

BRITISH COLUMBIA FOREST SERVICE

COMPARATIVE VALUE TIMBER PRICING

SEPTEMBER 15, 1987

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INTRODUCTION

On July 10, 1987 the Ministry of Forests and Lands released a proposal to implement a new timber pricing system in British Columbia on September 1. The Ministry engaged the firm of Deloitte Haskins and Sells to present the proposal throughout the province and to meet with anyone who wished to discuss the proposal. Private meetings were held with ninety-seven corporations, associations and individuals. Many others attended open meetings in all six Forest Regions.

The views and observations received by Deloitte Haskins and Sells were consolidated and provided to the Ministry. Implementation of the new pricing system was delayed for one month in order to permit evaluation of each of the respondents' suggestions and modification of the original proposal.

The Ministry will now proceed with implementing the new Comparative Value Pricing System on most major tenures beginning October 1, 1987. New royalty rates and prices for some miscellaneous forest products will be set at the same time.

This paper outlines the revised Comparative Value Pricing System, explains each of its elements and provides some of the technical parameters that will be employed.

COMPARATIVE VALUE PRICING SYSTEM - OVERVIEW

Comparative Value Pricing is a means of charging specific prices according to the relative value of each stand of timber being sold. Comparative Value Prices will be established so that the total stumpage revenue collected approximates the stumpage portion of an overall forest revenue objective set by government.

The relative value of each stand will depend upon estimates of both the total selling price of products which could be generated from the stand, and the cost of producing them. The difference between the selling price and the cost of production is termed the stand's "Value Index".

Two market sensitive "Base Rates" will be established for the province, one for the Coast Selling Price Zone ("the Coast"), another for the remainder of the province ("the Interior"). The "Value Index" of each appraised timber stand will be estimated and compared to the average of the Value Indices of all stands. The price charged for each stand will be more or less than the Base Rate, depending upon whether the appraised stand is more or less valuable than the average. No price may be less than the Prescribed Minimum Rate, which will be \$0.25/m³ throughout the province.

Timber for which appraised rates are calculated will be sold on a stand-as-a-whole basis. One price will be determined for all appraised timber on each cutting authority, and appraised rates will be adjusted quarterly.

Reviews of provincial timber pricing will take place periodically. Base Rates may be adjusted as a result of such major reviews.

Most timber will be sold at Comparative Value prices determined through the appraisal process. A number of miscellaneous forest products will not be appraised, but instead will continue to be sold at rates set out in schedules incorporated in Appraisal Manuals.

Upset prices for Small Business Enterprise Program timber sales will be set at or above the Ministry's direct costs of administering such sales. Smaller sales may be sold without appraisal. Sales of more than 10 000m³ will be appraised.

INITIAL AVERAGE RATES

The provincial objective for forest revenue will be broadly related to the gross sales value of products produced by the forest industry. Provincial forest revenue is currently estimated at \$580 million per year, which represents 6.2% of the forest industry's 1986 sales of \$9.3 billion. The revised timber pricing structure will raise provincial revenues to \$680 million at current market volumes and prices.

A minimum provincial revenue base has been established, such that forest revenues will not be less than the forest management related costs of the Ministry of Forests and Lands.

In addition to stumpage revenues from non-competitive timber sales, forest revenue includes stumpage from competitive sales, royalty, rental, and a number of other items. Deducting estimated revenue from these other sources, from the \$680 million total, yields an objective for non-competitive stumpage revenues of \$547 million.

In the forty-five year period 1942 through 1986/87, the average Coast stumpage rate was approximately \$2.00/m³ higher than the average Interior rate, measured in 1987 dollars. This differential has been retained in establishing the initial average rates for the Coast and the Interior.

Based on the stumpage bearing volumes harvested in the period from July 1986 through June 1987 and estimates of stumpage bearing volumes which are expected to be sold at other than appraised rates, initial average rates for the Coast and Interior have been derived. These rates are \$10.59/m³ for the Coast and \$8.59/m³ for the Interior.

