The Nova Scotia Primary Forest Products Marketing Board

Survey Results and Prices for Standing Timber Sales from Nova Scotia Private Woodlots

for the period

January 1 to December 31, 2008

Prepared By:

Nortek Resource Solutions Inc.

March 16, 2009

Acknowledgement

The members of the Nova Scotia Primary Forest Products Marketing Board would like to commend the forest industry of Nova Scotia for their cooperation and participation in this survey. A special thank you is extended to all those who agreed to contribute to the survey. We appreciate the time given and the fact that you entrusted us with valuable information of a sensitive nature. All information will remain confidential.

The Project Team

Nortek Resource Solutions Inc. and *Market Research Associates Ltd.* have combined professional resources to jointly prepare this report on prices for Standing Timber in Nova Scotia from Nova Scotia Private Woodlots. The team consists of two Foresters, one certified Forest Technician and one Market Research expert.

Kirk Schmidt, the General Manager of *Nortek Resource Solutions Inc.*, holds a Masters of Science in Forestry from the University of New Brunswick and is a Registered Professional Forester in Nova Scotia and Ontario. Mr. Schmidt has a thorough knowledge of the forest industry. Kirk also has a thorough understanding of statistical analysis, spatial analysis and sampling design.

John MacLellan received his Bachelor of Science in Forest Resource Management in 1984. He has more than 18 years of practical experience in the forest industry in the areas of administration, mill operations, timberland management as well as sales and acquisitions of resource properties.

Ed MacLean has been directly involved in forestry operations in Nova Scotia since 1987. With 12 years experience in the sawmill industry, he was directly responsible for planning and operations for MacTara Ltd. During his time with MacTara, he was responsible for all aspects of planning of harvesting, silviculture and reporting for company freehold and crown lands. At the same time, Ed was the operations supervisor directly responsible for harvesting, road building, surveying, silviculture and consulting contractors. Ed understands the industry and brings a wealth of operations knowledge to the project.

Robin Roger is the President of Market Research Associates Ltd. and has extensive experience as a multi sector marketing analyst. Mr. Roger has played a key role in a broad range of market and resource based research that has had strong survey design and implementation components.

All of the project team members participated in data compilation and data input quality control. Robin worked with the survey data and ensured the results conformed to proper statistical analysis and market research protocols. Robin also, provided the resources needed to contact potential contributors and provide the necessary support to ensure the highest possible participation rate.

Table of Contents

1.0 Executive Summary

A project to collect and report on private woodlot stumpage prices was initiated in the early fall of 2008. This report summarizes the results of this, the fifth stumpage survey completed for the Nova Scotia Primary Forest Products Marketing Board (NSPFPMB) which corresponds to stumpage prices for the twelve month period from January 1 to December 31, 2008.

The project team assembled a comprehensive list of 1,123 potential contributors from a variety of sources that included the NSDNR Registry of Buyers, Workers' Compensation Board of Nova Scotia, Green Pages and the Yellow Pages. Attempts were made to contact all of the 1,123 potential contributors to recruit participants for this survey. In order to be eligible, a potential contributor must have purchased stumpage during the previous 12 month period.

From the 1,123 potential contributors, 104 agreed to be contacted by the survey team for a possible face-to-face interview. A total of 61 face-to-face surveys were completed at which time a setup and stumpage survey was completed. The data were stratified into Eastern, Central and Western Regions based on county borders and the results are reported by region.

Results for regional modifiers and average operating costs obtained from the initial setup surveys were used in this report. Normalization is an adjustment made to reflect favorable or unfavorable operating conditions which affect stumpage prices offered on a woodlot. Operating conditions that affect stumpage prices were identified at the start of this project. The threshold at which each operating condition began to impact stumpage for each participant was identified and used to develop regional modifiers. Modifiers have been developed as a means of comparing, or normalizing stumpage values, over a broad range of provincial operating conditions. The regional modifiers were used to normalize the stated stumpage surveys and the results were summarized on a regional basis.

Stated stumpage values are the key values reported and represent the largest sample size of data collected. Residual calculations provided stumpage values which were used to supplement or verify stated stumpage results. Only on participant agree to provide contract values, and therefore the data was combined with the stated stumpage values.

A total of 61 stated stumpage survey questionnaires were completed and the data were converted (using standardized factors) to solid cubic meters as a standard volume measure. Data for each participant was normalized if participants indicated unfavourable or favourable operating conditions. The normalized data were used to create a final stated stumpage matrix for each of the three regions. The operational thresholds and modifiers are summarized in regional user guides which will allow users to adjust reported values to suit their individual conditions and circumstance.

Normalized Provincial results were tabulated and compared to the results from the previous stumpage survey (January 1 to June 30, 2006). Stumpage values

increased for grade 1 softwood pulpwood (43%) and balsam fir sawlogs (9%), which can be attributed to the lack of pulpwood markets in Eastern and Central Regions during 2006 as a result of the shut down of Stora Enso operations in Point Tupper. Softwood studwood and spruce sawlogs exhibited a decline in stumpage value of 8% and 5% respectively. White pine as well as hemlock/larch sawlog rates decreased by 21% and 10%. Hardwood pulpwood/OSB/fuelwood products recorded an increase of 55% as demand for these products expanding during the year. Hardwood sawlog and veneer grades also exhibited increases over rates from the first 6 months of 2006.

Offer prices were collected from buyers and processing facilities throughout Nova Scotia. Residual values were calculated by subtracting average operational costs (derived from the initial set up surveys) from average regional product prices to develop a benchmark. The residual value supported the results of the stated stumpage survey and provided an estimated value for products that had no data from the stated stumpage responses.

2.0 Introduction

The demand, specifications and price for primary forest products has changed rapidly in Nova Scotia over the past fifteen years (AGFOR Inc. 2004, *Method to Survey and Report Standing Timber Prices in Nova Scotia*). This dynamic environment has caused stumpage values paid to private woodlot owners to increase for a number of years and decline in value in recent times. The value of the resource to woodlot owners has decreased in the last few years as the demand and price for roundwood products has declined. Timely data on current stumpage values provide woodlot owners and contractors with an understanding of provincial trends and a method for evaluating their own transactions.

The Nova Scotia Primary Forest Products Marketing Board (NSPFPMB) has embarked on a third project to obtain and report on private woodlot stumpage information across Nova Scotia. A series of four surveys, referred to as phase 2, were completed for the NSPFPMB for the period from July 2004 to June, 2006 and this survey is the first of 3 annual surveys to be completed in phase 3. Stumpage is defined as the price per unit measure paid to a landowner for standing merchantable wood. The data, once published, will provide a fast and simple means for landowners and contractors to assess current stumpage prices and trends.

Phase 1 of the project was completed in January, 2004 and involved developing a sound methodology to accurately collect and analyze private woodlot stumpage data. Phase 2 involved applying the methodology to collect a variety of data that included:

- Operating costs;
- Operating conditions and modifiers;
- Stumpage values; and
- Mill prices.

This document is the first of three annual surveys which make up this project (phase 3) and covers the reporting period from January 1 to December 31, 2008. Regional modifiers and average regional operating costs developed from the initial setup interviews were used in the analysis of the current data. The resulting normalized private woodlot stumpage data is presented by region and includes user guides which can be used to apply regional values to individual harvest operations.

Completion of this report is in keeping with the intent of the NSPFPMB for the on-going data collection, handling and public distribution of private woodlot stumpage and round wood market information.

3.0 Overview of the Forest Industry in Nova Scotia

Prior to presenting stumpage results, the authors felt it would be advantageous to provide background information on the forest industry in Nova Scotia highlighting the role that private woodlot owners play. Following is this background information and a brief synopsis of the forest industry in Nova Scotia. The intent is to provide an overview of factors and events that influenced private woodlot stumpage rates or market opportunities during the reporting period.

3.1 Forest Land Ownership

Table 1 summarizes ownership of forested lands in Nova Scotia. Private woodlot owners account for 50% of the forested land in the Province while Private Industrial owners hold another 18%. In total, 68% of the forested land in Nova Scotia is privately owned. Provincial crown and Federal crown forests make up the remainder of the area.

Table 1: Summary of Nova Scotia Forested Land by Ownership.

Ownership Class	Area (ha)	% of Total
Private Woodlots	2,132,940	50%
Private Industrial	762,491	18%
Total Private Ownership	*2,895,431*	*68%*
Provincial Crown	1,219,574	29%
Federal Crown	111,558	3%
Total Crown Ownership	*1,331,132*	*32%*
Total Private and Crown	4,226,563	100%

3.2 Harvest Levels

Nova Scotia Department of Natural Resources (NSDNR) Registry of Buyers data were used to summarize harvest levels from private woodlots by market location. Since its inception, the registry has provided a mechanism to determine the volume of primary forest products harvested within the Province. Data current to 2007 provide the reader with and understanding of the demand for forest products in Nova Scotia. The demand for roundwood is one of the factors that impact stumpage rates that are paid to private woodlot owners.

Over the nine year period from 1999 to 2007, an average of 55% of the total provincial harvest originated from private woodlots. This represents a nine year average private harvest level of 3.34 million m^3. Aside from the average, it should be noted that harvest levels from private woodlots decreased from a high in 1999 of 3.876 million m^3 to 3.185 million m^3 in 2003 which represents an 18% decline. In 2004, the private woodlot harvest increased dramatically to 4.140 million m^3 which represents a 30% increase over 2003 harvest levels that and exceeded 1999 levels. In 2005 and 2006, harvest levels declined before increasing by 8 % in 2007. Low harvest levels during 2006 can be attributed to the curtailment of production at Stora Enso in Point Tupper due to profitability challenges. The closure affected Eastern and Central Regions of Nova Scotia.

Figure 1 highlights nine year harvest levels from private woodlots destined for Nova Scotia and Out of Province markets. Markets for roundwood outside of Nova Scotia are important to private woodlot owners since the nine year average is approximately 28% of all private wood is sold to processing facilities outside the Province (Figure 1). Since reaching a peak in 2004, Out of Province sales from private woodlots have decreased from 1.126 million m^3 to 0.253 million m^3 in 2007, which is a decrease of 79%.

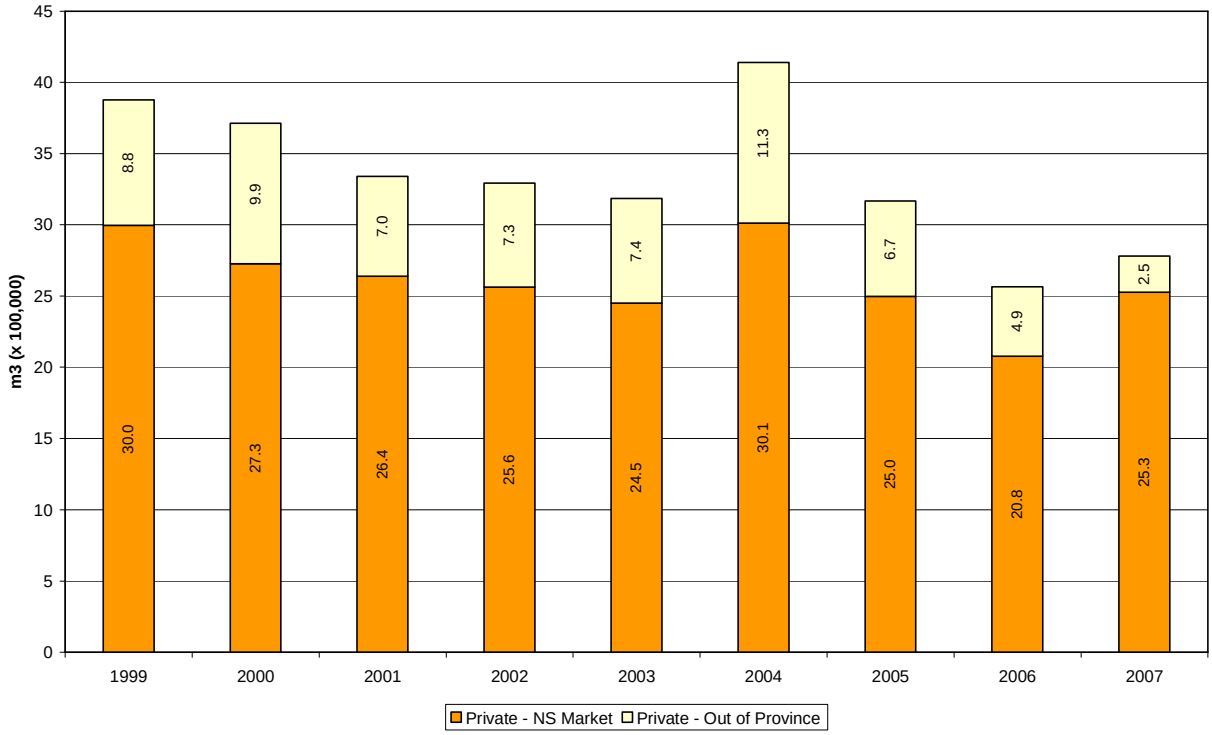


Figure 1: Summary of Total Softwood and Hardwood Harvest (Nova Scotia and Out of Province Markets) from Private Woodlots from 1999 to 2007 (NSDNR, Registry of Buyers).

