Province of British Columbia

Ministry of Forests

MEMORANDUM

File: 195-30/CAPP

December 30, 1998

To: Regional Managers

From: The Honourable David Zirnhelt
Minister of Forests

I hereby approve Amendment No. 4 to the *Coast Appraisal Manual*, and attach a copy of it for your use. The following sections are amended:

Section 1.5	Market pricing system.
Section 1.6 and 1.7	Renumbered and market pricing system.
Section 2.1 (5)	Market pricing system.
Section 5.3	Timber licence cutting authority appraisals and the mean value index and base rate calculation.
Section 6.2	Small Scale Salvage Initiative.
Section 6.4	Market pricing system.
Chapter 7	Market pricing system.

Section 11 (3) (b) of the *British Columbia Forest Renewal Act* applies to the amendment to Section 5.3, above.

This amendment will come into force on January 1, 1999. Further amendments or revisions to this manual require my approval.

David Zirnhelt
Minister

Attachment

pc: Bill Howard, Director, Revenue Branch

All Subscribers, *Coast Appraisal Manual*

Printed on Recycled Paper

BRITISH COLUMBIA Ministry of Forests

MANUAL REVISION TRANSMITTAL

FOR FURTHER INFORMATION CONTACT:

George Silvestrini
Sr. Timber Pricing Forester (Coast)
Revenue Branch
Ministry of Forests
Victoria, B.C.
V8W 3E7
Phone: 387-8377
E-Mail: george.silvestrini@gems9.gov.bc.ca
FAX: 387-5670

MANUAL TITLE
Coast Appraisal Manual

REVISION No.	**ISSUE DATE**
Amendment No. 4	January 1, 1999

MANUAL CO-ORDINATOR
Judy Laton
Revenue Branch

AUTHORIZATION (Name, Title)
W. Howard
Director, Revenue Branch

Please make the following changes to your copy of the above Ministry manual. Please insert the following specified pages and **file this notice** immediately after the Amendments Tab.

ACTION (Remove/Insert)	(VOL.) CHAPTER-SECTION-SUBJECT TABLE OF CONTENTS	PAGE(S)	COMMENTS
INSERT	Parameters		Behind Parameters Tab
INSERT	Letter from Minister and Manual Revision Transmittal		Behind Amendments Tab
INSERT	Coast Appraisal Order Form		Behind Amendments Tab until submitted for order of new manual
REMOVE	Table of Contents	i - iv	
INSERT	Table of Contents	i - vi	
REMOVE	Chapter 1	5 - 8	
INSERT	Chapter 1	5 - 10	
REMOVE	Chapter 2	1 - 2	
INSERT	Chapter 2	1 - 2	
REMOVE	Chapter 4	3 - 4	
INSERT	Chapter 4	3 - 4	
REMOVE	Chapter 5	3 - 4	
INSERT	Chapter 5	3 - 4	
REMOVE	Chapter 6	3 - 8	
INSERT	Chapter 6	3 - 8	
INSERT	Chapter 7	1 - 10	New Chapter - insert after Chapter 6
REMOVE	Index	1 - 4	
INSERT	Index	1 - 4	

Table of Contents

Terms and Conventions Used in this Document

1 Introduction

1.1 Terms of Reference 1-2
1.2 Area of Application 1-3
1.3 Cutting Authority 1-4
1.3.1 Cutting Authority Area 1-4
1.4 Responsibility for Stumpage 1-5
1.5 Market Pricing System 1-6
1.6 Comparative Value Timber Pricing 1-7
1.7 Stumpage Adjustments 1-9

2 Appraisal Principles and Procedures

2.1 Types of Determination 2-2
2.2 Time Schedule - Appraisals and Reappraisals 2-3
2.3 Reappraisal 2-5
2.4 Fixed Stumpage Rate and Extensions of Term 2-9
2.5 Point of Appraisal 2-11
2.6 Calculation Conventions 2-12
2.7 Immature Coniferous Timber 2-13

3 Average Selling Price Estimation

3.1 Average Log Market Value (AMV) Determination 3-2
3.2 Log Grade Percentages 3-3
3.2.1 Billing History Record 3-3
3.2.2 Log Grade Percentage Criteria 3-4
3.2.3 Source of Log Grade Percentage for Each Cutting Authority 3-6
3.2.3.1 Log Grade Percentages for a Cutting Authority Within the Geographic Boundaries of a Tree Farm Licence 3-6
3.2.3.2 Log Grade Percentages for a Cutting Authority Within a Timber Supply Area 3-7
3.2.4 Damaged Timber 3-9
3.3 Calculation of Stand Selling Price (SP) 3-10
3.3.1 Low Volume Cypress Exception 3-11

