2	20.4	20.7	20.9	21.1	21.3	21.6	21.8	22.0	22.2
10	22.5	22.7	22.9	23.1	23.4	23.6	23.8	24.0	24.2	24.5
11	24.7	24.9	25.1	25.4	25.6	25.8	26.0	26.3	26.5	26.7
12	26.9	27.2	27.4	27.6	27.8	28.1	28.3	28.5	28.7	29.0
13	29.2	29.4	29.6	29.9	30.1	30.3	30.5	30.8	31.0	31.2
14	31.4	31.7	31.9	32.1	32.3	32.6	32.8	33.0	33.2	33.5
15	33.7	33.9	34.1	34.4	34.6	34.8	35.0	35.3	35.5	35.7
16	35.9	36.1	36.4	36.6	36.8	37.0	37.3	37.5	37.7	37.9
17	38.2	38.4	38.6	38.8	39.1	39.3	39.5	39.7	40.0	40.2
18	40.4	40.6	40.9	41.1	41.3	41.5	41.8	42.0	42.2	42.4
19	42.7	42.9	43.1	43.3	43.6	43.8	44.0	44.2	44.5	44.7
20	44.9	45.1	45.4	45.6	45.8	46.0	46.3	46.5	46.7	46.9
21	47.2	47.4	47.6	47.8	48.0	48.3	48.5	48.7	48.9	49.2
22	49.4	49.6	49.8	50.1	50.3	50.5	50.7	51.0	51.2	51.4
23	51.6	51.9	52.1	52.3	52.5	52.8	53.0	53.2	53.4	53.7
24	53.9	54.1	54.3	54.6	54.8	55.0	55.2	55.5	55.7	55.9
25	56.1	56.4	56.6	56.8	57.0	57.3	57.5	57.7	57.9	58.2
26	58.4	58.6	58.8	59.1	59.3	59.5	59.7	59.9	60.2	60.4
27	60.6	60.8	61.1	61.3	61.5	61.7	62.0	62.2	62.4	62.6
28	62.9	63.1	63.3	63.5	63.8	64.0	64.2	64.4	64.7	64.9
29	65.1	65.3	65.6	65.8	66.0	66.2	66.5	66.7	66.9	67.1
30	67.4	67.6	67.8	68.0	68.3	68.5	68.7	68.9	69.2	69.4
31	69.6	69.8	70.1	70.3	70.5	70.7	71.0	71.2	71.4	71.6
32	71.8	72.1	72.3	72.5	72.7	73.0	73.2	73.4	73.6	73.9

SLOPE CORRECTION FACTORS FOR SLOPE IN PERCENT

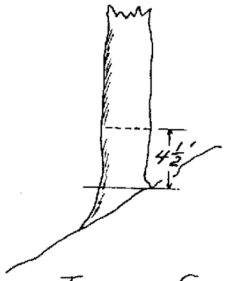
	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%
0%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10%	1.00	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02
20%	1.02	1.02	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04
30%	1.04	1.05	1.05	1.05	1.06	1.06	1.06	1.07	1.07	1.07
40%	1.08	1.08	1.08	1.09	1.09	1.10	1.10	1.10	1.11	1.11
50%	1.12	1.12	1.13	1.13	1.14	1.14	1.15	1.15	1.16	1.16
60%	1.17	1.17	1.18	1.18	1.19	1.19	1.20	1.20	1.21	1.21
70%	1.22	1.23	1.23	1.24	1.24	1.25	1.26	1.26	1.27	1.27
80%	1.28	1.29	1.29	1.30	1.31	1.31	1.32	1.33	1.33	1.34
90%	1.35	1.35	1.36	1.37	1.37	1.38	1.39	1.39	1.4	1.41
100%	1.41	1.42	1.43	1.44	1.44	1.45	1.46	1.46	1.47	1.48
110%	1.49	1.49	1.5	1.51	1.52	1.52	1.53	1.54	1.55	1.55
120%	1.56	1.57	1.58	1.59	1.59	1.60	1.61	1.62	1.62	1.63
130%	1.64	1.65	1.66	1.66	1.67	1.68	1.69	1.70	1.70	1.71
140%	1.72	1.73	1.74	1.74	1.75	1.76	1.77	1.78	1.79	1.79