Closer examination of the data reveal that softwood harvest levels for Out of Province shipments have continually decreased since 2004 which represents a 78% reduction in shipments. Record harvest levels where recorded in 2004 which appears to be related

to Hurricane Juan salvage operations throughout Central Nova Scotia. From 2006 to 2007, Out of Province shipments from private woodlots dropped by 60% (Table 2). Private softwood harvest levels destined for local markets increased by 21% from 2006 to 2007. Hardwood harvest levels on private woodlots decreased by 13% for products destined for Out of Province markets and increased by 33% for provincial markets (Table 2).

These trends show that the level of harvest on private woodlots for both softwood and hardwood increased slightly in 2007 from the previous year, which were the lowest harvest levels since data started to be collected in 1999. Since the 2008 harvest data is not yet available, the authors anticipate that harvest levels for softwood products from private woodlots will have showed little or no growth for 2008, and hardwood harvest levels may actually have increased, especially in response to increased demand for hardwood fuelwood for both domestic and commercial markets.

Table 2: Comparison between 2006 and 2007 Harvest Levels From Private Woodlots in Nova Scotia (NSDNR, Registry of Buyers).

Year	Market	Softwood (m^3)	Hardwood (m^3)	Total
2006	Provincial	1,916,515	161,335	2,077,850
	Out of Province	358,364	128,595	486,959
	Total	**2,274,879**	**289,930**	**2,564,809**
2007	Provincial	2,313,413	214,108	2,527,521
	Out of Province	141,711	11,1530	253,241
	Total	**2,455,124**	**325,638**	**2,780,762**
Percent Change	Provincial	21%	33%	22%
	Out of Province	- 60%	- 13%	- 48%
	Total	**8%**	**12%**	**8%**

3.3 Market Conditions

A number of factors affected market conditions for manufactured and primary forest products during 2008. Market conditions for manufactured forest products play an important role in private stumpage rates as the demand and prices for roundwood have a direct bearing on what is passed on to the landowner in the form of stumpage.

3.3.1 Manufacturing

The markets for manufactured forest products continued to be poor for softwood and hardwood lumber products during 2008. In contrast, the pulp and paper industry started the year with bright prospects, however, market conditions deteriorated in the last 3 months of the year.

Prices for northern bleached softwood kraft pulp where strong at the start of 2008, however, prices tumbled from U.S.$900/ton in early spring to U.S.$615/ton in January 2009. In comparison, newsprint prices remained strong, peaking in the fall of 2008, as overall U.S. consumption dropped by approx 13% for the year. Reduce North American production kept pressure on prices as demand continued to drop. Supercalendered paper prices also recorded a drop in pricing in the second half of 2008.

A strong Canadian Dollar relative to its United State counterpart during the first part of 2008 continued to have an impact on the profitability of wood manufacturing facilities in Nova Scotia (Figure 2). During the first seven months of 2008, the Canadian dollar fluctuated at or near parity from January to July ($0.93 to $1.03). During August and September, the exchange rate dipped to the $0.95, before rapidly dropping below the $0.85 level. Wood products manufacturers were severely affected by the high dollar during the first 9 months of the year as most of the finished products are sold into the

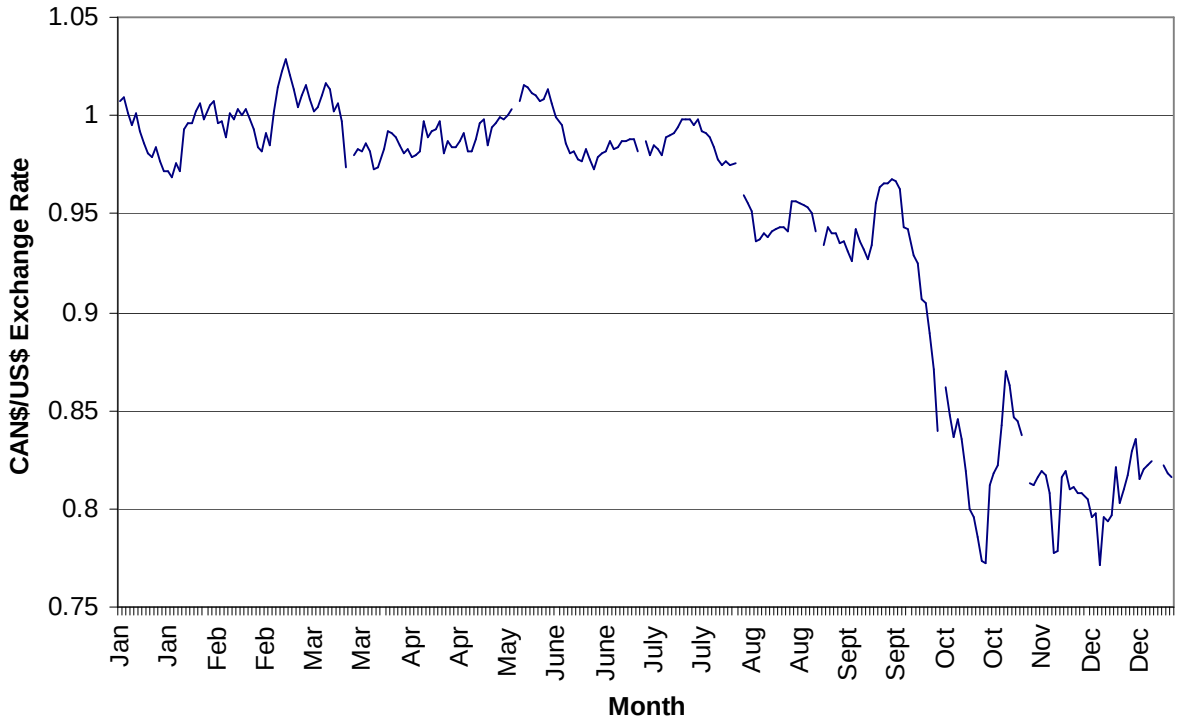


Figure 2: Canada/U.S. Dollar Exchange Rate for 2008 (Bank of Canada)

U.S. market. Manufacturers experienced some relief during the last 3 months of the year.

Overall, North American softwood lumber prices have been falling since demand dropped in early 2006. During 2008, lumber prices declined throughout the year, starting at approx US$225/mfbm in January and climbing to a peak of US$255/mfbm in August before starting a steep decline to finish the year at below $190/mbfm. The price declines during the second half of the year were partially offset by the rapid decline in the exchange rate between the Canadian and U.S. dollar. The price of finished lumber was below the price of production for many sawmills which caused many facilities to reduced production to help curb losses. In December of 2007, MacTara, once the largest sawmill in Nova Scotia, closed it's sawmill operations as a result of a court ordered bankruptcy. The pellet producing part of the operation continued to operate for the majority of 2008 but sawmilling operations did not resume.

Lumber production in Nova Scotia continued to decline during 2008. Statistics Canada data show that production and shipments of softwood lumber for 2008 declined 33% from 2007 levels. Figure 3 shows that production and shipments declined in February and remained relatively steady until September, at which time levels rapidly declined. Monthly production and shipments declined by 44% over the year.

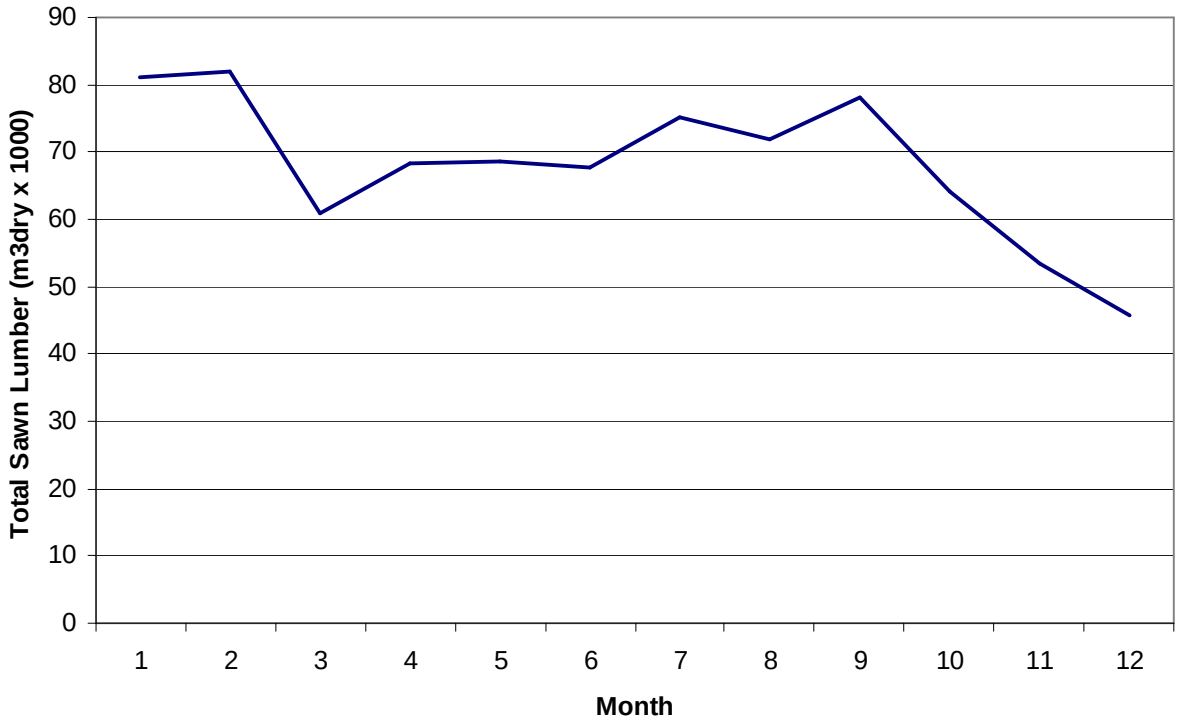


Figure 3: Softwood Lumber Production and Shipments for 2008 (Statistics Canada, Table 303-0009)

3.3.2 Harvesting

The markets for primary forest products in Nova Scotia were weak throughout the survey period.

Diesel fuel prices had a strong negative impact on logging contractors who struggled with historically high fuel costs and decreased demand and price for roundwood. The average retail price of diesel fuel in Halifax for the first week of January, 2008 was 116.5¢/l. The price peaked in the second week of July at 157.6 ¢/l and steadily declined to 82.5 ¢/l during the last week of December, 2008. High diesel fuel prices during the summer of 2008 put extreme pressure on the profitability of logging contractors and the drop in fuel prices have given many a much needed reduction in operating costs.

Throughout the survey period, market prices for softwood studwood and sawlogs started to decline in the wake of market conditions. An unusually wet late summer and fall reduced the supply of accessible roundwood which led to localized price increases to shore up short term mill inventories.

White pine markets remained soft with small scale sawmills making up the majority of the demand. Value added manufacturers such as Lewis Moldings in Weymouth continued to purchase white pine.

The demand for low grade hardwood products in the form of palletwood remained low. In comparison, hardwood pulpwood or fuelwood demand increased over the year. Record energy prices and steady demand at Great Northern Timber in Sheet Harbour and Liverpool ensured that contractors could sell all the low grade hardwood they could produce. Residential firewood demand also increased significantly in response to the high oil prices during the summer.

4.0 Sampling Process

Stumpage data were collected and analyzed for this survey using the report methodology developed for the NSPFPMB in 2004 (see *Method to Survey and Report Standing Timber Prices in Nova Scotia*). The methodology describes a detailed sampling approach which the project team used as a guide and reference to complete this project.

A potential contributor list that consisted of 1,123 businesses was developed from a number of sources including the Nova Scotia Registry of Buyers, telephone directories and the Workers' Compensation Board of Nova Scotia. Each business was contacted by telephone and a list of 104 participants was developed from potential contributors that agreed to participate or where interested in discussing the survey in more detail with the interview team. The script used for the telephone calls is included in Appendix A.

This survey of stumpage prices covered the period from January 1 to December 31, 2008. Survey questionnaires where completed during face-to-face interviews which were conducted between September 2008 and February 2009. A total of 61 surveys were completed from an original group of 104 that agreed to participate. Of the 104 that originally agreed to participate, many had completed small or insignificant stumpage transactions during 2008, were difficult to locate or declined an interview and were subsequently dropped from the face-to-face interviews.

The methodology was designed to capture data from three lines of evidence which include stated stumpage values, contract values and residual calculations. Each line of evidence is explained in more detail later in this report. The methodology also includes a setup survey, completed during the fall of 2008 and winter of 2009, which provided a mechanism to collect average operating costs and modifiers that impacted stumpage rates.

Ultimately, all units of measure were converted into solid cubic meters to standardize the analysis and results. Conversion factors were derived from values published by the Nova Scotia Department of Natural Resources for use by the Registry of Buyers (Appendix D).

A non response test was completed to compare the types of businesses that made up the potential contributor lists and the types of business that participated in the survey. The results of this analysis are presented in Appendix C

The data were stratified into three regions which are shown in Figure 4. The stratification was based on county boundaries and provided a means for reporting regional differences in harvesting costs, modifiers and stumpage prices discussed in this report.