4 Operating Cost Estimation

4.1 Cost Estimates 4-2
4.1.1 Specified Operations 4-3
4.2 Appraisal Data Requirements 4-4
4.3 Development 4-5
4.3.1 Development Cost Categories 4-6
4.3.1.1 Development Cost Allocation 4-8
4.3.1.1.1 Development Cost Estimates on Crown Lands 4-9
4.3.1.1.2 Development Cost Estimates for Full Appraisal on Timber Licence (TL) Cutting Authorities 4-9
4.3.1.1.3 Development Cost Estimates on Private Land 4-10
4.3.1.1.4 Existing Roads and Structures 4-10
4.3.1.1.5 Extended Road Amortization 4-11
4.3.2 Tabular Road and Bridge Cost Estimates 4-12
4.3.2.1 Subgrade Construction 4-12
4.3.2.2 Drainage Structures 4-16
4.3.2.2.1 Log Bridges 4-16
4.3.2.2.2 Permanent or Portable Bridges 4-16
4.3.2.2.3 Culverts 4-17
4.3.2.3 Additional Stabilizing Material 4-19
4.3.3 Detailed Engineering Cost Estimates 4-22
4.3.3.1 Data Requirements 4-22
4.4 Tree To Truck 4-24
4.4.1 Conventional Logging 4-24
4.4.2 Helicopter Logging 4-25
4.5 Log Transportation 4-27
4.5.1 Truck Hauling 4-27
4.5.2 Water Transportation 4-28
4.5.2.1 Dump, Sort, Boom and Scale 4-28
4.5.2.2 Towing or Barging 4-28
4.5.3 Routine Maintenance and Deactivation 4-31
4.5.4 Road and Land Use Charges 4-31
4.6 Administration and Other Costs 4-33
4.6.1 Overhead 4-33
4.6.2 Woods Run 4-33
4.6.3 Accommodation 4-34
4.6.4 Low Volume Cost Estimate Additive 4-35
4.7 Total Logging Cost Estimate 4-36
4.8 Basic Silviculture 4-37
4.9 Cost Trend 4-38

5 Stumpage Rate Determination

5.1 Indicated Stumpage Rate 5-2
5.2 Value Index 5-3
5.3 Mean Value Index 5-4
5.4 Market Value Indexing 5-5
5.5 Base Rate 5-6
5.6 Calculation of Stumpage Rate 5-7
5.6.1 Calculation of Indicated Stumpage Rate 5-7
5.6.2 Prescribed Minimum Stumpage Rate 5-7
5.6.3 Reserve Stumpage Rate 5-7
5.6.4 Upset Stumpage Rate 5-8
5.6.5 Total Stumpage Rate 5-8

6 Misc. Timber Pricing Policies

6.1 Value Indexes by District and Species 6-2
6.2 Cutting Authorities With 5 000 m^3 or Less Volume 6-3
6.3 Partially Harvested Timber 6-4
6.4 Small Business Forest Enterprise Program (SBFEP) Sales 6-5
6.5 Levies 6-6
6.6 Miscellaneous Stumpage Rates 6-7
6.6.1 Special Forest Products and Other Miscellaneous Rates 6-7
6.6.2 Miscellaneous Stumpage Rates for Timber Licences 6-9

7 Market Pricing System

7.1 Market Pricing System Introduction 7-2
7.2 MPS Principles and Procedures 7-3
7.2.1 Calculation Conventions 7-3
7.2.2 Methodology 7-3
7.3 Log Selling Prices 7-4
7.3.1 Log Grade Percentage 7-4
7.3.2 Calculation of Stand Selling Price 7-4
7.4 MPS Stumpage Calculations 7-5
7.4.1 List of MPS Variables 7-5
7.4.2 Preliminary Upset Stumpage Rate (Step 1) 7-5
7.4.3 Number of Bidders (Step 2) 7-7
7.4.4 Market Stumpage Price (Step 3) 7-8
7.4.5 Upset Stumpage Rate (Step 4) 7-9
7.4.6 Prescribed Minimum Stumpage Rate 7-9
7.4.7 Total MPS Stumpage Rate 7-9
7.5 Deciduous and Miscellaneous Forest Products 7-10

Appendices

Appendix I Equipment and Labour Rates A-2
Appendix II Reconstruction and Replacement A-4
Appendix III Development Cost Allocation A-5
Appendix IV Rock Mass Classification A-6