Slope distance = Horizontal distance x factor from table

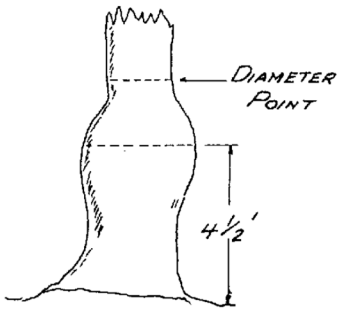


TREE FORKED AT LESS THAN 4½ FEET

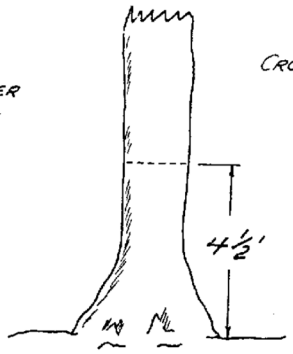
LEANING TREE



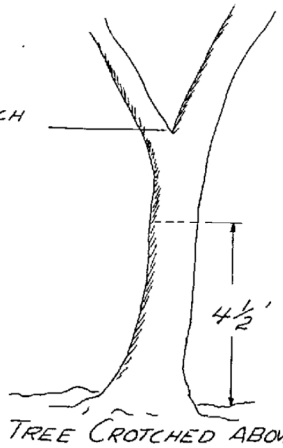
TREE ON SLOPE



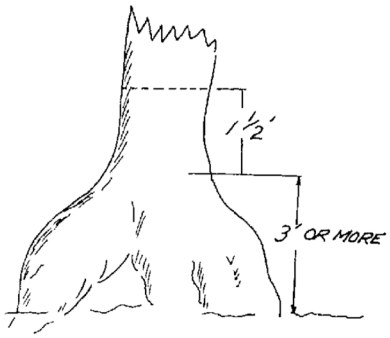
TREE WITH SWELL AT 4½ FEET



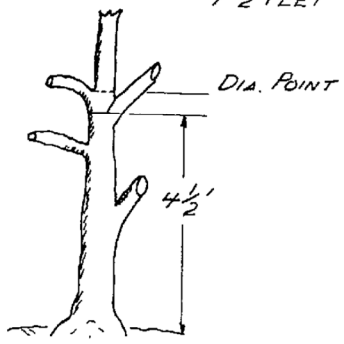
TREE ON LEVEL



TREE CROTCHED ABOVE 4½ FEET



SWELL BUTT OR BOTTLENECK



BRANCHED TREE AT 4½'

Tract Level Summary (Total Values)

WARDDS1022

Area: 239.4 acres

Plots: 41

All Trees

Species	All TPA		All BA		AGS TPA	AGS BA	Sawlogs BF Inter	Pallet BF Inter	Pulpwood CO MC_CO	Cull TO CUHTF	Veneer BF Inter	**Total (BF)**	**Total (CO)**
Sugar Maple	59.1	32%	34.8	38%	52.7	30.0	357,736	305,306	1,497	0	3,737	**666,779**	**1,497**
Beech	49.8	27%	15.0	16%	4.0	1.5		14,496	799	0		**14,496**	**799**
Red Maple	15.5	8%	9.9	11%	8.2	6.6	76,903	67,273	520	0		**144,175**	**520**
Spruce	17.0	9%	8.4	9%	16.2	8.1	256,529		51	0		**256,529**	**51**
Yellow Birch	15.0	8%	7.7	8%	11.6	5.5	53,793	38,982	356	0		**92,775**	**356**
Hemlock	4.0	2%	4.4	5%	2.6	3.3	101,080		100	0		**101,080**	**100**
White Ash	7.4	4%	4.0	4%	6.6	3.7	73,011		202	0		**73,011**	**202**
Other Hdwd	6.8	4%	2.2	2%	1.4	0.4			114	0		**0**	**114**
White Birch	2.7	1%	1.8	2%	2.7	1.8	13,510	13,161	97		3,718	**30,388**	**97**
Basswood	1.5	1%	1.1	1%	1.1	0.7	17,890		47	0		**17,890**	**47**
Black Cherry	1.4	1%	0.7	1%	1.4	0.7	2,947		49	0		**2,947**	**49**
White Pine	0.1	0%	0.4	0%	0.1	0.4	14,138	6,238	7			**20,376**	**7**
Elm	2.7	1%	0.4	0%	0.0	0.0			21			**0**	**21**
Aspen	0.1	0%	0.4	0%	0.1	0.4	21,467					**21,467**	**0**
Total	**183.1**	**100%**	**91.1**	**100%**	**109**	**62.9**	**989,002**	**445,456**	**3,859**	**0**	**7,455**	**1,441,913**	**3,859**