4.1 Lines of Evidence

Stated stumpage values are the key values reported and represent the largest sample size of data collected. Residual calculations provided stumpage values which were used to supplement or verify stated stumpage. The methodology used to collect and report on private woodlot stumpage called for these lines of evidence (AGFOR Inc., *Method to Survey and Report Standing Timber Prices in Nova Scotia*). A summary of the 2 lines of evidence is presented in Appendix E.

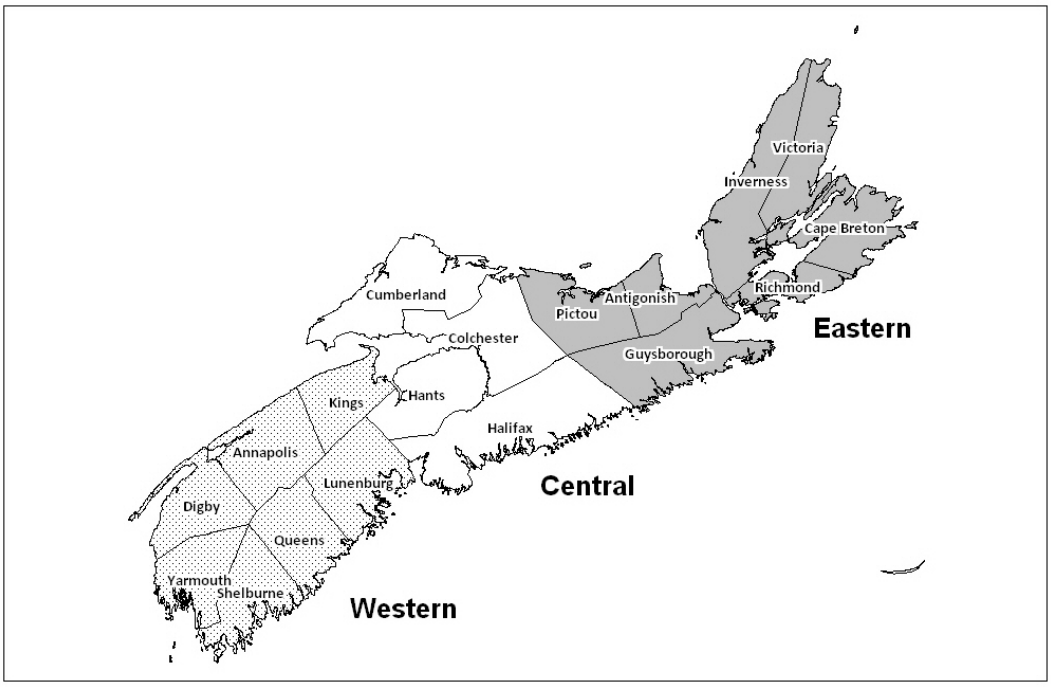


Figure 4: Nova Scotia Stumpage Regions

4.1.1 Stated Stumpage

Stated Stumpage is obtained through the solicitation/sampling of actual (real) stumpage values paid within a reference period. Survey respondents were asked to provide the stumpage prices paid for the last transaction completed within the reporting period, January 1 to December 31, 2008. Respondents were asked to check their documented records rather than rely on memory recall when completing the surveys.

Stated stumpage is retained as the primary line of evidence because it captures the widest range of local conditions from a broad sample of buyers/participants. It reflects true transaction values in each of the regions.

4.1.2 Residual Calculation

Residual Calculations were obtained by subtracting average regional costs associated with producing and delivering roundwood products from averaged product prices offered by roundwood buyers (may be either roadside or mill delivered). It is useful as a line of evidence because it provides an objective method that recognizes the costs of producing roundwood products. It is used as both a benchmark, to detect shifts or discrepancies in pricing, and to establish regional average values for products that are not widely purchased in the market place.

4.1.3 Contract Values

Contract Values had been used in previous surveys as a line of evidence to verify stated stumpage values. These values are linked to actual documents that can be examined and were obtained from organizations that document stumpage rates in contract form. During the previous four surveys, contract values were obtained from Group Management Ventures, land management companies and non-governmental organizations for each region. These data were summarized and the regional averages where used as an internal validation against the results of the stated stumpage component of the project. The number of contract contributors declined steadily during the first 4 surveys and where difficult to recruit for this survey. Since the number of contractors involved in the industry continues to decline, the data from all survey contributors where pooled and used in the regional stumpage price calculations.

4.2 Stumpage Survey

This stumpage survey covered the period from January 1 to December 31, 2008. Participants were asked to complete the stumpage survey instrument after the completion of the face-to-face interview. Table 3 summarizes the number and distribution of stated stumpage surveys completed and the number of price points (reported value for a specific product) reported by the participants.

Table 3: Summary of Stated Stumpage Surveys Completed

Region	Number of Participants	% of Total	Number of Price Points	% of Total
Eastern	24	39%	90	34%
Central	22	36%	101	39%
Western	15	25%	70	27%
Total	61	100%	261	100%

Of the 61 surveys completed, all indicated that they did buy stumpage for the reporting period. During the previous round of surveys, the number of non-transactions where 18%, 30% and 30% for the second, third and fourth surveys respectively. This relatively large number of non transactions reflects the general industry observation that economic conditions were difficult for Nova Scotia harvesting contractors during the past 4 years.

5.0 Results

The project team made a number of assumptions when working with the data provided by the survey participants. These assumptions were based on common forest industry practices, as well as the knowledge and experience of the project team. The challenges encountered and the assumptions made are listed in Appendix F.

5.1 Stated Stumpage

Stated stumpage values are the key values reported and are the primary basis for the stumpage figures listed in Tables 4, 5 and 6 in this section of the report. Tables 4, 5 and 6 list the average, 1 standard deviation above (SDA) and 1 standard deviation below (SDB) the average reported for each product by region. Approximately sixty eight percent (68%) of the reported values for each of the products in the table fall between SDA and SDB.

Participants were asked to complete a survey stating the month of their last stumpage transaction within the survey period from January 1 to December 31, 2008. A stumpage transaction is defined as any verbal or written contract between a seller of standing timber and a buyer of standing timber. Based on that last transaction, participants were then asked to provide the county the woodlot was located in and list the stumpage rates paid or offered (payment is pending if work is still in progress) for the different products harvested.

The survey concluded by inviting participants to comment on operating conditions that may have influenced the stumpage offered. Participants were asked to rate conditions including job size, partial harvesting, roads, terrain, tree size, and percentage of hardwood as being unfavorable, normal or favorable. Unfavorable conditions resulted in a lower stumpage rate being offered, normal conditions would result in no adjustment in stumpage and favorable conditions would result in higher stumpage rates being offered. Modifiers were applied to unfavorable and favorable responses to normalize them for comparison purposes. Modifiers and normalization is described in detail in section 5.3.

5.2 Residual Calculation

The residual calculation method of estimating stumpage is based on offered product prices paid per unit of measure (either roadside or mill delivered) and subtracts various operating costs incurred. The amount left over represents a value that could be paid for stumpage. The residual calculation is useful as both a validation of stated stumpage rates and also as a method for estimating potential stumpage prices for products produced in small, infrequent amounts such as hardwood veneer.

Table 4: Eastern Region Stumpage Report

January 1 to December 31, 2008

		Normalized Formal Price ($/ m^3)				Normalized Price ($/ UNIT)		
Products	**Values**	**Current Period**	**Rating**	**Previous Period**	**Rating**	**Current Period**	**Previous Period**	**UNIT**
Softwood G1 Pulpwood (N=23)	SDA	$13.90		$9.57		$32.28	$22.20	Cord
	Mean	$11.45	Excellent	$6.03	Unreliable	$26.59	$13.99	Cord
	SDB	$9.01		$2.48		$20.92	$5.75	Cord
Softwood G2 Pulpwood (N=10)	SDA	$8.90		$10.83		$20.67	$25.13	Cord
	Mean	$5.48	Acceptable	$5.71	Unreliable	$12.72	$13.25	Cord
	SDB	$2.05		$0.60		$4.76	$1.39	Cord
Softwood Studwood (N=17)	SDA	$20.69		$27.48		$48.04	$63.75	Cord
	Mean	$15.81	Very Good	$18.42	Acceptable	$36.71	$42.73	Cord
	SDB	$10.94		$9.36		$25.40	$21.72	Cord
Spruce Sawlog (N=8)	SDA	$20.90		$28.34		$118.36	$160.40	Mfbm
	Mean	$15.51	Good	$19.54	Acceptable	$87.83	$110.60	Mfbm
	SDB	$10.13		$10.75		$57.37	$60.85	Mfbm
Fir Sawlog (N=3)	SDA	$19.66		$29.86		$111.33	$169.01	Mfbm
	Mean	$15.80	Good	$19.95	Poor	$89.48	$112.92	Mfbm
	SDB	$11.93		$10.04		$67.56	$56.83	Mfbm
White Pine Sawlog (N=1)	SDA	n/a		n/a		n/a	n/a	Mfbm
	Mean	$15.32	n/a	No Data	n/a	$86.76	$106.80*	Mfbm
	SDB	n/a		n/a		n/a	n/a	Mfbm
Hemlock / Larch Sawlog (N=3)	SDA	$16.68		n/a		$94.46	n/a	Mfbm
	Mean	$10.39	Unreliable	$12.93	n/a	$58.84	$73.18	Mfbm
	SDB	$4.10		n/a		$23.22	n/a	Mfbm
Hardwood Pulp/Fuelwood (N=13)	SDA	$10.82		$13.36		$20.84	$25.78	Cord
	Mean	$8.24	Very Good	$7.80	Unreliable	$15.87	$15.05	Cord
	SDB	$5.66		$2.25		$10.90	$4.34	Cord
Hardwood Palletwood (N=2)	SDA	$12.10		n/a		$26.73	n/a	Cord
	Mean	$11.09	Very Good	$3.99	n/a	$24.50	$7.70	Cord
	SDB	$10.08		n/a		$22.27	n/a	Cord
Hardwood G1 Sawlog (N=6)	SDA	$40.46		$28.53		$25.26	$161.48	Mfbm
	Mean	$28.32	Acceptable	$18.62	Unreliable	$160.38	$105.39	Mfbm
	SDB	$16.17		$8.71		$91.57	$49.30	Mfbm
Hardwood G2 Sawlog (N=3)	SDA	$28.56		n/a		$161.74	n/a	Mfbm
	Mean	$21.69	Acceptable	No Data	Acceptable	$122.83	No Data	Mfbm
	SDB	$14.81		n/a		$83.87	n/a	Mfbm
Hardwood Veneer (N=1)	SDA	n/a		$59.10		n/a	$334.51	Mfbm
	Mean	$88.59	n/a	$46.57	n/a	$501.69	$263.59	Mfbm
	SDB	n/a		$34.04		n/a	$192.67	Mfbm

RATINGS

Coefficient of Variance	Estimate Quality
CV <= 5%	Excellent
5% < CV <= 10%	Very Good
10% < CV <= 15%	Good
15% < CV <= 20%	Acceptable
20% < CV <= 25%	Poor
CV > 25%	Unreliable

Other	Meaning
N	Sample Size
n/a	Not Available
SDA	Standard Deviation Above
SDB	Standard Deviation Below
*	Value Derived from Residual Calculation

Table 5: Central Region Stumpage Report

January 1 to December 31, 2008

		Normalized Formal Price ($ / m^3)				Normalized Price ($ / UNIT)		
Products	**Values**	**Current Period**	**Rating**	**Previous Period**	**Rating**	**Current Period**	**Previous Period**	**UNIT**
Softwood G1 Pulpwood (N=17)	SDA	$11.93		$14.32		$27.70	$33.22	Cord
	Mean	$9.31	Very Good	$8.82	Good	$21.62	$20.46	Cord
	SDB	$6.70		$3.33		$15.56	$7.73	Cord
Softwood G2 Pulpwood (N=17)	SDA	$7.37		$10.18		$17.11	$23.62	Cord
	Mean	$4.55	Acceptable	$6.11	Poor	$10.57	$14.18	Cord
	SDB	$1.73		$2.03		$4.02	$4.71	Cord
Softwood Studwood (N=18)	SDA	$24.22		$26.24		$56.24	$60.88	Cord
	Mean	$19.05	Very Good	$19.20	Good	$44.23	$44.54	Cord
	SDB	$13.87		$12.16		$31.81	$28.21	Cord
Spruce Sawlog (N=16)	SDA	$30.11		$35.03		$170.51	$198.27	Mfbm
	Mean	$22.39	Very Good	$24.53	Very Good	$107.88	$138.84	Mfbm
	SDB	$14.66		$14.02		$78.55	$79.35	Mfbm
Fir Sawlog (N=5)	SDA	$30.96		$25.79		$175.33	$145.97	Mfbm
	Mean	$23.39	Good	$17.88	Excellent	$134.72	$101.20	Mfbm
	SDB	$16.63		$9.96		$94.18	$56.37	Mfbm
White Pine Sawlog (N=1)	SDA	n/a		$27.49		n/a	$155.59	Mfbm
	Mean	$9.80	n/a	$21.07	Good	$55.50	$119.26	Mfbm
	SDB	n/a		$14.65		n/a	$82.92	Mfbm
Hemlock / Larch Sawlog (N=4)	SDA	$21.79		$14.68		$123.40	$83.09	Mfbm
	Mean	$14.00	Unreliable	$11.70	Good	$79.28	$66.22	Mfbm
	SDB	$6.21		$8.72		$35.17	$49.36	Mfbm
Hardwood Pulp/Fuelwood (N=16)	SDA	$12.49		$8.00		$24.06	$15.44	Cord
	Mean	$9.17	Very Good	$5.08	Poor	$17.66	$9.80	Cord
	SDB	$5.85		$2.17		$11.27	$4.19	Cord
Hardwood Palletwood (N=0)	SDA	n/a		No Data		n/a	No Data	Cord
	Mean	No Data	n/a	No Data	n/a	No Data	No Data	Cord
	SDB	n/a		No Data		n/a	No Data	Cord
Hardwood G1 Sawlog (N=5)	SDA	$21.28		n/a		$120.51	n/a	Mfbm
	Mean	$16.26	Good	$13.88	n/a	$92.08	$78.56	Mfbm
	SDB	$11.25		n/a		$63.71	n/a	Mfbm
Hardwood G2 Sawlog (N=1)	SDA	n/a		n/a		n/a	n/a	Mfbm
	Mean	$9.33	n/a	No Data	n/a	$52.84	No Data	Mfbm
	SDB	n/a		n/a		n/a	n/a	Mfbm
Hardwood Veneer (N=1)	SDA	n/a		n/a		n/a	$n/a	Mfbm
	Mean	$9.33	n/a	$44.36	n/a	$52.84	$251.08	Mfbm
	SDB	n/a		n/a		n/a	n/a	Mfbm