Index

Tables

Table 3-1: Billing History Record 3-3
Table 4-1: Construction Categories 4-13
Table 4-2: Subgrade Construction Cost Estimate 4-15
Table 4-3: Log Bridge Cost Estimate 4-17
Table 4-4: Culvert Cost Estimate 4-17
Table 4-5: Permanent/Portable Bridge Cost Estimates 4-18
Table 4-6: Additional Loose Stabilizing Material Depths 4-19
Table 4-7: Towing Cost Estimates 4-29
Table 4-8: Barging Cost Estimates 4-30
Table 4-9: District Silviculture Cost Estimates 4-37
Table 4-10: Trend Factor by Effective Date 4-38
Table 5-1 Timber Licence Stumpage Rate Adjustment Schedule 5-8
Table 6-1: Miscellaneous Stumpage Rates 6-8
Table 6-2: Miscellaneous Stumpage Rates for Timber Licences 6-9

This page is intentionally left blank.

1.4 Responsibility for Stumpage

For the purposes of Section 105 of the *Forest Act*, the following employees of the ministry are authorized to determine, redetermine and vary stumpage rates:

- Regional Managers, Regional Appraisal Coordinators or Officers, or other employees authorized by the Regional Manager, and
- Director, Revenue Branch and employees of Revenue Branch.

1.5 Market Pricing System

Market Pricing System (MPS), subject to a minimum stumpage rate, is the basis for determining stumpage rates for timber sale licences awarded under Sections 20 and 21 of the *Forest Act* on or after January 1, 1999.

1.6 Comparative Value Timber Pricing

Comparative Value Pricing (CVP), subject to a minimum stumpage rate, is the basis for determining stumpage rates for all cutting authorities except those specified under Section 1.5. Section 2.1, (2.), (3.) and (4.) provides the methods that are used for specific products and extra ordinary situations.

A method for determining the average stumpage rate for the Coast has been set by the provincial government. The stumpage rate for a cutting authority area is more or less than the Base Rate (see Section 5.5) depending on whether or not the timber in the cutting authority area is more or less valuable than timber from the average cutting authority area. To make that assessment and hence to determine a stumpage rate, the Appraisal Coordinator will typically:

1. Estimate the Average Selling Price of the logs for the cutting authority area (see Chapter 3).

2. Estimate the least Operating Cost (see Chapter 4) for the cutting authority area.

3. Determine the Value Index (see Chapter 5) for the cutting authority area by subtracting the estimated least Operating Cost from the estimated Average Selling Price.

4. Determine the indicated stumpage rate by comparing the Value Index for the cutting authority area with the Coast Mean Value Index and adding the Coast Base Rate (see Chapter 5).

5. Determine the reserve stumpage rate (see Chapter 5) by selecting:

   a. the greater of the indicated stumpage rate or the prescribed minimum stumpage rate, or

   b. for an appraised cutting authority area containing timber licence volume, the greater of the adjusted indicated stumpage rate or the prescribed minimum stumpage rate.

6. Determine the upset stumpage rate by adding any development or silviculture levies (see Section 6.5) to the reserve stumpage rate,

7. Determine the total stumpage rate by adding any bonus bid to the upset stumpage rate.

One stumpage rate is determined for all appraised timber in each cutting authority area with the exception of miscellaneous stumpage rates under Section 6.6.

The average stumpage rate or Target Rate for the coast is calculated as a function of a coast softwood lumber price index (see Chapter 5).

The Coast Target Rate is adjusted to the Coast Base Rate as described in the publication *Specifications: Calculating Stumpage Rates for Coast Appraisals.*

1.7 Stumpage Adjustments

Unless a cutting authority or the application and tender for a timber sale licence specifies that stumpage rates are fixed for a specified period or for the full term of the cutting authority, stumpage rates are adjusted quarterly on January 1, April 1, July 1, and October 1 of each year, subject to Section 6.4.

Commencing each quarter, the stumpage rates are adjusted to reflect changes in estimated Average Selling Prices based on revised average market values (as authorized in this manual since the previous adjustment) and the recalculated Operating Cost based on the appropriate trend factors in Section 4.9. In addition, the adjustment reflects changes in the Statistics Canada Coast Softwood Lumber Index, the Statistics Canada Pulpwood Chip Index for British Columbia, the Coast Base Rate and the Coast Mean Value Index (see Section 5).

This page is intentionally left blank.