DETERMINATION OF CUTTING AUTHORITY STUMPAGE RATES

The stumpage rate for each cutting authority (timber mark) will be determined as follows:

$$IR = BR + (VI - \overline{VI})$$

where IR = Indicated Rate for the appraised timber

BR = Base Rate for the Coast or Interior as appropriate

VI = Cutting Authority Value Index

\overline{VI} = Mean Value Index for the Coast or Interior as appropriate

All terms are expressed as \$/m³.

The Indicated Rate will then be compared to the Prescribed Minimum Rate. The Upset Rate will be the higher of the two. Any Bonus Bid will be added to the Upset Rate to determine the Final Rate charged.

DETERMINATION OF BASE RATE

Some cutting authorities will be charged the Prescribed Minimum Rate. Base rates which are less than the initial average rates, must therefore be used in the stumpage rate formula to avoid having the average of the individual rates exceed the planned average rates. The Ministry's Valuation Branch will determine the Coast and Interior Base Rates so that this potential upward bias is avoided.

DETERMINATION OF VALUE INDEX (VI)

The stumpage price to be charged on each cutting authority will be keyed to the estimated "Value Index" of the stand to be harvested. The Value Index is defined as the Selling Price less the Operating Cost, both of which are estimates expected for an average operator in that stand. The formula to be used is:

$$VI = SP - OC$$

Where VI = Value Index for the cutting authority.

SP = estimated prorated Selling Price for the merchantable species and grades appraised on the cutting authority.

OC = estimated prorated Operating Cost applicable to the timber being appraised.

Attachments 1 and 2 outline the method of calculating a stand selling price and operating cost.

The VI, SP and OC are all expressed as \$/m³.

Selling Price Estimates - The estimated selling price for each species will be based upon the six-month market value schedules prepared by Valuation Branch. The cut-off dates for market value input will be the 15th of February, May, August, and November each year.

Selling price estimates will continue to be calculated as specified in the Coast and Interior Appraisal Manuals. The market value schedules effective for the period October 1 to December 31, 1987 are included as Attachments 3 and 4 to this paper. It should be noted that only one schedule of log market values will be used. Discounting of selling prices for some small operators in the Interior will be discontinued.

In the Interior, lumber and chip recovery factors and chip market values will be updated on all appraised cutting authorities on October 1. The update factors and new chip market values are shown in Attachment 5 to this paper.

Initially chip market values will be estimated on the same geographical basis as lumber market values. The Ministry will commence work immediately to refine the chip value zonation in consultation with licensees.

There will be no immediate change to the current method of applying stud market values. However, the Ministry will initiate discussions with licensees in order to develop a method and timetable for modifying the application of stud values.

Operating Cost Estimates - Costs of logging on the Coast, and of logging and milling in the Interior, will continue to be estimated in the current manner and according to schedules and formulae contained in the relevant Appraisal Manual (including trending). The Ministry will continue to revise cost estimates periodically in order to reflect up-to-date data and evolving procedures.

Where separate species cost estimates are now derived, they will be prorated according to the estimated volumes to be harvested, so that one average operating cost will be estimated for each cutting authority (timber mark) appraised.

In the Interior, all existing milling cost estimates will be updated on October 1 in order to parallel the updating of lumber recovery factors. The adjusting factor is shown in Attachment 5.

Estimates of the cost of Basic Silviculture will be included concurrent with the termination of Section 88 funding for this work.

DETERMINATION OF MEAN VALUE INDEX (\overline{VI})

The Mean Value Index (\overline{VI}) is the volume-weighted average of the Value Indices for all cutting authorities on which harvesting has taken place during a specified period. It is the benchmark against which individual stands of timber will be compared. The Mean Value Index for the Coast and the corresponding figure for the Interior will be recalculated quarterly by Valuation Branch according to the following formula.

$$\overline{VI} = \frac{\text{Sum of (Cutting Authority VI x Cutting Authority Volume)}}{\text{Sum of Cutting Authority Volumes}}$$

Where \overline{VI} = Mean Value Index (Coast or Interior)

VI = Value Index

Volume = appraised volume billed in the previous twelve-month period.