RATINGS

Coefficient of Variance	Estimate Quality
CV <= 5%	Excellent
5% < CV <= 10%	Very Good
10% < CV <= 15%	Good
15% < CV <= 20%	Acceptable
20% < CV <= 25%	Poor
CV > 25%	Unreliable

Other	Meaning
N	Sample Size
n/a	Not Available
SDA	Standard Deviation Above
SDB	Standard Deviation Below
*	Value Derived from Residual Calculation

Table 6: Western Region Stumpage Report

January 1 to December 31, 2008

		Normalized Formal Price ($ / m^3)				Normalized Price ($ / UNIT)		
Products	**Values**	**Current Period**	**Rating**	**Previous Period**	**Rating**	**Current Period**	**Previous Period**	**UNIT**
Softwood G1 Pulpwood (N=10)	SDA	$9.38		$4.73		$21.78	$10.97	Cord
	Mean	$6.63	Good	$3.20	Unreliable	$15.39	$7.42	Cord
	SDB	$3.88		$1.68		$9.01	$3.90	Cord
Softwood G2 Pulpwood (N=3)	SDA	$1.60		$4.73		$3.72	$10.97	Cord
	Mean	$1.27	Acceptable	$3.45	Poor	$2.95	$8.00	Cord
	SDB	$0.94		$2.17		$2.18	$5.03	Cord
Softwood Studwood (N=6)	SDA	$28.51		$33.50		$66.20	$77.72	Cord
	Mean	$22.99	Very Good	$25.70	Acceptable	$53.38	$59.62	Cord
	SDB	$17.47		$17.91		$40.57	$41.55	Cord
Spruce Sawlog (N=14)	SDA	$29.34		$29.74		$166.15	$168.33	Mfbm
	Mean	$24.63	Very Good	$24.90	Very Good	$139.48	$140.93	Mfbm
	SDB	$19.93		$20.06		$112.86	$113.54	Mfbm
Fir Sawlog (N=10)	SDA	$27.93		$27.86		$158.17	$157.69	Mfbm
	Mean	$23.98	Very Good	$23.13	Very Good	$135.80	$130.92	Mfbm
	SDB	$20.03		$18.39		$113.43	$104.09	Mfbm
White Pine Sawlog (N=9)	SDA	$25.88		$28.36		$146.56	$160.52	Mfbm
	Mean	$18.77	Good	$23.66	Very Good	$106.29	$133.92	Mfbm
	SDB	$11.65		$18.96		$65.97	$107.31	Mfbm
Hemlock / Larch Sawlog (N=4)	SDA	$21.03		$26.52		$119.09	$150.10	Mfbm
	Mean	$16.79	Good	$20.25	Acceptable	$95.08	$114.62	Mfbm
	SDB	$12.55		$13.98		$71.07	$79.13	Mfbm
Hardwood Pulp/Fuelwood (N=11)	SDA	$15.86		$8.23		$30.55	$15.88	Cord
	Mean	$11.42	Good	$6.11	Acceptable	$21.99	$11.79	Cord
	SDB	$6.97		$3.99		$13.42	$7.70	Cord
Hardwood Palletwood (N=0)	SDA	n/a		No Data		n/a	n/a	Cord
	Mean	No Data	n/a	No Data	n/a	No Data	No Data	Cord
	SDB	n/a		No Data		n/a	n/a	Cord
Hardwood G1 Sawlog (N=2)	SDA	$62.47		n/a		$353.77	n/a	Mfbm
	Mean	$34.66	Unreliable	$25.52	n/a	$196.28	$144.44	Mfbm
	SDB	$6.85		n/a		$38.79	n/a	Mfbm
Hardwood G2 Sawlog (N=1)	SDA	n/a		n/a		n/a	n/a	Mfbm
	Mean	$14.99	n/a	$31.35	n/a	$84.89	$177.44	Mfbm
	SDB	n/a		n/a		n/a	n/a	Mfbm
Hardwood Veneer (N=0)	SDA	n/a		$16.88		n/a	$32.58	Mfbm
	Mean	$103.30*	n/a	$10.81	Unreliable	No Data	$20.86	Mfbm
	SDB	n/a		$4.74		n/a	$9.15	Mfbm

RATINGS

Coefficient of Variance	Estimate Quality
CV <= 5%	Excellent
5% < CV <= 10%	Very Good
10% < CV <= 15%	Good
15% < CV <= 20%	Acceptable
20% < CV <= 25%	Poor
CV > 25%	Unreliable

Other	Meaning
N	Sample Size
n/a	Not Available
SDA	Standard Deviation Above
SDB	Standard Deviation Below
*	Value Derived from Residual Calculation

Buyers of forest products (as identified in the Registry of Buyers) were contacted and asked to provide price lists, product specifications and grade mix information. For each product, an average price paid within each of the three reporting regions was determined. Operating costs were subtracted from the average prices obtained to get a residual value. Operating costs incurred where obtained during initial face-to-face setup surveys with participants. Operating costs incurred include:

- The charge out rate for felling, forwarding and delimbing (cost to roadside);
- The charge out rate for floating equipment;
- Road allowances (building and maintenance);
- The charge out rate for trucking and loading;
- Estimates of contractor profit and overhead.

The formula used for the residual calculation (RC) is:

RC = Regional Average Product Price – ([Cost to Roadside]+[Floating]+[Road Allowance]+[Trucking and Loading]+[Overhead and Profit])

The results of the residual calculation method of estimating stumpage are presented in Table 7. A detailed explanation of how pricing information and operating costs were compiled is presented in Appendix F.

Table 7: Summary of Residual Calculations

Product	Region		
	Eastern	Central	Western
Softwood G1 Pulpwood	$4.63	$5.32	-$2.52
Softwood G2 Pulpwood	-$9.26	-$5.50	-$3.99
Softwood Studwood	$8.79	$11.39	$11.08
Spruce Sawlog	$17.71	$21.16	$22.78
Fir Sawlog	$17.71	$15.92	$16.97
White Pine Sawlog	$4.02	$0.70	$1.75
Hemlock/Larch Sawlog	$5.06	$6.63	No Data
Hardwood Pulp/Fuelwood	-$8.24	-$8.12	-$1.47
Hardwood Pallet	-$10.80	-$10.29	-$5.87
Hardwood G1 Sawlog	$30.25	$45.19	$52.84
Hardwood G2 Sawlog	$6.43	$10.02	$13.54
Hardwood Veneer	$101.75	$102.26	$103.30

Regarding grade 1 softwood pulpwood (Western), grade 2 softwood pulpwood (all Regions), hardwood pulpwood (all Regions) and pallet wood (all Regions), it can be seen the residual calculation method results in negative values. For these four products, operating costs tend to exceed the roadside or mill delivered prices received suggesting that they are not profitable as stand alone stumpage objectives.

With the residual calculation method, it is important to clarify what is meant by road allowances. During the face-to-face interviews, participants were asked what they allowed ($) for road construction or maintenance for typical stumpage jobs. The allowance was used to help cover the cost of road maintenance/upgrading only and cannot be used to derive the full cost of road development. Often, the road allowance was used strictly for maintenance of pre-existing roads which was a common response during the face-to-face interviews. As well, the class of road built was not specified and ranged from winter roads used during frozen conditions to construction of landings next to public roads.

5.3 Normalization and Modifiers

Tables 4, 5 and 6 present Normalized Regional Prices for stumpage. Therefore, it is important that an explanation of "Normalized" be given. Normalization is an adjustment made to reflect favorable or unfavorable operating conditions within a woodlot by applying modifiers. For example, a returned survey that stated low stumpage because it involved partial harvesting needed to be modified before it could be comparable to stumpage from a clearcut where normal stumpage rates were reported.

Modifiers have been developed from data collected during the initial setup face-to-face surveys as a means of comparing, or normalizing stumpage values, over a broad range of provincial operating conditions. The original list of provincial operating conditions for which modifiers were developed is presented in Table 8. These conditions were determined to have a strong impact on stumpage rates and were developed by AGFOR Inc. (*Method to Survey and Report Standing Timber Prices in Nova Scotia*) after consultation with a number of contractors in the Province.

Table 8: Original Operating Conditions and Descriptions

Operating Condition	Description or Unit
Partial Harvest	% of block that is partially cut
Job Size	Volume
Roads	$/unit of volume
Terrain	% of block with difficult conditions
Tree Size	Volume per unit area
% Hardwood	% of block that is hardwood

During the initial face-to-face interviews, it was important to identify the point at which a particular condition began to have a negative or positive impact on stumpage values being offered to a woodlot owner. Once that point (or threshold) was

identified, it was necessary to determine what adjustments were typically made to the stumpage offer. An example is in the case of job size where the participants were asked *"in terms of volume (i.e. cords), what minimum volume would cause you to reduce your stumpage offer? How much would you reduce or adjust your offer if a job was smaller than the minimum just identified?"*. The responses were compiled by region and arithmetic averages were calculated for each operating condition. The arithmetic average was the modifier that was used to normalize reported stumpage values. A summary of operating condition thresholds and regional modifiers are presented in Table 9.

Null responses were coded and not included in the analysis. Some data were omitted if the responses were unsuitable or the units given were ambiguous or qualitative.

The participants also had an opportunity to identify other operating conditions that they considered important. One common response was that the hardwood component of harvest blocks did not impact stumpage prices, and during 2008, hardwood was a sought after product. When the original methodology was developed, softwood was the preferred product for harvesting contractors, and hardwood reduced softwood production during harvesting operations. Therefore, it was identified as a factor that affected the overall stumpage offer. With the changes experienced in the market, this factor was dropped as a modifier. During face-to-face interviews, contractors indicated that fuel prices had an impact on profitability and how far they would travel to job sites. As fuel prices started to decline, this operating condition became less prevalent and therefore, was not included as a modifier.

Also worth noting is that participants did not identify Forest Sustainability Regulations or Primary Forest Product Marketing Board levies as financial obligations which may cause them to reduce stumpage offers. Participants were more likely to absorb these costs as overhead expenses.

If the impact on stumpage was negative, the operating condition was termed unfavorable. Conversely, if the impact was positive the operating condition was termed favorable. The use of modifiers to normalize data was triggered anytime a participant indicated that an operating condition was unfavorable or favorable on the stated stumpage survey. Table 9 presents the operating conditions and associated modifiers which were generated. The data presented in Table 9 also provides a means for landowners who wish to convert the regional average stumpage values presented in this report to reflect the conditions on their own woodlots. The regional user guides discussed next provide the tool to achieve this.

For comparison purposes, Appendix H presents the normalized results versus the unmodified results with no modifiers applied.

Table 9: Summary of Regional Modifiers Developed for each Operating Condition by Region.