Appraisal Principles and Procedures 2

2.1 Types of Determination

Stumpage rates are determined by one of the following methods:

1. An appraisal or reappraisal under Chapters 3 and 4 of this manual.

2. An Order-in-Council directive setting stumpage rates under the *Forest Act,* Section 105.

3. Pricing under Chapter 6 of this manual.

4. The use of stumpage rates developed by regional revenue staff, and approved by the Regional Manager or Regional Manager's designate.

5. An appraisal under Chapter 7 for timber sale licences awarded under Sections 20 or 21 of the *Forest Act* on or after January 1, 1999.

Phase cost estimates for specified operations, helicopter logging operations and conventional logging are weighted according to the applicable net cruise volume under the cutting authority for each system.

4.1.1 Specified Operations

In addition to the logging phases and systems that are covered by this manual, there are specified operations which require special cost estimates.

The following is a complete list of specified operations for which certain cost phase estimates are based on the information on hand rather than on the tables and formulas in this manual. Specified operation cost estimates are combined with associated *Coast Appraisal Manual* phase cost estimates to determine the least total operating cost for the cutting authority being appraised.

SPECIFIED OPERATIONS	AFFECTED PHASE
A-frame Logging	Tree-to-Truck (Section 4.4)
Balloon Logging	Tree-to-Truck (Section 4.4)
Blowdown Timber	Tree-to-Truck (Section 4.4)
Partial Harvesting	Tree-to-Truck (Section 4.4)
Salvage Logging	Tree-to Truck (Section 4.4)
Skyline Logging	Tree-to Truck (Section 4.4)
Tree Crown Modification	Tree-to-Truck (Section 4.4)
Lake Transportation	Log Transportation (Section 4.5)
Skidder Swinging	Log Transportation (Section 4.5)
Towing to Tie-up Grounds (over 10 km Distance)	Log Transportation (Section 4.5)
Camp Moves (of greater than 10 km)	Administration and Other Costs (Section 4.6) except Helicopter Logging
Destumping for root disease control	Administration and Other Costs (Section 4.6)

The specified operations phase costs are monitored and updated by the regional manager and may not be part of the annual cost collection and analysis process.

4.2 Appraisal Data Requirements

The cruise and all other pertinent information required for the appraisal must be submitted with the appropriate *COAST APPRAISAL DATA SHEET.*

Unless otherwise specified by the Director, Revenue Branch, cruise data must be gathered and compiled according to the approved utilization specifications and in accordance with the following Ministry of Forests Publications:

- Ministry of Forests Provincial Cruising Manual,
- Cruise Compilation Design Manual,
- Forest Service Policies (e.g., Timber Utilization Policy & Procedures for the Coast of the Province), and
- Regional Publications (e.g., Operational Cruising Requirements in the Vancouver and Prince Rupert Forest Regions).

In order to verify the accuracy of the cruise compilation program, the licensee must provide on request, photocopies of the tally sheets and a magnetic copy of the compilation in a format prescribed by the regional manager.

The appraisal uses the net cruise volume of timber. The net cruise volume (m^3) is the gross volume (m^3) less decay, waste and breakage for all the species listed in Section 3.3. The cutting authority total net cruise volume is determined by multiplying the net cruise volume per hectare (m^3/ha) by the total merchantable timbered area (ha) to be harvested under the cutting authority. The total merchantable timbered area is determined from the cruise summary if available.

If the application for a cutting authority is subsequently modified, the cruise submission must be recompiled by the applicant when more than five percent of the total number of compiled plots used in the cruise submission lie outside the boundaries established for the initial appraisal of the cutting authority.

Each reappraisal uses the net cruise volume by species determined by adjusting the original cruise volume on the basis of approved amendments since the last appraisal.

Plots located in areas requiring helicopter logging or specified operations are included in the cruise compilation calculation of conventional logging.

5.2 Value Index

The stumpage rate charged on each cutting authority area is 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 stand Selling Price determined in accordance with Chapter 3.

OC = estimated Operating Cost applicable to the timber being appraised, and determined in accordance with Chapter 4.

5.3 Mean Value Index

The Coast Mean Value Index (MVI) is the benchmark against which individual stands of timber are compared. The Mean Value Index is recalculated and published by Revenue Branch at the time of each quarterly stumpage adjustment. When distributed it becomes an integral part of this manual.

Prior to January 1, 1999, the MVI does not include any timber licence marks. However, effective with the January 1, 1999 stumpage adjustment, appraised timber licence cutting permits are included in the MVI.