The cut-off dates for the rolling twelve-month periods will be the end of January, April, July and October each year. Only Tree Farm Licences, Forest Licences, Timber Sale Harvesting Licences, Watershed Licences, and Timber Sale Licences which specify an allowable annual cut will initially be included in the calculation of Mean Value Indices.

For stumpage prices effective from October 1 to December 31, 1987 the Mean Value Indices will be:

	<u>Area</u>	
	<u>Coast</u>	<u>Interior</u>
Mean Value Index (\$/m ³)	10.09	7.72

Attachment 6 is an example of a stumpage rate determination using all of the appraisal elements.

MARKET SENSITIVITY - QUARTERLY ADJUSTMENTS

The B.C. forest industry is subject to wide and unpredictable swings in product prices. To ensure that the prices charged for timber under the Comparative Value Pricing system are market responsive, rates will be adjusted quarterly to reflect movements in lumber prices. These adjustments will occur on January 1, April 1, July 1, and October 1 each year.

The quarterly adjustments will be based on the movement in the industrial product price index for B.C. softwood lumber published by Statistics Canada.¹ This is a composite price index reflecting the various types of lumber produced by sawmills in B.C. for all markets. The historical variation in the B.C. softwood lumber price index is shown in Attachment 7.

Initially, the same index will be used to adjust average stumpage rates for both Coast and Interior. Consideration will be given to using separate indices for the two geographic regions if Statistics Canada is able to compute a suitable disaggregation of the composite index.

The first adjustment occurs on January 1, 1988. The adjustment factor will be computed as the ratio of the average of the index for the three month period ending October 1987 to the average value of the index for the three month period ending July 1987. Subsequent quarterly adjustment factors will be based on averages for the three month periods ending January, April, July and October each year.

As part of each quarterly adjustment, a new Value Index will be calculated for each cutting authority and new Mean Value Indices will be computed. Individual rates will then be determined by again comparing individual Value Indices to the Mean Value Indices using the procedure outlined above.

Reviews of the overall pricing of provincial timber will take place periodically, taking into account the need to ensure a healthy, viable industry in British Columbia and a continuing fair share of value to the people of the province for their timber resource. These periodic reviews will occur as warranted. A periodic review may result in revised Base Rates.

¹Details regarding industrial product price indexes can be found in the publication, Industrial Product Price Indexes, 1981 = 100, Concepts and Methods (Statistics Canada catalogue no. 62-556).

PRESCRIBED MINIMUM RATE

The Minimum Stumpage Rate Regulation (B.C. Reg. 560/78) will be replaced effective October 1, 1987. The new Prescribed Minimum Rate will be \$0.25/m³ throughout the Province.

There will be no reduced minimum rate for any category of timber, except by Order-in-Council.

MISCELLANEOUS FOREST PRODUCTS

Miscellaneous forest products, including Grade 04 logs in the Interior, will normally be sold at schedule rates included in the appropriate Appraisal Manual. The rate for Grade 04 logs will be \$0.50/m³. The Regional Manager may at any time override the schedule rates by means of a cutting authority appraisal.

The Ministry will undertake, in consultation with licensees, to replace the Grade 04 category with a Lumber Reject log classification and an appropriate schedule rate for such logs. The Scaling Regulation and scaling procedures will be amended as necessary to accommodate a Lumber Reject definition.

ROYALTY RATES

Royalty rates will be specified by regulation effective October 1, 1987. The new rates will average approximately \$5.40/m³ compared to an average of approximately \$1.35/m³ charged in 1986. This will leave royalty rates at roughly one-half of initial Comparative Value stumpage rates.

APPLICABILITY OF NEW TIMBER PRICES AND EFFECTIVE DATES

New prices based upon Comparative Value Pricing will be charged for timber scaled on or after the following dates.