Region	Operating Condition	Modifier (-Adjustment)	Lower Threshold	Upper Threshold	Modifier (+ Adjustment)
Eastern	Partial Harvest	-13.8%	65% pc	0% pc	0%
	Job Size	-13.9%	356 m^3	2,196 m^3	+3.7%
	Roads	-5.0%	>$4.47/$m^3$	<$3.88/$m^3$	+5.3%
	Terrain	-29.1%	33% difficult	0% difficult	+6.3%
	Tree Size	-25.0%	76 m^3/ha	175 m^3/ha	+6.0%
	Max. Adjustment	-17.2%	n/a	n/a	+9.8%
Central	Partial Harvest	-8.8%	56% pc	0% pc	0%
	Job Size	-22.1%	452 m^3	2,457 m^3	+4.9%
	Roads	-2.8%	>$0.97/$m^3$	<$1.14/$m^3$	+2.5%
	Terrain	-13.3%	37% difficult	0% difficult	0%
	Tree Size	-9.5%	75 m^3/ha	168 m^3/ha	+11.5%
	Max. Adjustment	-13.8%	n/a	n/a	+14.2%
Western	Partial Harvest	-15.5%	82% pc	16% pc	0%
	Job Size	-22.9%	322 m^3	1,489 m^3	+3.5%
	Roads	-2.5%	>$1.93/$m^3$	$0.0/$m^3$	0%
	Terrain	-9.7%	75% difficult	0% difficult	0%
	Tree Size	-17.7%	78 m^3/ha	185 m^3/ha	+6.4%
	Max. Adjustment	-19.3%	n/a	n/a	+6.7%

5.4 Regional Stumpage Values and User Guides

Normalized regional stumpage values are presented in Tables 4, 5 and 6. The tables highlight the various stumpage values that were obtained from the fourth stated stumpage survey. In addition to the average, the standard deviation above and below the average for each product are shown to give the reader an indication of the range of variation for each product. Additionally, each product has a rating assigned to it which gives the reader an indication of the quality of the average value. The stumpage values are initially reported in dollars per cubic meter, however they have also been converted to other common units for ease of use.

User guides have been developed for each of the three regions. The guides are designed to allow landowners and contractors to convert the reported normalized data to reflect specific conditions. The conversion allows landowners and contractors the ability to obtain a reasonable estimate of current stumpage values for their individual woodlots.

The following example is provided to illustrate the process to convert regional normalized values to suit local conditions.

> A woodlot owner in Central Nova Scotia wishes to obtain an estimate of the current stumpage value for a white spruce stand on his farm woodlot. With a harvest block in mind, a landowner can make the necessary conversions from the regional levels to suit local conditions:
>
> The regional stumpage report for the Central Region (Table 5) shows that the average normalized price for white spruce sawlogs is $22.39/$m^3$. The average value has a 'Very Good' rating. By referencing the Central Regional Users Guide, the operating condition thresholds can be determined. For this example, assume that the total harvest is expected to yield 350 m^3 of sawlog grade wood. The regional user guide (Table 11) indicates that at job size volumes less than 452 m^3, a stumpage reduction of 22.1% is reasonable for the Region. On the other hand, assume the stand contains large trees and stand volumes are approximately 200 m^3/ha. The regional user guide indicates that in harvest blocks with more than 168 m^3/ha, an 11.5% premium on stumpage may be achievable. A maximum adjustment factor has also been introduced which can be used to set the maximum +/- adjustment if more than one modifier is favourable or unfavourable.
>
> Therefore:
>
> | | |
> |---|---|
> | (Sum the negative and positive modifiers) | **(-22.1% + 11.5%) = - 10.6%** |
> | (Compare with maximum adjustments) | **(-10.6% is between -13.8% and +14.2%) Therefore, no change** |
> | (Convert the normalized rate) | **($22.39/m^3 x [1 - 0.106]) = $20.02/m^3** |

The final result is \$20.02/m^3 which can be converted to \$/Mfbm by multiplying the result by 5.663 (Appendix D):

(Convert \$/m3 to \$/Mfbm) **(\$20.02/m^3 x 5.663) = \$113.37/Mfbm**

Alternatively, the normalized price is also presented in Mfbm at the right hand side of the table. Simply replace the price/m^3 with the \$/Mfbm and the result will not have to be converted:

Therefore:

(Sum the negative and positive modifiers)	**(-22.1% + 11.5%) = - 10.6%**
(Compare with maximum adjustments)	**(-10.6% is between -13.8% and +14.2%) Therefore, no change**
(Convert the normalized rate)	**(\$126.79 x [1 - 0.106]) = \$113.35/Mfbm**

As can been seen in Tables 4, 5, and 6, not all products listed were given a rating. If data were not reported for a product, the value from the corresponding residual calculation was used (if available) to provide a reasonable stumpage estimate. These reasonable stumpage estimates and those stated stumpage values derived from a sample of only one could not be given a rating because the sample was too small.

Table 10: Eastern Regional User Guide

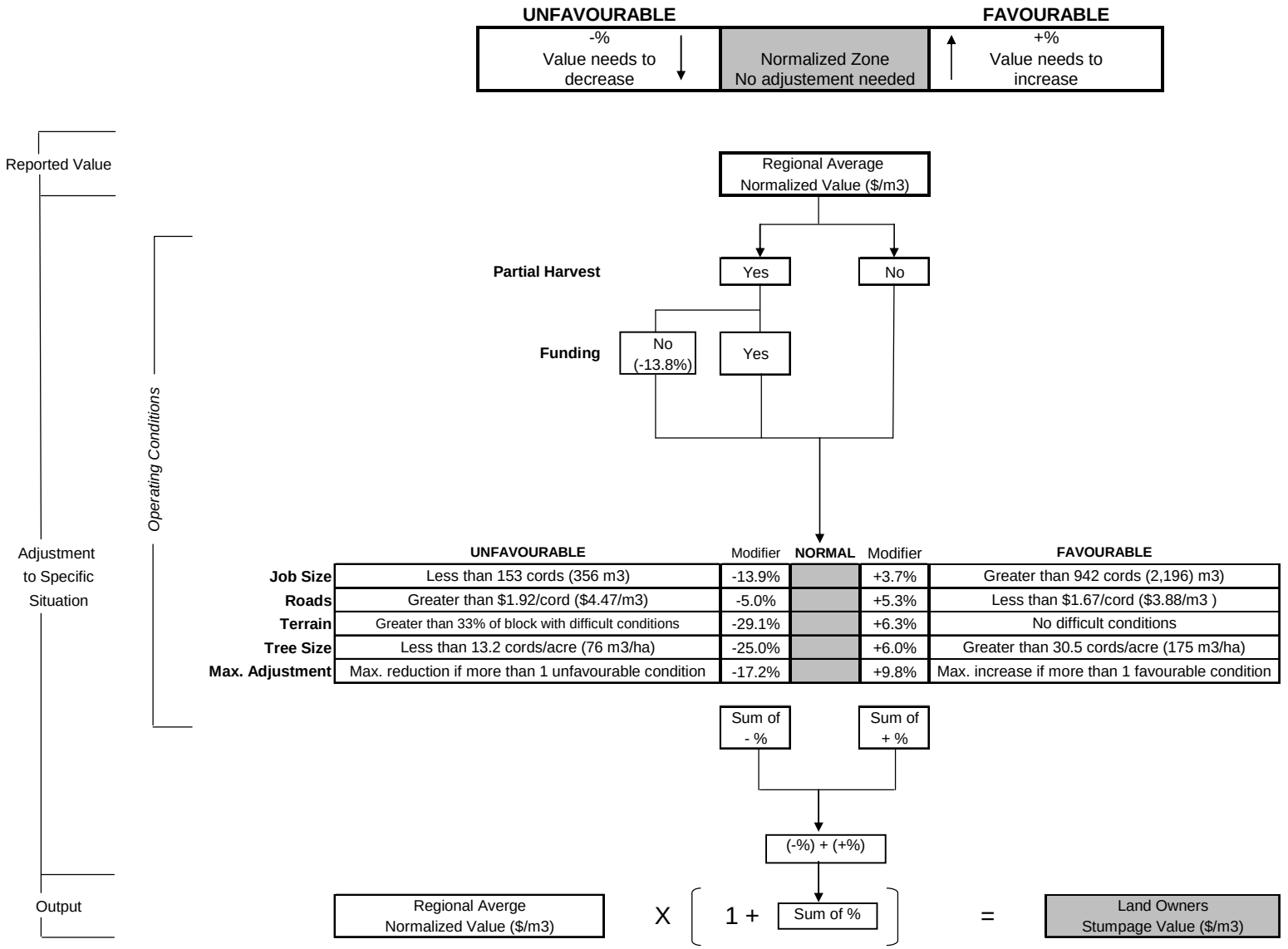


Table 11: Central Regional User Guide

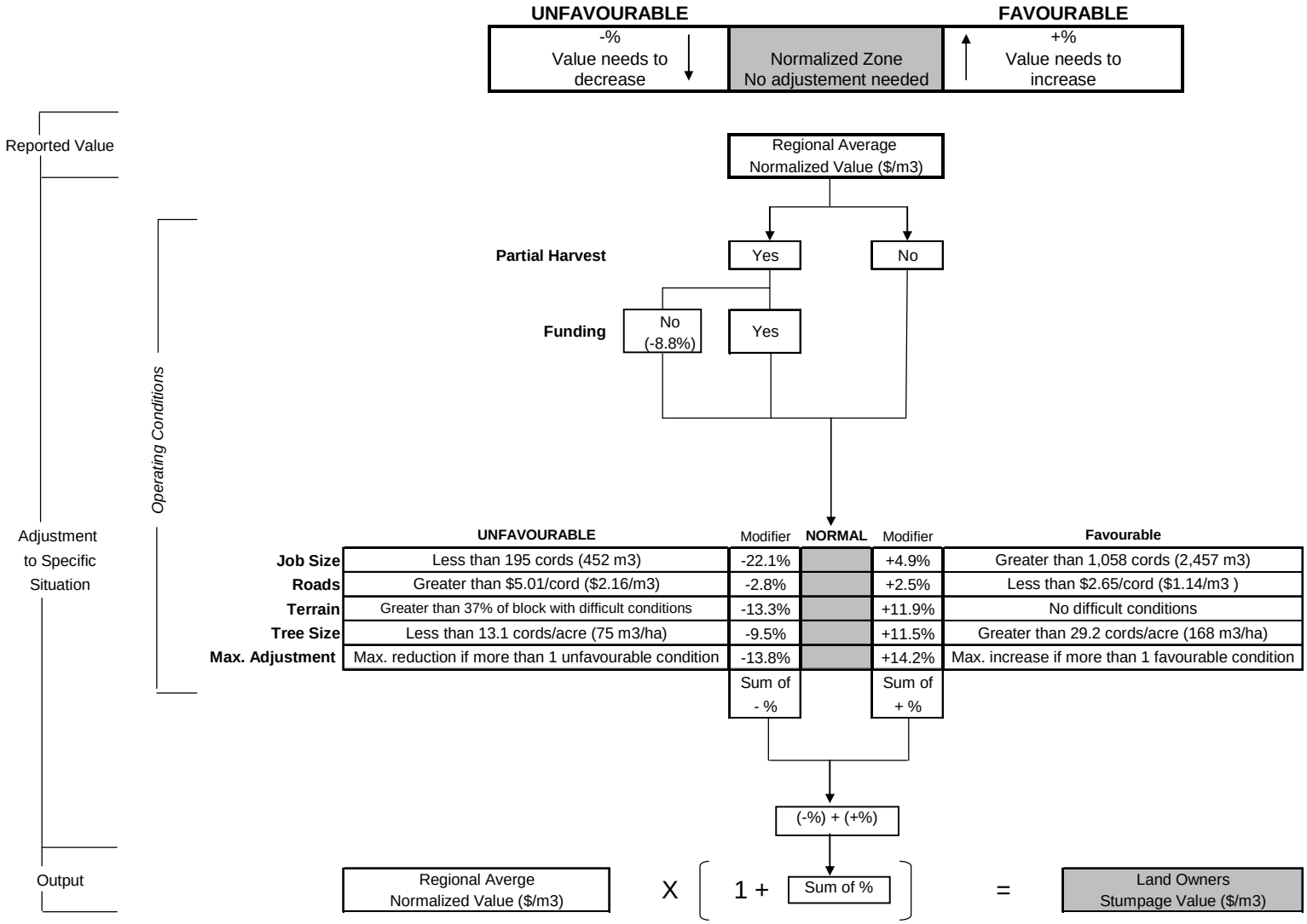
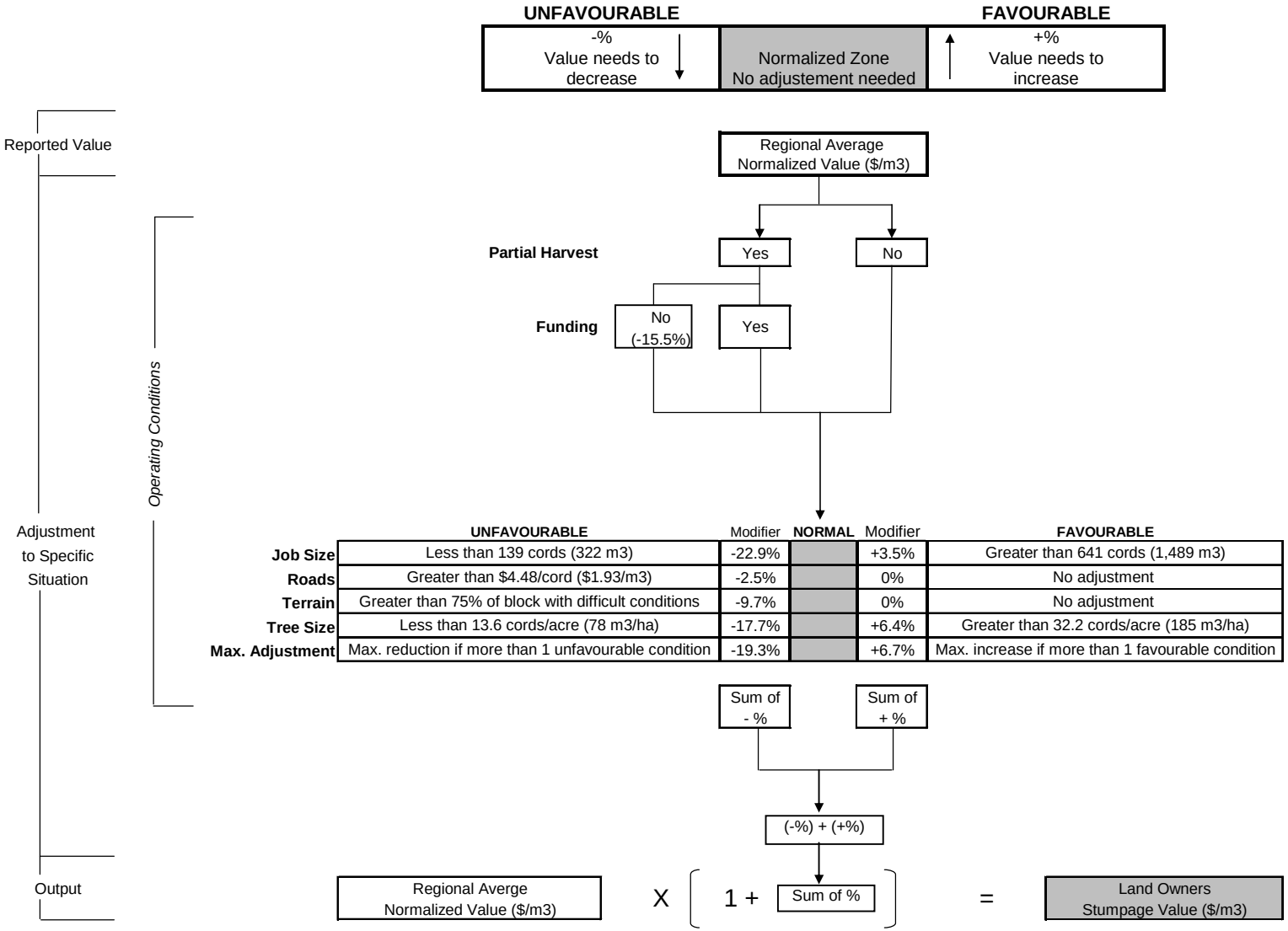