6.2 Cutting Authorities With 5 000 m³ or Less Volume

1. Total Volume of less than 2 000 m³

   a. Average Value Indexes by District and Species (DVI)

      An indicated stumpage rate may be determined by estimating the species volumes, prorating the appropriate Average Value Indexes by District and Species according to those volumes, and then using the resulting stand value index in the stumpage rate formula as described under Section 5.6. For cutting authorities where the licensee is not required to establish a free growing crop of trees, the Value Indexes must be adjusted by adding a basic silviculture cost estimate (District Average Value Indexes are based on full appraisals of areas requiring basic silviculture). The total stumpage rate is fixed for the term of the cutting authority (for extensions see Section 2.4.4).

      The upset stumpage rate for cutting authorities with 500 m^3 or less volume, awarded under the small scale salvage initiative, will be one-half the DVI calculated stumpage rate.

   b. Full Appraisal

      Alternatively, an indicated stumpage rate may be determined through a full appraisal. The stand data may be site-specific or obtained from one or more comparable cutting authority areas (e.g., similar stand and terrain characteristics, etc.) and is recorded on a Coast Appraisal Data Sheet. The total stumpage rate is adjustable for the term of the cutting authority, except as provided in Section 6.4.

      Each full appraisal is made as described in Chapters 3, 4 and 5.

2. Total Volume of 2 000 to 5 000 m³

An indicated stumpage rate is determined on the basis of full appraisal data. The data may be site-specific or the data may be obtained from comparable cutting authority areas, as determined by the Regional Manager.

Each appraisal is made as described in Chapters 3, 4 and 5.

These sales are cruised if specified by the Regional Manager in accordance with Section 4.2 of this manual.

The total stumpage rate is adjustable for the term of the cutting authority, except as provided in Section 6.4.

6.3 Partially Harvested Timber

In the case of decked timber, or timber which has been felled and bucked, such as on rights-of-way, and the volume exceeds 300 m^3, a full cost estimate appraisal is completed on an "as is, where is" basis.

6.4 Small Business Forest Enterprise Program (SBFEP) Sales

For appraisal purposes, the SBFEP includes:

- all Timber Sale Licences issued under the *Forest Act*, Sections 20 and 21, and
- all TSLs issued under the *Forest Act*, Section 23 except 23(1)(a) and 23(1)(b).

Fixed/Adjustable Stumpage Rates for SBFEP Cutting Authorities

The adjustable rate option can be provided to a licensee only if the upset rate has been determined by means of a full appraisal. The data for the full appraisal may be site-specific or may be obtained from one or more comparable cutting authority areas. Once a selection has been made, it remains in effect for the term and all extensions. If the District Value Index method is used, the upset and hence the total stumpage rate is fixed for the term of the cutting authority and all extensions. The only exceptions are if a reappraisal is done under Section 2.3 (1), Sudden and Severe Damage or Section 2.3 (4) Minister's Direction.

A licensee's election of fixed stumpage rates precludes any correction to the upset stumpage rate determination that would otherwise be warranted because of an error in the appraisal.

For Section 20 and 21 timber sale licences (on and after January 1, 1999) refer to Chapter 7.

Section 20 Timber Sale Licences (Prior to May 1, 1994)

A licensee who holds a timber sale licence issued under Section 20 of the *Forest Act* that was advertised or awarded prior to May 1, 1994 may elect to have the stumpage rate on that licence fixed at the April 30, 1994 level for the term and all extensions. The election must have been made prior to July 1, 1994.

Section 21 Timber Sale Licences (Prior to May 1, 1994)

For a timber sale licence issued under Section 21 of the *Forest Act*, the licensee may have elected to have the stumpage rate fixed at the April 30, 1994 level until April 30, 1996 on timber marks issued under that licence if:

- the timber sale licence was advertised or awarded prior to May 1, 1994,
- the timber mark was issued prior to May 1, 1994, and
- the election to fix rates was made before July 1, 1994.

The above timber marks with rates fixed until April 30, 1996 will be reappraised effective May 1, 1996. All subsequent reappraisals for those timber marks will be as per Section 2.3.

6.5 Levies

The amount of any levy may be redetermined at reappraisals only.

1. Basic Silviculture Levy

A basic silviculture cost estimate is made for every cutting authority that will require basic silviculture, including those with a volume of less than 2 000 m^3.