<u>Form of Agreement</u>	<u>Effective Date</u>
<u>Existing Cutting Authorities</u>	
Group 1) Tree Farm Licence Forest Licence Timber Sale Harvesting Licence Watershed Licence Timber Sale Licence (with AAC) Timber Licence (Stumpage-bearing) R/W Permit Road Permit (Except as noted in Group 2)	October 1, 1987
Group 2) Timber Sale Licence (without AAC) ¹ Licence-to-Cut Woodlot Licence Active Cutting Authorities in Group 1 when any species has been deliberately set at the prescribed minimum rate by the Regional Manager.	Cutting authority appraisal expiry date after December 31st, 1987. Until then, rates will be fixed at the September 1, 1987 level.
Group 3) SBEP Timber Sale Licence with fixed rate election	Upon extension of harvesting authority at normal expiry date, at the Regional Manager's discretion.

New Cutting Authorities

Group 4) All new cutting authorities issued after September 30, 1987	Effective date of appraisal
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¹ Other than SBEP fixed rate election

ATTACHMENT 3

LOG AND LUMBER MARKET VALUES SYSTEM

AVERAGE LOG VALUES FOR THE SIX MONTHS

ENDED AUGUST 15, 1987

EFFECTIVE FOR STUMPAGE ADJUSTMENT PURPOSES: October 1, 1987

EFFECTIVE FOR NEW SALES ON OR AFTER: October 1, 1987

EFFECTIVE FOR ALL LOG - BASED APPRAISALS

Average Log Market Values (\$/m³)

SPECIES

GRADE	BAL-HEM	CEDAR	CYPRESS	FIR	SPRUCE	PINE
A				218.37		
B				145.40		
C	60.54			75.69	99.08	
D	79.33	135.86	528.66	169.77	262.18	46.58
E			542.63		251.54	
F		138.70	418.52		188.91	
G			306.24		101.94	
H	56.27	80.27	318.09	62.52	88.09	38.22
I	48.82	63.37	235.11	51.58	59.14	28.24
J	35.90	44.89	74.93	35.51	35.99	17.87
K		69.36				
L		58.16				
M		43.29				
X	29.15	20.97	71.96	25.67	28.76	16.24
Y	14.81	0.08	7.76	14.89	1.28	7.50

ATTACHMENT 4

LOG AND LUMBER MARKET VALUES SYSTEMAVERAGE LUMBER VALUES FOR THE SIX MONTHSENDED AUGUST 15, 1987EFFECTIVE FOR STUMPAGE ADJUSTMENT PURPOSES: October 1, 1987EFFECTIVE FOR NEW SALES ON OR AFTER: October 1, 1987Average Lumber Values (\$/Mbm)

<u>Selling Price</u> <u>Zone</u>	<u>Species</u>								
	<u>BA</u>	<u>CE</u>	<u>FI</u>	<u>HE</u>	<u>LA</u>	<u>PL</u>	<u>PW</u>	<u>PY</u>	<u>SP</u>
2	240	366	221	206	221	237	404	210	240
3	234	358	208	196	208	220	396	199	234
4	214	354	201	191	201	215	392	193	214
5	254	336	-	253	-	220	-	-	254
6	253	336	-	253	-	220	-	-	254
7	-	-	224	-	224	-	-	-	-
8	-	-	204	-	204	-	-	-	-
9	209	-	-	-	-	201	-	-	209
12, 17	189	366	188	206	188	188	404	210	189
13	189	358	188	196	188	188	396	199	189
14, 18	176	354	175	191	175	175	392	193	176
30	220	366	208	206	208	217	318	202	220
31	216	358	200	196	200	207	313	195	216