Table 12: Western Regional User Guide



6.0 Observations on Stumpage Values by Product

Following are a number of comments and observations realized during the collection, compilation and analysis of stumpage market data for the period January 1 to December 31, 2008. Comparisons have been made to the previous stumpage report which covered the period from January 1 to June 30, 2006.

Stumpage prices for Grade 1 softwood pulpwood doubled over prices reported for the first 6 months of 2006 for the Eastern and Western Regions. Grade 2 softwood pulp rates also showed a 36% and 63 % increased in Central and Western Regions. Spruce studwood showed an increase in value over the previous 6 month survey period with a 14%, 1% and 11% increase for Eastern, Central and Western Regions respectively. Balsam fir sawlog stumpage rates showed contrasting changes with a 21% increase in Eastern Region while declines were reported for Central and Western Regions of 33% and 4%. White pine, hemlock and larch sawlogs also showed a general decline in stumpage value over the period.

Hardwood stumpage rates appear to have increased while log prices remained consistent or declined throughout the period.

The normalized provincial average stumpage value for each product was calculated from the data obtained during this stumpage survey (Table 13). Similar values derived from the fourth stumpage survey for the previous six month period are also presented and the relative changes are shown.

6.1 Grade 1 Softwood Pulpwood

The average provincial stumpage value of softwood pulpwood has increased by 43% over the previous reporting period (Januray 1, to June 30, 2006). This large change is primarily the result of the impact of the shutdown of Stora Enso's Point Tupper mills on the demand for pulpwood during the previous reporting period. NewPage Corporation purchased the Point Tupper facilities and resumed operations in October of 2006 and private land stumpage rates have rebounded in Eastern Region. Stumpage rates for softwood pulpwood in the Western Region are typically lower than the rest of the province, however the rates for sawlogs and studwood tend to higher than in other Regions. During this survey period, stumpage rates for softwood pulpwood were 29% and 42% lower than those in Central and Eastern Regions respectively.

6.2 Grade 2 Softwood Pulpwood

Provincial average stumpage rates for grade 2 pulpwood showed a decrease of 15% when compared to the first six months of 2006. This product typically has been sold in Central Nova Scotia and included fibre destined for pulp and paper or pellet manufacturing. Harvesting contractors typically sell this grade of product as a cost recovery exercise and therefore the decline in stumpage values may be attributed to

increased harvesting costs primarily caused by high fuel prices during the survey period.

Table 13: Comparison of Provincial Normalized Stumpage Values from January 1 to December 31, 2008 and January 1 to June 31, 2006.

Product	January 1 to December 31, 2008[1]		January 1 to June 30, 2006[2]		Change (%)
	Value ($)	Sample Size	Value ($)	Sample Size	
Softwood G1 Pulpwood	$9.76	50	$6.82	14	43%
Softwood G2 Pulpwood	$4.53	30	$5.47	15	-15%
Softwood Studwood	$18.28	41	$19.84	22	-8%
Spruce Sawlog	$22.46	38	$23.67	30	-5%
Fir Sawlog	$22.56	18	$20.72	14	9%
White Pine Sawlog	$17.64	11	$22.36	8	-21%
Hemlock/Larch Sawlog	$14.03	11	$15.63	9	-10%
Hardwood Pulpwood/Fuelwood	$9.49	40	$6.12	18	55%
Hardwood Pallet	$11.09	2	$3.99	1	178%
Hardwood G1 Sawlog	$24.66	13	$19.05	5	29%
Hardwood G2 Sawlog	$17.88	5	n/a	n/a	n/a
Hardwood Veneer	$48.96	2	$43.08	5	14%

1: Provincial Normalized Values (IRE, 2006, Survey Results and Prices for Standing Timber Sales from Nova Scotia Private Woodlots, January 1 to June 30, 2006).
2: Provincial Normalized Values derived from this report (Appendix H)

6.3 Softwood Studwood

The provincial average stumpage value for studwood experienced a decrease of 8% over the previous reporting period. Regionally, stumpage rates increased from east to west for a relative difference of 31%. Traditionally, studwood and sawlog stumpage rates are higher in Western Nova Scotia. In contrast, the market opportunities for studwood decrease the further east one goes from the Strait of Canso, although studwood markets existed through NewPage Port Hawkesbury Corp. through a fibre exchange agreement with Ligni Bel Ltd. in Pictou County.

6.4 Spruce Sawlog

Overall, the provincial average stumpage value for spruce sawlogs has decreased by 5% to a level similar to that which was reported for the second half of 2005. Regionally, the Eastern Nova Scotia experienced a decrease of 21% over the previous survey period while the Central and Western Regions observed small decreases of 2% and 1% respectively. These two Regions typically have higher sawlog stumpage rates than Eastern Region which is primarily driven by the market opportunities for softwood pulp and studwood products.

6.5 Fir Sawlog

Provincially, stumpage prices reported for balsam fir sawlogs exhibited a slight increase of 9% over the previous survey period. The largest change was observed in Eastern Region, with the prices being stable in Central and Western Regions.

6.6 White Pine Sawlog

White pine stumpage prices showed a decrease of 21% over the first 6 months of 2006. The Western Region accounted for 82% of the price points recorded and this Region contains the largest white pine resource and is the most active for white pine harvesting. As the demand for both white pine lumber and finished products have declined over the survey period, it appears that stumpage prices have also declined.

6.7 Hemlock/Larch Sawlog

The stumpage prices reported for hemlock/larch also showed a small decrease of 10% however, the provincial average price of $14.03 is the second highest price recorded over a total of 5 surveys. The high relative price for this product group may be attributed to harvesting contractors diversifying there target products.

6.8 Hardwood Pulpwood, Palletwood and Fuelwood

This product group has been combined to reflect existing market opportunities. The increased demand for both commercial and residential fuelwood has eclipsed the demand for hardwood pulpwood form private woodlots in Nova Scotia. The stumpage values reported for hardwood pulp showed an increase of 55% over the previous six month survey period. Great Northern Timber drove demand for low grade hardwood at both its main Sheet Harbour and satellite Liverpool chipping facilities. Residential fuelwood demand was also high as the demand for non oil based heating continued.

The comparison made for hardwood palletwood is questionable since only one price was reported for the 2006 survey. As with most roundwood products, the demand and price for palletwood decreased over the survey period as a result of diminished demand for industrial shipping pallets.

6.9 Hardwood G1 Sawlog and Hardwood Veneer

The average reported hardwood grade 1 sawlog stumpage values showed an increase of 29%. The change in value observed for this product can be attributed to the reporting of both grade 1 and 2 sawlog prices during this survey. In the survey for the first 6 months of 2006, all hardwood prices were included in a single category, and lower grade prices would have reduced the provincial average. Although the price for all hardwood roundwood products have declined since 2006, increased attention to tolerant hardwood harvest blocks to satisfy fuelwood demand may have kept upward pressure on stumpage prices.

6.10 Hardwood G2 Sawlog

The grade 2 hardwood sawlog product group is new for this survey period and therefore no direct comparison can be made to previous stumpage surveys. This average provincial price is 27% lower than grade 1 hardwood sawlog product group which is consistent with the value of the product at the mill.

Appendices

Appendix A – Recruitment Script

Date: _____ ID:_____

Surveyor - If you call and get an answering machine, leave the following message:

This is _____ calling on behalf of the Nova Scotia Primary Forest Products Marketing Board. Each year we do a check on stumpage and I'd just like to ask you one quick question. Could you please give me a call at 902-425-1320? (Again) That's _____ at 902-425-1320. Thank you!

If you call and a person answers (ask for the name we have – or if not there, say "perhaps you can help us"). (Then say)

This is _____ calling on behalf of the Nova Scotia Primary Forest Products Marketing Board. Each year we do a check on stumpage and I am wondering if you have purchased stumpage from private woodlots in the last 12 months?

Yes .....1 - CONTINUE
No.....2 Terminate and "Thank you!"

1. OK. We need help to track trends for the industry that are published for harvesters and woodlot owners. Would you be able to meet with us in person so that we can get more detailed information? (If asked – the face-to-face meeting is necessary to identify the different types of wood and stumpage conditions that occur.) Our forestry consultants can meet with you at your convenience – are you available anytime this week? … next week?...

2. (IF ASKED, STATE THAT THE FACE-TO-FACE INTERVIEW WOULD BE ABOUT 30 TO 60 MINUTES)

   If answer to 1) above is Yes.....1 (GO TO Q.3)
   If answer to 1) above is No.....2
   If No, ask "Would it help if we had Kirk Schmidt or John MacLellan, the lead consultants on the project, contact you in person?"
   Yes .....1 (GO TO Q.3)
   No.....2 Terminate and Thank you!

3. Now I'd just like to confirm your contact information for the interview.

Name: _____Phone:_____

Company: _____County:_____

Address: _____Postal Code:_____

Interview Date & Time: _____

Codes

NA – No Answer, NIS – Not in service, Disconnected - DIS, Busy - BUS
Answering Machine/Left Message - AM/LM

Appendix B – Potential Contributors

A potential contributor list was developed from the following sources:

- NSDNR Registry of Buyers;
- Workers' Compensation Board;
- Green Pages 2003, DVL Publishing Inc;
- Yellow Page listings of forestry professionals;
- Word of mouth.

A total of 1,123 potential contributors were contacted by phone. The purpose of the phone calls was to pre-qualify participants and arrange face-to-face interviews. In order to qualify, contributors must have purchased stumpage in the 12 months prior to the call. Table B.1 summarizes the breakdown of responses to the callers.

Table B.1: Summary of Phone Call Responses

Description	Number
Wrong Number	79
Contact Info Incorrect	95
Disconnected	84
Left a message	186
Fax/Modem	9
Out of Business	25
Language	2
Refused	529
Yes	104
Maybe	10
Total	**1,123**

A total of 61 surveys were completed from an original group of 104 that agreed to participate. Of the 104 that originally agreed to participate, many had completed

small or insignificant stumpage transactions during 2008, were difficult to locate or declined an interview and were subsequently dropped from the face-to-face interviews.

Appendix C – Non Response Test Results

The following non-response test was completed and involved comparing and contrasting the profiles of participants with potential contributors that did not purchase stumpage or declined to participate in the survey. The purpose of this analysis was to identify any bias in the type of contributors participating in the survey.

Table C.1 shows the profile of the 1,123 participants that were placed on the potential contributor list categorized by business type. The business types were derived from two primary sources, the Nova Scotia Registry of Buyers and the Workers Compensation Board of Nova Scotia.