A basic silviculture levy may be added to the Reserve Stumpage Rate. The levy is $0.00/$m^3$ if no Crown expenditures are anticipated for basic silviculture, or the district manager may set the levy at $0.00/$m^3$ if the sale is offered under the *Forest Act,* Section 20, and the District Manager is satisfied that there will be competition for the sale. Otherwise the silviculture levy is equal to the appraisal estimate of basic silviculture costs provided by the Crown (trended at the time of the appraisal).

2. Development Levy

A development levy may be added to the Reserve Stumpage Rate. The levy is $0.00/$m^3$ if no Crown expenditures are anticipated for road construction and other services, or the District Manager may set the levy at $0.00/$m^3$ if the sale is offered under the *Forest Act,* Section 20, and the District Manager is satisfied that there will be competition for the sale. Otherwise, the development levy is equal to the appraisal cost estimate of road construction and other extraordinary services provided by the Crown as determined by the Regional Manager (trended at the time of the appraisal).

The amount of any levy may be re-determined at reappraisal only.

6.6 Miscellaneous Stumpage Rates

For the purpose of determining stumpage rates for certain special forest products, including deciduous species, low grade logs and timber in specified areas listed under this section, the miscellaneous stumpage rates tables are to be used.

6.6.1 Special Forest Products and Other Miscellaneous Rates

Table 6-1 is to be used for determining stumpage rates for the specified products when scaled.

Table 6-1: Miscellaneous Stumpage Rates

Vancouver Forest Region and North Coast Forest District

Coniferous Species	Product	Reserve Rate
Cedar & other	Shake and Shingle Bolts and Blocks	$ 5.30/m^3
Cedar	Shakes - Handsplit	$ 6.00/m^3
Cedar	Shakes - Blanks	$ 7.20/m^3
Cedar	Fence Posts and Fence Rails	$ 3.00/m^3
Cedar	Sticks and Stakes (round or split)	$ 2.00/m^3
Cedar	Hop Poles	$ 1.30/m^3
Cedar & other	Cants *	$ 9.60/m^3
Cypress	Cants *	$37.00/$m^3$
Yew	All	$ 0.25/m^3
Deciduous Species		
Alder & Cottonwood	The lesser of the appraised stand as a whole reserve rate, reduced if applicable (CVP only), or	$1.00/$m^3$
All other Deciduous Species	The reserve rate is	$1.00/$m^3$
All Species		
All Species	Grade Y	$ 0.25/m^3
All Species	Firewood	$ 1.00/m^3
All Species	Christmas Trees: less than 3m 3 to 5m More than 5m	$ 0.20 each $ 1.00 each $ 1.50 each
All Species	Logs salvaged in the Vancouver Log Salvage District under the *Forest Act,* Part 11, and stray logs salvaged elsewhere in coastal waters below the high tide mark (unless logs are salvaged from an area while it is under closure under the *Forest Act,* Section 139).	$ 0.70/m^3
All Species	Logs salvaged at Wahleach Island catchment basin operated by B.C. Debris Control Board.	$ 0.25/m^3

* Note: Cants are produced from dead and down post logging material that would not make a sawlog as determined by the regional manager.

Market Pricing System 7

The Market Pricing System (MPS) policy provided in this chapter is to be used only for fully appraised timber sale licences awarded under Section 20 and 21 of the *Forest Act* on or after January 1, 1999.

Chapters 3, 4, 5 and 6 of this manual are only to be used for Section 20 and 21 TSLs where directly referenced in Chapter 7.

7.1 Market Pricing System Introduction

The Market Pricing System (MPS) is the basis for determining sawlog stumpage rates for timber sale licences issued under Section 20 and 21 of the Forest Act, subject to a minimum stumpage rate. Sections 2.1 (2) and (3) of this manual provide the methods that are used for deriving stumpage rates for specific products and extraordinary situations.

MPS is a method of estimating the stumpage value of a cutting authority area based on the results of previous similar cutting authority areas that were sold competitively.

MPS can only be used where there is complete appraisal data available for the cutting authority area. Where data is not available, see Section 6.2.

The MPS upset rate and bonus bid applies to coniferous sawlogs only. All deciduous species, special forest products and Y grade logs have a default price listed under Section 6.6.

7.2 MPS Principles and Procedures

7.2.1 Calculation Conventions

Stumpage rate calculations are performed according to the methods specified in the document entitled, *Specifications: Calculating Stumpage Rates for Coast Appraisals* for *the Market Pricing System* approved by the Director, Revenue Branch.