F&W
SINCE 1962

Tract Summary (per Acre Values)

WARDDS1022

Area: 239.4 acres

Plots: 41

All Trees

Species	All TPA		All BA		AGS TPA	AGS BA	Sawlogs BF Inter	Pallet BF Inter	Pulpwood CO MC_CO	Cull TO CUHTF	Veneer BF Inter	**Total (BF)**	**Total (CO)**
Sugar Maple	59.1	32%	34.8	38%	52.7	30.0	1494.6	1275.6	6.3	0.0	15.6	**2785.8**	**6.3**
Beech	49.8	27%	15.0	16%	4.0	1.5		60.6	3.3	0.0		**60.6**	**3.3**
Red Maple	15.5	8%	9.9	11%	8.2	6.6	321.3	281.1	2.2	0.0		**602.4**	**2.2**
Spruce	17.0	9%	8.4	9%	16.2	8.1	1071.8		0.2	0.0		**1071.8**	**0.2**
Yellow Birch	15.0	8%	7.7	8%	11.6	5.5	224.7	162.9	1.5	0.0		**387.6**	**1.5**
Hemlock	4.0	2%	4.4	5%	2.6	3.3	422.3		0.4	0.0		**422.3**	**0.4**
White Ash	7.4	4%	4.0	4%	6.6	3.7	305.0		0.8	0.0		**305.0**	**0.8**
Other Hdwd	6.8	4%	2.2	2%	1.4	0.4			0.5	0.0		**0.0**	**0.5**
White Birch	2.7	1%	1.8	2%	2.7	1.8	56.4	55.0	0.4		15.5	**127.0**	**0.4**
Basswood	1.5	1%	1.1	1%	1.1	0.7	74.7		0.2	0.0		**74.7**	**0.2**
Black Cherry	1.4	1%	0.7	1%	1.4	0.7	12.3		0.2	0.0		**12.3**	**0.2**
White Pine	0.1	0%	0.4	0%	0.1	0.4	59.1	26.1	0.0			**85.1**	**0.0**
Elm	2.7	1%	0.4	0%	0.0	0.0			0.1			**0.0**	**0.1**
Aspen	0.1	0%	0.4	0%	0.1	0.4	89.7					**89.7**	**0.0**
Total	**183.1**	**100%**	**91.1**	**100%**	**109**	**62.9**	**4132.0**	**1861.1**	**16.1**	**0.0**	**31.1**	**6024.3**	**16.1**

Stand Sawlog and Pulp Volume by Units and Diameter (per Acre Values)

WARDDS1022

Stand ID: 1 Stand#: 1

Area: 239.4 acres Quadratic Mean Diameter: 9.6 Inches TPA: 183

Plots: 41 Average Diameter: 8.9 Inches BA: 91.1 Sqr FT

All Trees

Volume Units BF

	<= 7"	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28+	**Total**
Aspen																89.7							**89.7**
Basswood								25.2	49.5														**74.7**
Beech					35.5							25.1											**60.6**
Black Cherry					12.3																		**12.3**
Hemlock						19.2	85.0	26.7	81.1	55.0	38.1		57.8		59.5								**422.2**
Red Maple					58.8	62.9	74.6	217.1	104.3	31.5				53.0									**602.2**
Spruce		73.4	206.5	185.8	75.9		184.3		216.4				69.6			59.6							**1071.6**
Sugar Maple			130.2	284.6	421.1	393.7	310.1	309.1	401.8	165.9	165.4		57.6	46.5		51.1	48.2						**2785.2**
White Ash					27.2	36.3	155.1			49.8		36.6											**305.0**
White Birch				38.9		42.9		45.2															**126.9**
White Pine																					85.1		**85.1**
Yellow Birch			8.7	14.8	59.3	34.5		37.2	99.9	74.9	28.1						30.2						**387.5**
Total		**73.4**	**345.4**	**524.0**	**690.1**	**589.4**	**809.1**	**660.5**	**953.0**	**377.1**	**231.5**	**61.7**	**185.0**	**99.5**	**59.5**	**200.4**	**78.4**				**85.1**		**6023.0**