<u>LEGEND:</u>	<u>Selling Price</u> <u>Zone</u>	<u>Description</u>	<u>Selling Price</u> <u>Zone</u>	<u>Description</u>
	2	Southern Interior	12	Southern Interior (Studs)
	3	Smithers-Pr George	13	Smithers-Pr. George (Studs)
	4	Cariboo	14	Cariboo (Studs)
	5	Skeena	17	Southern Interior (dry belt fir studs)
	6	Skeena		
	7	Southern Interior	18	Cariboo (dry belt fir studs)
	8	Cariboo (dry belt fir)	30	Riverside
	9	Ft. Nelson-Peace	31	McBride

<u>SPECIES:</u>			
	BA	-	Balsam
	CE	-	Cedar
	FI	-	Fir
	HE	-	Hemlock
	LA	-	Larch
	PL	-	Lodgepole Pine
	PW	-	White Pine
	PY	-	Yellow Pine
	SP	-	Spruce

LUMBER RECOVERY UPDATE FACTORS

Effective October 1, 1987

<u>Species</u>	<u>Update Factor</u>
Spruce	1.192
Lodgepole Pine	1.218
Balsam	1.214
Douglas-fir, Larch	1.173
All Others	1.097

Example

<u>Lodgepole Pine</u>	<u>Cruise LRF</u>	x	<u>Update Factor</u>	=	<u>LRF used in Appraisal</u>
Small Log	167		1.218		203
Large Log	207		1.218		252

CHIP YIELD DERIVATION

Effective October 1, 1987

Small Logs:

$$\text{Chip Yield (BDU/m}^3\text{)} = [398 - \text{Adjusted LRF}] \times \text{Species Yield Factor}$$

Large Logs:

$$\text{Chip Yield (BDU/m}^3\text{)} = [377 - \text{Adjusted LRF}] \times \text{Species Yield Factor}$$

ATTACHMENT 5 CONT'D

MILLING COST UPDATE FACTOR

Effective October 1, 1987

Because all Lumber Recovery Factors have been updated to reflect the most recent survey data (ie. to mid-1985), milling cost estimates must also be updated to mid-1985. The update factor is 1.152. All milling cost estimates in current appraisals will be multiplied by 1.152 prior to deriving value indices.

EXAMPLE

<u>Milling Cost Estimate</u> <u>Now in Appraisal</u> <u>(\$/m³)</u>	x	<u>Update</u> <u>Factor</u>	=	<u>Milling Cost Estimate</u> <u>Effective October 1</u> <u>(\$/m³)</u>
18.66		1.152		21.50
31.01		1.152		35.72

INTERIOR CHIP VALUES

(\$/BDU)

Effective October 1, 1987

Selling Price

Species

<u>Zone</u>	<u>Cedar</u>	<u>All Others</u>
2	40	50
3, 13, 31	40	53
4	40	61
5, 6	40	59
7, 12, 30	40	50
8, 14	40	61
9	40	39

ATTACHMENT 6

EXAMPLE OF STUMPAGE RATE DETERMINATION

IF:

		<u>\$/m³</u>
Selling Price	=	49.33
Operating Cost	=	<u>47.00</u>
Value Index (VI)	=	2.33
Prescribed Minimum Rate	=	0.25
Base Rate (BR)	=	8.22
Mean Value Index (\overline{VI})	=	7.72
Bonus Bid	=	1.10

THEN:

$$\begin{aligned}\text{Indicated Rate} &= \text{BR} + (\text{VI} - \overline{\text{VI}}) \\ &= 8.22 + (2.33 - 7.72) \\ &= \$2.83/\text{m}^3\end{aligned}$$