Figure C.1 highlights the percent distribution of both the participants and non participants. In general, businesses that participated in the survey are well represented when compared to the distribution of business types within the assembled potential contributor list. For the main business types that tend to be directly involved in stumpage purchases, the survey participants are well represented and in most cases exceed the relative proportion of the initial potential contributor group. Two exceptions are apparent in the data, sawmill and trucking business types appear to have a lower relative proportion of participation rates than the original potential contributor population.

The data show that a considerably smaller proportion of sawmills are represented in the participant group when compared with the non-participant group. Closer examination of the data reveals that the majority of the sawmill group is composed of small operations that acquire less than 500m3 of round wood per year and tend not to purchase stumpage.

The majority of firms involved in the trucking business focus on trucking as a primary business activity. Very few trucking firms are also involved in private woodlot stumpage transactions.

In contrast, the contractor group had proportionately more participants than represented on the potential contributor list. As logging contractors are the main group responsible for negotiating stumpage rates, this is a positive result.

Table C.1: Comparison of Business Types for Potential Contributors and Participants

Business Type	Participants		Non-Participants	
	Number	Percent	Number	Percent
Contractor			7	1%
Energy Generation			2	0%
Firewood Sales	3	5%	14	1%
Forester Consultant			8	1%
Fuel Chip Sales			1	0%
Group Venture			1	0%
Hardboard Mill			1	0%
Land Agent			1	0%
Log Homes			4	0%
Logging	28	46%	418	39%
Lumber Manufacturers			1	0%
Lumber Retail	1	2%	6	1%
Other			4	0%
Poles/Posts Plant			2	0%
Pulp/Paper Mill	1	2%	2	0%
Sawmill	10	16%	384	36%
Silviculture	12	20%	88	8%
Trucking	1	2%	86	8%
Veneer Mill			1	0%
Wood Export	5	7%	49	5%
Total	61	100%	1,081	100%

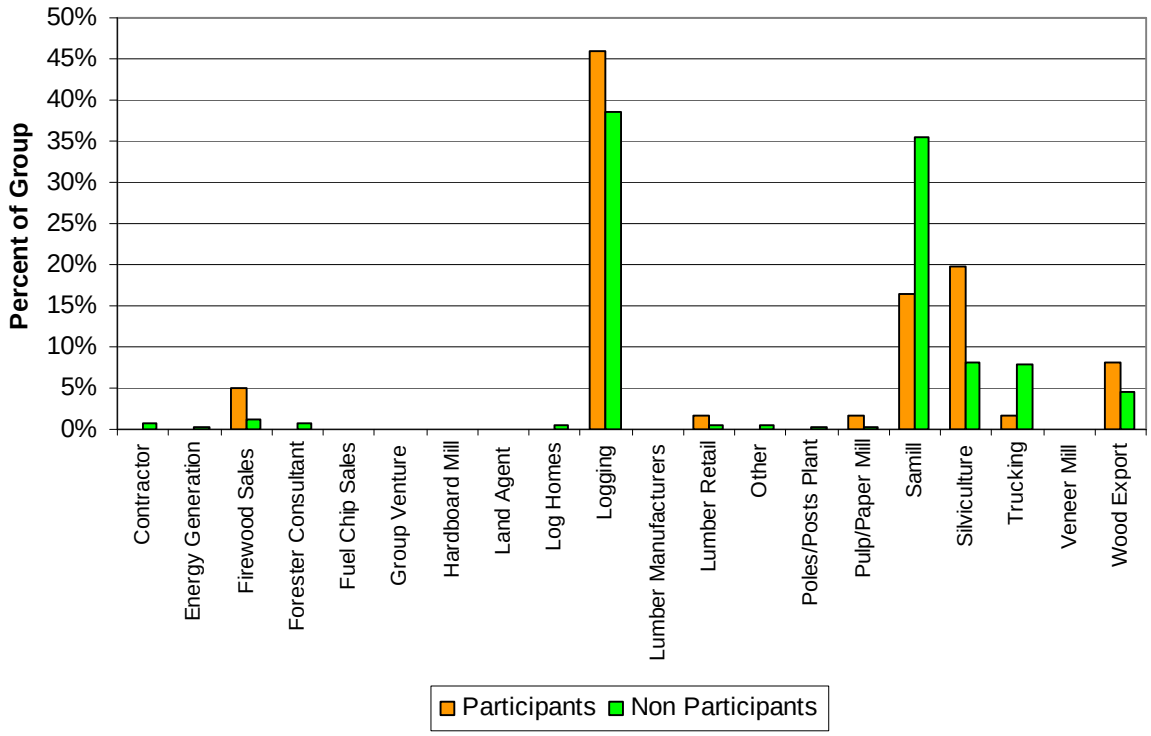


Figure C.1: Percent Distribution of Potential Contributor and Participant Businesses by Type.

Appendix D - Conversion Factors

One characteristic of the forest industry in Nova Scotia is the number of different units of measure used. All units of measure provided by participants to the surveys were converted to solid meters cubic (m^3) in order to standardize the results. Tables D.1 and D.2 present the conversion factors used and were adopted by the authors for this report as specified in the Methodology to Survey and Report Standing Timber Prices in Nova Scotia, *AGFOR Inc., January 2004*.

Table D.1: Softwood Conversion Factors

Type	Species	Product	Detail	Original Unit of Measure	Multiply	Conversion Factor	Volume m3
Softwood	Spruce/Pine/Fir (SPF)	Sawlogs	CTL	mbfm	x	5.663	
				fbm	x	0.005663	
			TL	tonnes	x	1.167	
		Studwood	8'	cords	x	2.322	
				tonnes	x	1.167	
				m3 (s)	x	0.641	
			10'	cords	x	2.265	
				tonnes	x	1.167	
				m3 (s)	x	0.625	
		Pulp/Fuel	TL	tonnes	x	1.167	
			8'	cords	x	2.209	
				tonnes	x	1.167	
				m3 (s)	x	0.609	
			RL	tonnes	x	1.167	
		Pulp	Chips	tonnes	x	1.2690	
		Fuel	Chips	tonnes	x	0.817	
	Hemlock		All	tonnes	x	1.026	
	Larch		All	tonnes	x	1.033	
	White Pine		All	tonnes	x	1.11	

* CTL: Cut to Length; TL: Tree Length; RL: Random Length; 8': 8 Foot Length; 10': 10 Foot Length.

Table D.2: Hardwood Conversion Factors

Type	Species	Product	Detail	Original Unit of Measure	Multiply	Conversion Factor	Volume m3
Hardwood	All	Sawlogs	CTL	mfbm	x	5.663	
				fbm	x	0.005663	
				m3	x	1	
				tonnes	x	0.963	
		Pulp/Fuel	TL	tonnes	x	0.9630	
		Pallet	8'	mbfm	x	5.663	
				fbm	x	0.005663	
				cords	x	2.209	
				m3(s)	x	0.609	
				tonnes	x	0.963	
		Pulp/Fuel	8'	cords	x	1.926	
				m3(s)	x	0.531	
				tonnes	x	0.963	
		Veneer		mbfm	x	5.663	
				fbm	x	0.005663	
				tonnes	x	0.963	

* CTL: Cut to Length; TL: Tree Length; RL: Random Length; 8': 8 Foot Length; 10': 10 Foot Length.

Appendix E – Summary of the Two Lines of Evidence

Stated stumpage values are the results presented in the main body of the report. Residual calculation values are used as an internal verification against these stated stumpage values. Table E.1 displays the results of the two lines of evidence by Region for the various forest products. The residual calculations for lower grade products such as softwood and hardwood pulpwood and hardwood palletwood indicated negative values. This supports the concept that the higher value products provide the operating margins for harvesting contractors and offset poor returns from low grade products.

Table E.1: Results of the Two Lines of Evidence by Region for the Various Forest Products Examined ($/m^3).

Region	Line of Evidence	Softwood G1 Pulpwood	Softwood G2 Pulpwood	Softwood Studwood	Spruce Sawlog	Fir Sawlog	White Pine Sawlog	Hemlock/Larch Sawlog	Hardwood Pulp/Fuelwood	Hardwood Palletwood	Hardwood G1 Sawlog	Hardwood G2 Sawlog	Hardwood Veneer
Eastern Mean	**Stated Stumpage (avg)**	$11.45	$5.48	$15.81	$15.51	$15.80	$15.32	$10.39	$8.24	$11.09	$28.32	$21.69	$88.59
	Residual Calculation	$4.63	-$9.26	$8.79	$17.71	$17.71	$4.02	$5.06	-$8.24	-$10.80	$30.25	$6.43	$101.75
Central Mean	**Stated Stumpage (avg)**	$9.31	$4.55	$19.05	$24.04	$23.79	$9.80	$14.00	$9.17	No Data	$16.26	9.33	$9.33
	Residual Calculation	$5.32	-$5.50	$11.39	$21.16	$15.92	$0.70	$6.63	-$8.12	-$10.29	$45.19	$10.02	$102.26
Western Mean	**Stated Stumpage (avg)**	$6.63	$1.27	$22.99	$24.63	$23.98	$18.77	$16.79	$11.42	$34.66	$14.99	No Data	No Data
	Residual Calculation	-$2.52	-$3.99	$11.08	$22.78	$16.97	$1.75	No Data	-$1.47	-$5.87	$52.84	$13.54	$103.30

Appendix F - Data Processing Assumptions

Challenge	Resolution / Assumption
Range given as answer	Assumed mid-point.
Different units provided	Whenever possible, units were converted to m^3 or to $/$m^3$. In exceptional cases these units were recorded for analysis at a later date.
Comments	A comment field was added to accept respondent input that was subjective in nature.
Numbers not broken down	A single number for felling was broken down into its felling and delimbing components whenever possible. In cases where they could not be, the single number for felling is assumed to contain the delimbing value.
No answer provided	Where respondents were unable to answer, or whose answers would be non-applicable (e.g., respondent does not do roadwork and so has no upper or lower thresholds), the fields were left blank.
Suspect numbers	Confirmed numbers with interviewer. All maximum and minimum numbers in a field were double checked for accuracy and reliability.
Different grade prices	Because only one answer allowed. Lower grades were included under “OTHER”. These grades were then tabulated separately. Where sufficient number of respondents gave pricing for grades not originally included in the survey design, a recommendation will be made to the NSPFPMB that these grades be included in future survey instruments.
Job size reported in acres	Assumed 20 cords per acre or 57 m^3/ha.
Conversion	Where possible, units will be converted using the conversion factors shown in Appendix A.
Converting Acres to m^3	Assumed 20 cords per acre or 57 m^3/ha.
Trucking Rates	Assumed 120 km to be the average trucking distance.
One overall logging cost	Logging costs stated as a percentage of roadside pricing were separated from other data that were broken down into their components. When available,

	roadside prices were converted to dollar values. (Did not include trucking rates).
Funding	When a respondent indicated that stumpage values were modified due to partial harvest, but also reported that funding was received, the reported values were not modified because they were assumed to be offset 100% by the funding.

Appendix G – Residual Calculations

The residual calculation (RC) method of estimating stumpage has two components including the collection of offered product prices paid per unit of measure (either roadside or mill delivered) and the determination of operating costs incurred.

The formula for Residual calculation can be simply stated as:

RC = Regional Average Product Price – Operating Costs

Regional Average Product Price

Offered product prices were obtained by contacting buyers of forest products as identified in the Registry of Buyers and asking them to provide prices offered during the reporting period. For this report, the period is defined as January 1 to December 31, 2008. Prices were given as either delivered or roadside and converted to $\$/m^3$. The authors were very careful to distinguish between roadside and delivered prices in order to apply or discount trucking rates.

Whenever possible, copies of the offered prices were obtained. However, some prices were acquired by face-to-face communication or by telephone interview in cases where pricing information was not formally documented. This ensured that the price lists were appropriately distributed throughout each Region and that price lists were truly reflective of a complete range of Registered Buyers in a Region.

After obtaining the product prices, an average price per product was then determined for each Region. Table G.1 summarizes The Regional Average Product Prices by Region. The Regional Average Product Prices were used in the Residual Calculation.

Table G.1: Regional Average Delivered Product Prices by Region ($\$/m^3$).