Stand Sawlog and Pulp Volume by Units and Diameter (per Acre Values)

WARDDS1022

Stand ID: 1 Stand#: 1

Area: 239.4 acres Quadratic Mean Diameter: 9.6 Inches TPA: 183

Plots: 41 Average Diameter: 8.9 Inches BA: 91.1 Sqr FT

All Trees

Volume Units CO

	<= 7"	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28+	**Total**
Basswood			0.1					0.0	0.1														**0.2**
Beech	1.1	0.4	0.7	0.3	0.6		0.1	0.1				0.1											**3.3**
Black Cherry			0.1		0.1																		**0.2**
Elm	0.1																						**0.1**
Hemlock					0.1	0.0	0.1	0.1	0.0	0.0	0.0		0.0		0.0								**0.4**
Other Hdwd	0.1	0.2	0.1	0.1																			**0.5**
Red Maple	0.3		0.1	0.3	0.3	0.1	0.3	0.3	0.2	0.1				0.0	0.1								**2.2**
Spruce	0.1	0.0	0.0	0.0	0.0											0.0							**0.2**
Sugar Maple	1.0	0.3	0.5	0.6	0.7	0.7	0.4	0.3	0.5	0.4	0.3		0.1	0.1		0.2	0.1						**6.3**
White Ash	0.1		0.2		0.1	0.1	0.3			0.1		0.1											**0.8**
White Birch				0.1	0.1	0.1		0.1															**0.4**
White Pine																					0.0		**0.0**
Yellow Birch	0.2		0.2	0.1	0.2	0.1		0.0	0.2	0.1	0.1		0.1				0.1						**1.5**
Total	**2.9**	**0.9**	**2.0**	**1.6**	**2.3**	**1.1**	**1.2**	**0.9**	**1.0**	**0.7**	**0.4**	**0.2**	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**				**0.0**		**16.1**

Total Sampled Area (acres): 239.4

#Points: 41

Product Group **Product** Species	Lower Limit	Mean	Upper Limit	Standard Error	CI %error	C.V.
All Log Products Combined -- 95% CI						
Sawlogs		---------- *Board Feet* ----------				
White Pine	-60.33	59.06	178.45	59.06	202.2	640.3
Yellow Birch	46.05	224.70	403.35	88.37	79.5	251.8
White Ash	7.90	304.97	602.05	146.95	97.4	308.5
Aspen	-91.60	89.67	270.94	89.67	202.2	640.3
Black Cherry	-12.57	12.31	37.19	12.31	202.2	640.3
Basswood	-36.43	74.73	185.89	54.99	148.8	471.2
Spruce	140.05	1,071.55	2,003.05	460.78	86.9	275.3
Hemlock	20.61	422.22	823.84	198.67	95.1	301.3
Sugar Maple	892.57	1,494.30	2,096.03	297.66	40.3	127.5
Red Maple	123.68	321.23	518.78	97.72	61.5	194.8
White Birch	-23.33	56.43	136.19	39.45	141.3	447.7
Pallet		---------- *Board Feet* ----------				
White Pine	-26.62	26.05	78.73	26.05	202.2	640.3
Yellow Birch	52.94	162.83	272.73	54.36	67.5	213.8
Beech	-32.30	60.55	153.41	45.93	153.3	485.7
Sugar Maple	870.13	1,275.30	1,680.46	200.42	31.8	100.6
Red Maple	61.82	281.00	500.19	108.42	78.0	247.1
White Birch	-29.37	54.98	139.32	41.72	153.4	485.9
Veneer		---------- *Board Feet* ----------				
Sugar Maple	-15.95	15.61	47.17	15.61	202.2	640.3
White Birch	-15.86	15.53	46.92	15.53	202.2	640.3
Overall	4,666.48	6,023.03	7,379.58	671.04	22.5	71.3