7.2.2 Methodology

Calculating the upset stumpage rate for Small Business Forest Enterprise Program (SBFEP) timber sale licences, issued under Section 20 and 21 of the *Forest Act* after January 1, 1999, will be done using the following methodology:

1. Calculate a preliminary market stumpage price using the equation in Section 7.4.2 with the variables as defined and the average number of bidders. Apply the discount factor to the preliminary market stumpage price to calculate the preliminary upset stumpage rate.

2. Calculate the estimated number of bidders using the equation in Section 7.4.3 with the variables for the timber sale.

3. Calculate the market stumpage price using the equation in Section 7.4.4, the variables for the timber sale and the estimated number of bidders calculated in Section 7.4.2.

4. Calculate the upset stumpage price by discounting the market stumpage price calculated in Section 7.4.4 using the discount factor in Section 7.4.5.

One stumpage rate is determined for all appraised coniferous sawlogs in each cutting authority area. Other products and deciduous species are priced using miscellaneous stumpage rates as specified under Section 6.6.

7.3 Log Selling Prices

Invoiced (f.o.b.) log market values are compiled from prime, domestic, arms-length sales the Alberni Inlet east of a line drawn south from Amphitrite Point; Johnstone Strait; the Queen Charlotte Strait south of a line drawn west from Cape Caution; and the Fraser River west of the bridge at the confluence of the Pitt River.

For the Market Pricing System a set of average log market values by species and log grade is developed using sales data for each one-month reporting period. The one-month sales data is used to produce a schedule of average market values by species and log grade published monthly by Revenue Branch for stumpage rate calculations.

7.3.1 Log Grade Percentage

See Section 3.2.

7.3.2 Calculation of Stand Selling Price

See Section 3.3.

7.4 MPS Stumpage Calculations

7.4.1 List of MPS Variables

MARKET STUMPAGE PRICE	Market Stumpage Price for the cutting authority in $/m^3$.
ALP	Average log selling price estimate ($/m^3$) based upon log grades and species for the cutting authority area, and schedules of log market values collected and published by Revenue Branch.
VPH	Volume per hectare in m^3/ha. Calculated by dividing the total net coniferous cruise volume (m^3) by the total merchantable area (ha).
HP	Fraction of coniferous volume which will be helicopter logged. This is calculated by dividing the coniferous volume to be harvested by helicopter by the cutting authority area's total net cruise volume.
SOR	The untrended specified operation cost estimate ($/m^3$) as determined by the Regional Appraisal Coordinator.
HD	Truck haul distance (km).
ln (NB)	The natural logarithm of the number of bidders competing for the cutting authority.
VOL	Total net cruise volume of coniferous timber (m^3).
CPIF	B.C. Consumer Price Index (P110000) for current month divided by the base CPI of 109.3.

7.4.2 Preliminary Upset Stumpage Rate (Step 1)

Using the equations below, calculate the preliminary upset stumpage rate.

Preliminary Market Stumpage Price = [-56.1836 + 0.9916 (ALP/CPIF) + 14.6050 (VPH/1000) - 36.8188 (HP) - 6.4322 (RS) - 0.7053 (SOR/CPIF) - 0.1232 (HD) + 10.4944 * ln (NB) - FD] * CPIF

Where:

RS = 1, where the cutting authority area is accessible only by air or water and is not serviced by public ferries. Otherwise RS = 0.

FD = 9.2977 (North Coast Forest District)

16.1047 (Port McNeill Forest District)

19.1108 (Mid Coast Forest District)

15.6639 (Queen Charlotte Islands Forest District)

NB = 5.3 (Coastal average number of bidders)

Preliminary Upset Stumpage Rate ($/m^3) = Preliminary Market Stumpage Price * (1-Discount Factor)

Where:

Discount factor = 0.30

7.4.3 Number of Bidders (Step 2)

Using the equation below calculate the estimated number of bidders.

Number of Bidders = 2.4176 + 0.03876 (Margin/CPIF) + 0.09650 (Δ ALP/CPIF) + 0.1760 (VOL/1000) - 0.00247 (VOL/1000)^2 - 2.2607 (HP) - 2.0634 (BARGEDUM) - 2.5571 (CTDUM) - 2.2939 (SKYDUM) - 2.9484 (ADUM) - 2.5990 (BLOWD) + FD

If VOL is greater than 35 000, then VOL = 35 000.

If the calculated number of bidders is less than 2, then number of bidders = 2.

Where:

Margin = average log price current month - preliminary upset stumpage rate

Δ ALP = ALP current month minus ALP previous month ($/m^3)

FD = 1.0440 (South Island Forest District)

The following variables take a value of 1 if the cutting authority area requires these specified operations, otherwise they are set to zero.