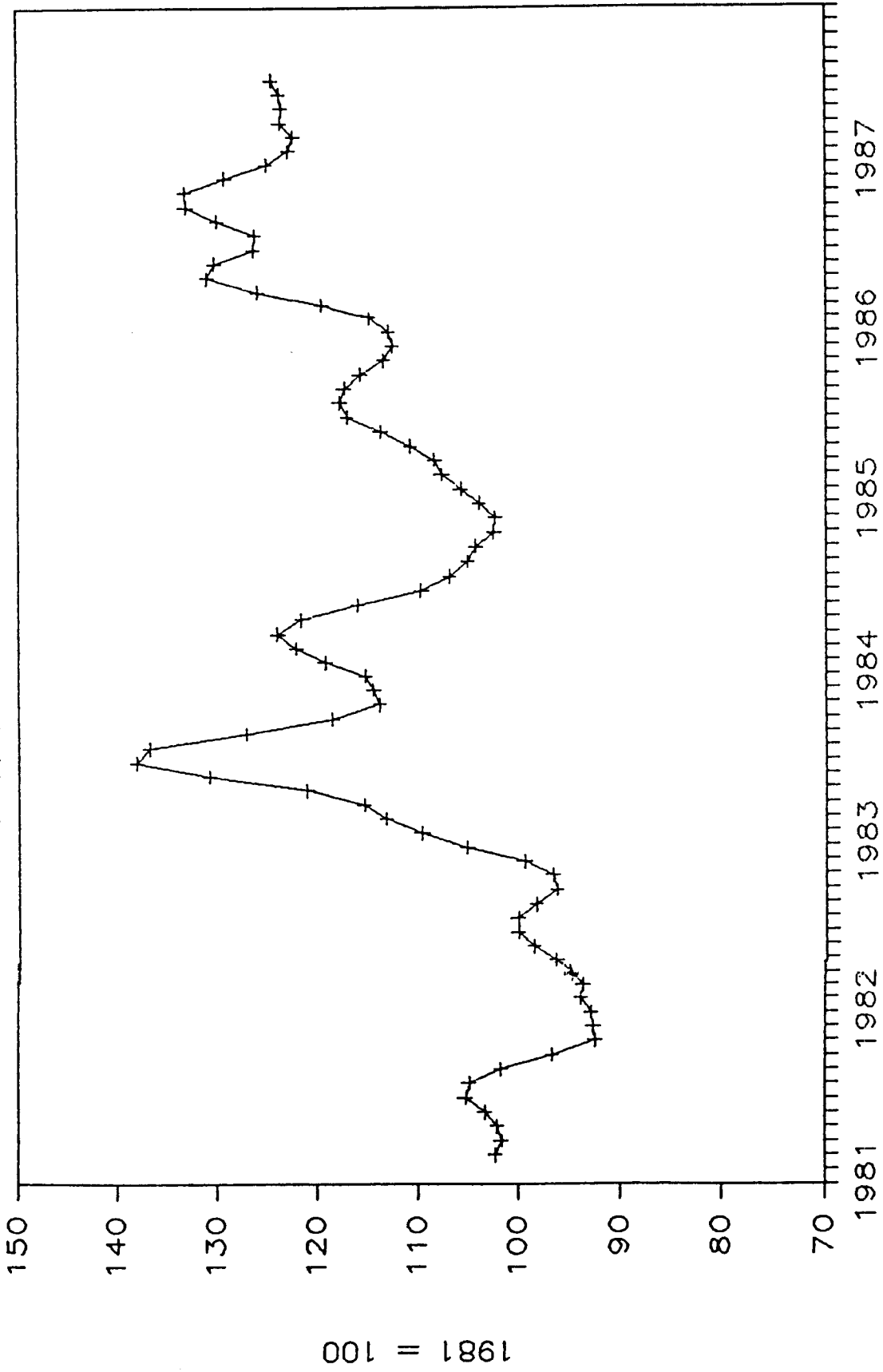
Since $\$2.83/\text{m}^3$ is greater than $\$0.25/\text{m}^3$

$$\begin{aligned}\text{Upset Rate} &= \$2.83/\text{m}^3 \\ \text{Final Rate} &= 2.83 + 1.10 \\ &= \underline{\underline{\$3.93/\text{m}^3}}\end{aligned}$$

All appraised timber on this cutting authority will be subject to a stumpage rate of $\$3.93/\text{m}^3$ until the next quarterly adjustment.

SOFTWOOD LUMBER PRICE INDEX

3-MONTH MOVING AVERAGE



Y E A R