Tract: Volume1 Statistics, Per Acre

By Product and Species

3/26/12

Total Sampled Area (acres): 239.4

#Points: 41

Product Group / Product / Species	Lower Limit	Mean	Upper Limit	Standard Error	CI %error	C.V.
All Cord Products Combined -- 95% CI						
Pulpwood		---------- *Cords* ----------				
White Pine	-0.03	0.03	0.09	0.03	202.2	640.3
Yellow Birch	0.64	1.49	2.33	0.42	56.9	180.3
Beech	2.02	3.34	4.65	0.65	39.4	124.8
White Ash	0.12	0.84	1.56	0.35	85.2	269.9
Black Cherry	-0.09	0.21	0.50	0.15	143.5	454.5
Basswood	-0.11	0.20	0.51	0.15	156.9	496.9
Other Hdwd	0.00	0.48	0.95	0.23	99.2	314.2
Spruce	0.03	0.21	0.40	0.09	87.4	276.7
Elm	-0.09	0.09	0.26	0.09	202.2	640.3
Hemlock	0.02	0.42	0.81	0.20	95.4	302.3
Sugar Maple	4.50	6.25	8.00	0.87	28.0	88.6
Red Maple	0.45	2.17	3.89	0.85	79.4	251.5
White Birch	-0.01	0.40	0.82	0.20	102.5	324.8
Overall	13.76	16.12	18.48	1.17	14.6	46.3
All Product Groups		6,039.1				

Tract: Volume2 Statistics, Per Acre

By Product and Species

3/26/12

Total Sampled Area (acres): 239.4

#Points: 41

Product Group / Product / Species	Lower Limit	Mean	Upper Limit	Standard Error	CI %error	C.V.
All Log Products Combined -- 95% CI						
Sawlogs		---------- *Cords* ----------				
White Pine	-0.08	0.08	0.23	0.08	202.2	640.3
Yellow Birch	0.09	0.39	0.70	0.15	77.9	246.8
White Ash	0.02	0.50	0.98	0.24	97.0	307.1
Aspen	-0.15	0.15	0.45	0.15	202.2	640.3
Black Cherry	-0.02	0.02	0.06	0.02	202.2	640.3
Basswood	-0.06	0.12	0.29	0.08	148.0	468.9
Spruce	0.32	2.06	3.79	0.86	84.4	267.2
Hemlock	0.04	0.64	1.24	0.30	94.3	298.8
Sugar Maple	1.51	2.52	3.53	0.50	40.1	126.9
Red Maple	0.22	0.55	0.88	0.16	60.2	190.7
White Birch	-0.04	0.10	0.24	0.07	141.2	447.1
Pallet		---------- *Cords* ----------				
White Pine	-0.03	0.03	0.10	0.03	202.2	640.3
Yellow Birch	0.10	0.29	0.48	0.09	65.1	206.3
Beech	-0.06	0.11	0.28	0.08	149.3	473.0
Sugar Maple	1.57	2.31	3.05	0.37	32.1	101.6
Red Maple	0.10	0.46	0.83	0.18	79.4	251.5
White Birch	-0.06	0.11	0.29	0.09	157.3	498.1
Veneer		---------- *Cords* ----------				
Sugar Maple	-0.03	0.03	0.08	0.03	202.2	640.3
White Birch	-0.03	0.03	0.08	0.03	202.2	640.3
Overall	8.15	10.50	12.84	1.16	22.3	70.8

Tract: Volume2 Statistics, Per Acre

By Product and Species

3/26/12

Total Sampled Area (acres): 239.4

#Points: 41

Product Group / Product / Species	Lower Limit	Mean	Upper Limit	Standard Error	CI %error	C.V.
All Cord Products Combined -- 95% CI						
Pulpwood		*Cords*				
White Pine	-0.03	0.03	0.09	0.03	202.2	640.3
Yellow Birch	0.64	1.49	2.33	0.42	56.9	180.3
Beech	2.02	3.34	4.65	0.65	39.4	124.8
White Ash	0.12	0.84	1.56	0.35	85.2	269.9
Black Cherry	-0.09	0.21	0.50	0.15	143.5	454.5
Basswood	-0.11	0.20	0.51	0.15	156.9	496.9
Other Hdwd	0.00	0.48	0.95	0.23	99.2	314.2
Spruce	0.03	0.21	0.40	0.09	87.4	276.7
Elm	-0.09	0.09	0.26	0.09	202.2	640.3
Hemlock	0.02	0.42	0.81	0.20	95.4	302.3
Sugar Maple	4.50	6.25	8.00	0.87	28.0	88.6
Red Maple	0.45	2.17	3.89	0.85	79.4	251.5
White Birch	-0.01	0.40	0.82	0.20	102.5	324.8
Overall	13.76	16.12	18.48	1.17	14.6	46.3
All Product Groups		26.6				