Regional Average Product Price ($\$/m^3$)	Softwood G1 Pulp	Softwood G2 Pulp	Softwood Studwood	Spruce Sawlog	Fir Sawlog	White Pine Sawlog	Hemlock & Larch Sawlog	Hardwood Pulp	Hardwood Palletwood	Hardwood G1 Sawlog	Hardwood G1 Sawlog	Hardwood Veneer Log
Eastern	$45.60	$31.71	$52.21	$61.70	$61.70	$35.71	$48.24	$34.91	$32.35	$77.38	$52.04	$153.45
Central	$42.53	$31.71	$61.11	$55.93	$55.93	$39.74	$46.05	$34.91	$32.74	$93.12	$55.71	$153.84
Western	$33.18	$31.71	$49.21	$61.65	$55.47	$39.28	No Data	$39.46	$35.06	$99.09	$57.29	$152.78

Operating Costs Incurred

The information required for determining operating costs incurred was gathered during the initial face-to-face setup survey. Here participants were asked to provide chargeout rates whenever possible (in $/unit) for the scope of operating services they engaged in. Chargeout rates were collected for both softwood products and hardwood products. Chargeout rates were asked for road construction and maintenance, felling, delimbing, forwarding, floating, loading, trucking, bucking/sorting, overheads, marketing, supervision and other potential services. This chargeout rate information was then stratified by Region and summarized to come up with regional average chargeout rates for each of the operating services mentioned. If a participant did not have a chargeout rate for a particular service the null response was not considered in the average rate calculation. Operating Costs incurred included the following:

Operating Costs = [Cost to Roadside]+[Floating]+[Road Allowance]+[Trucking and Loading]+[Overhead and Profit]]

Cost to Roadside - Very few responses were obtained for felling rates. Instead the majority of participants gave a combined felling and delimbing rate (or harvesting rate). In some cases a combined felling, delimbing and forwarding rate was given (or a roadside rate). This caused the authors to add individual responses to felling, delimbing and forwarding together to get a Cost to Roadside rate for each respondent. In the event that only one rate was given, such as forwarding and no felling, the rate provided could not be used as it could not be totaled to give an accurate Cost to Roadside rate. A simple Excel routine was developed to detect this and discount it. Responses to felling, delimbing and forwarding were given in $/cord, $/Mfbm and $/tonne and could easily be converted to $/$m^3$ for standardization.

Floating - Also, added to the Cost to Roadside were any floating rates provided by the participants. Only 41% of the participants provided a floating rate while most stated that floating was included in their chargeout rates for felling, delimbing and forwarding. It was for this reason that floating, when provided, was included in the Cost to Roadside.

Road Allowance - The majority of responses to road construction and maintenance costs (road allowance) were expressed in $/unit volume. Wherever possible responses were standardized to $/$m^3$ and these were the values used to calculate the regional average road allowance.

Trucking and Loading – Almost all participants who provided a response, gave a trucking rate that included loading. Responses were generally given in $/cord, $/Mfbm and $/tonne and could easily be converted to $/$m^3$ for standardization. In the event that a respondent did give separate rates, the two numbers were totaled to give a combined Trucking and Loading Cost. All Trucking and Loading values were then totaled and an average was derived.

It should be noted that an average of 70% of the participants did not provide Trucking and Loading information stating that the mills or buyer looks after the trucking. In these

cases the participant would receive a roadside price and didn't know what the trucking rates were.

Overhead – The Overhead cost was determined from the setup survey by combining individual responses to Overhead plus Supervision rates. The majority of responses were expressed in $/m^3$. However, some responses were given in simple dollar values. Wherever possible responses were standardized to $/m^3$ and these were the values used to calculate the regional average overhead costs.

Profit – Profit was handled on a product by product basis and was determined to be a percentage of the roadside price. Comments made by participants during the face-to-face setup survey lead the authors to this conclusion. For some products, such as pulpwood there was no expectation of profit by many participants. While profit on other products, such as logs and studwood was expected to be sufficient enough to offset the non-profitable products.

The authors applied a 0% profit expectation to softwood pulpwood, hardwood pulpwood, hardwood palletwood and hardwood fuelwood. Often these products were viewed as undesirable byproducts that were a part of the job. All other products, including studwood, spruce logs, fir logs, white pine, hemlock/larch, hardwood logs and hardwood veneer were assigned a profit expectation of 6%. A profit margin of 12% was used in the previous 4 survey calculations, but based on contractor comments, this value is to high for the current market conditions. Profit expectations were applied consistently across all 3 Regions.

The Regional Average Operating Costs Incurred are summarized and presented in Table G.2 for Eastern, Table G.3 for Central and Table G.4 for Western.

Table G.2: Regional Average Operating Costs Incurred in the Eastern Region ($/m^3).

Eastern	Hardwood	Softwood
Roadside Cost	$25.68	$23.40
Floating	$0.33	$0.51
Road Allowance	$1.26	$1.02
Trucking/Load	$11.01	$11.42
Overhead	$4.87	$4.62

Table G.3: Regional Average Operating Costs Incurred in the Central Region ($/m^3).

Central	Hardwood	Softwood
Roadside Cost	$23.76	$21.25
Floating	$0.51	$0.45
Road Allowance	$1.51	$1.24
Trucking/Load	$11.40	$9.23
Overhead	$5.85	$5.04

Table G.4: Regional Average Operating Costs Incurred in the Western Region ($/m^3).

Western	Hardwood	Softwood
Roadside Cost	$24.77	$22.30
Floating	$1.47	$1.26
Road Allowance	$1.82	$1.18
Trucking/Load	$10.34	$ 8.77
Overhead	$2.53	$2.19

Appendix H – Normalized and Unmodified Results

The following tables, H.1, H.2 and H.3, present both the normalized results and unmodified results for each Region.

Table H.1: Eastern Region Normalized and Unmodified Stumpage Report
January 1 to December 31, 2008

		Normalized Prices		Unmodified Prices	
Products	Values	Current Period	Rating	Current Period	Rating
Softwood G1 Pulpwood (N=23)	SDA	$13.90		$14.29	
	Mean	$11.45	Excellent	$11.44	Very Good
	SDB	$9.01		$8.60	
Softwood G2 Pulpwood (N=10)	SDA	$8.90		$8.67	
	Mean	$5.48	Acceptable	$5.40	Acceptable
	SDB	$2.05		$2.14	
Softwood Studwood (N=17)	SDA	$20.69		$20.75	
	Mean	$15.81	Very Good	$15.96	Very Good
	SDB	$10.13		$11.17	
Spruce Sawlog (N=8)	SDA	$20.90		$20.48	
	Mean	$15.51	Good	$15.11	Good
	SDB	$10.13		$9.74	
Fir Sawlog (N=3)	SDA	$19.66		$19.38	
	Mean	$15.80	Good	$15.46	Good
	SDB	$11.93		$11.53	
White Pine Sawlog (N=1)	SDA	n/a		n/a	
	Mean	$15.32	n/a	$15.32	n/a
	SDB	n/a		n/a	
Hemlock / Larch Sawlog (N=3)	SDA	$16.68		$16.68	
	Mean	$10.39	Unacceptable	$10.55	Unacceptable
	SDB	$4.10		$4.41	
Hardwood Pulp/Fuelwood (N=13)	SDA	$10.82		$10.61	
	Mean	$8.24	Very Good	$7.93	Very Good
	SDB	$5.66		$5.25	
Hardwood Palletwood (N=2)	SDA	$12.10		$10.38	
	Mean	$11.09	Very Good	$10.38	Excellent
	SDB	$10.08		$10.38	
Hardwood G1 Sawlog (N=6)	SDA	$40.46		$36.16	
	Mean	$28.32	Acceptable	$26.54	Good
	SDB	$16.17		$16.92	
Hardwood G2 Sawlog (N=3)	SDA	$28.56		$23.87	
	Mean	$21.69	Acceptable	$19.90	Good
	SDB	$14.81		$15.94	
Hardwood Veneer (N=1)	SDA	n/a		n/a	
	Mean	$88.59	n/a	$77.88	n/a
	SDB	n/a		n/a	

RATINGS (R)

Coefficient of Variance	Estimate Quality
CV <= 5%	Excellent
5% < CV <= 10%	Very Good
10% < CV <= 15%	Good
15% < CV <= 20%	Acceptable
20% < CV <= 25%	Poor
CV > 25%	Unreliable

Other	Meaning
N	Sample Size
n/a	Not Available
SDA	Standard Deviation Above
SDB	Standard Deviation Below

Note: Approximately 68.2% of the reported values for each of the products in the table above fell between SDA and SDB.

Table H.2: Central Region Normalized and Unmodified Stumpage Report
January 1 to December 31, 2008

		Normalized Price		Unmodified Price	
Products	Values	Current Period	Rating	Current Period	Rating
Softwood G1 Pulpwood (N=17)	SDA	$11.93		$11.82	
	Mean	$9.31	Very Good	$9.27	Very Good
	SDB	$6.70		$6.71	
Softwood G2 Pulpwood (N=17)	SDA	$7.37		$7.22	
	Mean	$4.55	Acceptable	$4.50	Good
	SDB	$1.73		$1.79	
Softwood (SPF) Studwood (N=18)	SDA	$24.22		$23.92	
	Mean	$19.05	Very Good	$18.79	Very Good
	SDB	$13.87		$13.67	
Spruce Sawlog (N=16)	SDA	$30.11		$27.82	
	Mean	$22.39	Very Good	$23.84	Excellent
	SDB	$14.66		$19.86	
Fir Sawlog (N=5)	SDA	$30.96		$28.90	
	Mean	$23.79	Good	$22.43	Good
	SDB	$16.63		$15.96	
White Pine Sawlog (N=1)	SDA	n/a		n/a	
	Mean	$9.80	n/a	$9.01	n/a
	SDB	n/a		n/a	
Hemlock / Larch Sawlog (N=4)	SDA	$21.79		$23.05	
	Mean	$14.00	Unacceptable	$14.74	Unacceptable
	SDB	$6.21		$6.42	
Hardwood Pulp/Firewood (N=16)	SDA	$12.49		$12.64	
	Mean	$9.17	Very Good	$9.15	Very Good
	SDB	$5.85		$5.66	
Hardwood Palletwood (N=0)	SDA	n/a		n/a	
	Mean	No data	n/a	No Data	n/a
	SDB	n/a		n/a	
Hardwood G1 Sawlog (N=5)	SDA	$21.28		$22.70	
	Mean	$16.26	Good	$16.88	Acceptable
	SDB	$11.25		$11.07	
Hardwood G2 Sawlog (N=1)	SDA	n/a		n/a	
	Mean	$9.33	n/a	$10.38	n/a
	SDB	n/a		n/a	
Hardwood Veneer (N=1)	SDA	n/a		n/a	
	Mean	$9.33	n/a	$10.38	n/a
	SDB	n/a		n/a	

RATINGS (R)

Coefficient of Variance	Estimate Quality
CV <= 5%	Excellent
5% < CV <= 10%	Very Good
10% < CV <= 15%	Good
15% < CV <= 20%	Acceptable
20% < CV <= 25%	Poor
CV > 25%	Unreliable

Other	Meaning
N	Sample Size
n/a	Not Available
SDA	Standard Deviation Above
SDB	Standard Deviation Below

Note: Approximately 68% of the reported values for each of the products in the table above fell between SDA and SDB.

Table H.3: Western Region Normalized and Unmodified Stumpage Report
January 1 to June 30, 2008

		Normalized Prices		Unmodified Prices	
Products	Values	Current Period	Rating	Current Period	Rating
Softwood) G1 Pulpwood (N=10)	SDA	$9.38		$8.68	
	Mean	$6.63	Good	$6.19	Good
	SDB	$3.88		$3.70	
Softwood G2 Pulpwood (N=3)	SDA	$1.60		$1.68	
	Mean	$1.27	Acceptable	$1.26	Acceptable
	SDB	$0.94		$0.83	
Softwood Studwood (N=6)	SDA	$28.51		$25.18	
	Mean	$22.99	Very Good	$21.33	Very Good
	SDB	$17.47		$17.48	
Spruce Sawlog (N=14)	SDA	$29.34		$26.96	
	Mean	$24.63	Very Good	$22.95	Excellent
	SDB	$19.93		$18.93	
Fir Sawlog (N=10)	SDA	$27.93		$25.15	
	Mean	$23.98	Very Good	$22.29	Excellent
	SDB	$20.03		$19.44	
White Pine Sawlog (N=9)	SDA	$25.88		$24.25	
	Mean	$18.77	Good	$17.71	Good
	SDB	$11.65		$11.17	
Hemlock / Larch Sawlog (N=4)	SDA	$21.03		$21.56	
	Mean	$16.79	Good	$16.46	Acceptable
	SDB	$12.55		$11.36	
Hardwood Pulpwood (N=11)	SDA	$15.86		$14.40	
	Mean	$11.42	Good	$10.50	Good
	SDB	$6.97		$6.60	
Hardwood Palletwood (N=0)	SDA	n/a		n/a	
	Mean	No Data	n/a	No Data	n/a
	SDB	n/a		n/a	
Hardwood G1 Sawlog (N=2)	SDA	$62.47		$57.43	
	Mean	$34.66	Unreliable	$31.39	Unreliable
	SDB	$6.85		$5.35	
Hardwood G2 Sawlog (N=1)	SDA	n/a		n/a	
	Mean	$14.99	n/a	$12.98	n/a
	SDB	n/a		n/a	
Hardwood Veneer (N=0)	SDA	n/a		n/a	
	Mean	No Data	n/a	No Data	n/a
	SDB	$n/a		n/a	

RATINGS (R)

Coefficient of Variance	Estimate Quality
CV <= 5%	Excellent
5% < CV <= 10%	Very Good
10% < CV <= 15%	Good
15% < CV <= 20%	Acceptable
20% < CV <= 25%	Poor
CV > 25%	Unreliable

Other	Meaning
N	Sample Size
n/a	Not Available
SDA	Standard Deviation Above
SDB	Standard Deviation Below

Note: Approximately 68% of the reported values for each of the products in the table above fell between SDA and SDB.