BARGEDUM

BARGEDUM = 1, where part of the route from local tie-up grounds at the appraised point of origin to point of appraisal is exposed to the open ocean swell. Otherwise BARGEDUM = 0.

Only points on the West Coast of Vancouver Island north of Port Renfrew, (except those routes totally east of a line drawn from Cape Beale to Amphitrite Point, including Ucluelet Harbour), and all points north of Cape Caution on the mainland are considered to require barge transportation.

CTDUM

CTDUM = 1, where the volume harvested from the cutting authority area is by commercial thinning. Otherwise CTDUM = 0.

Commercial thinning is a silviculture treatment that "thins" out overstocked immature stands by removing trees that are large enough to be manufactured into lumber, post or pole products. It is carried out to improve the health and growth rate of the remaining crop trees. The cut is from "below" for the entire even-aged stand.

SKYDUM	SKYDUM = 1, where the cutting authority is harvested using a skyline system. Otherwise SKYDUM = 0. Skyline logging includes any logging method that has short span, long span, or multispan systems using standing or running lines. Logs must be a suspended clear of the ground to qualify as a skyline system and the average yarding distance must be greater than 300 m measured from the landing.
ADUM	ADUM = 1, where an A-frame is used to yard timber on the cutting authority area. Otherwise ADUM = 0. A-frame logging uses an A-frame spar with a yarder mounted on a large log float. The float is positioned along the shoreline and logs are yarded directly from the stump to the shore.
BLOWD	BLOWD = 1, where 50% or more of the net cruise volume in a cut block is blowndown. Otherwise BLOWD = 0.

7.4.4 Market Stumpage Price (Step 3)

Using the equation below enter the number of bidders calculated from Step 2.

Market Stumpage Price = [-56.1836 + 0.9916 (ALP/CPIF) + 14.6050 (VPH/1000) - 36.8188 (HP) - 6.4322 (RS) - 0.7053 (SOR/CPIF) - 0.1232 (HD) + 10.4944 * ln (NB) - FD] * CPIF

Where:

FD =	9.2977	(North Coast Forest District)
	16.1047	(Port McNeill Forest District)
	19.1108	(Mid Coast Forest District)
	15.6639	(Queen Charlotte Islands Forest District)

NB = Number of bidders calculated in Step 2. Must not be less than 2.

7.4.5 Upset Stumpage Rate (Step 4)

For each cutting authority area, the MPS upset stumpage rate is determined by selecting the greater of:

- the MPS upset stumpage rate, or
- the prescribed minimum stumpage rate.

Upset Stumpage Rate ($/m^3) = Market Stumpage Rate (From Step 3) * (1 - Discount Factor)

Where:

Discount Factor = 0.30

7.4.6 Prescribed Minimum Stumpage Rate

The minimum stumpage rate is prescribed by the Minimum Stumpage Rate Regulation (B.C. Reg. 354/87). The current minimum stumpage rate is $0.25 per cubic metre.

7.4.7 Total MPS Stumpage Rate

The total stumpage rate is the upset stumpage rate plus any bonus bid.

7.5 Deciduous and Miscellaneous Forest Products

The stumpage rate for deciduous sawlogs, all species grade "Y" and other miscellaneous forest products are found in Section 6.6.

Index

A

Accessible Cutting Authority, 4-33, 4-34
Accommodation, 4-34
Additional Stabilizing Material, 4-19
Administration and Other Costs, 4-33
Amendments, 2-6
Appendices, A-1
Appraisal Data Requirements, 4-4
Appraisal Data Submission (Coast Appraisal Data Sheet), 2-3
Appraisal Principles & Procedures, 2-1
Area of Application, 1-3
Average Cost Estimates, 4-6
Average Log Market Value (AMV) Determination, 3-2

B

Barge Transportation, 4-28
Barging Cost Estimates, 4-30
Base Rate, 5-6
Basic Silviculture, 4-37
Billing History Record, 3-3
Bridge Cost Estimates, 4-7

C

Calculation Conventions, 2-12
Calculation of Indicated Stumpage Rate, 5-7
Calculation of Stand Selling Price (SP), 3-10
Calculation of Stumpage Rate, 5-7
Capping, 4-21
Charges as a Share of Road Maintenance, 4-32
Charges for Other than Road Maintenance, 4-32
Comparative Value Timber Pricing, 1-7
Conventional Logging, 4-24
Cost Estimates, 4-2
Cost Trend, 4-38
Culverts, 4-17
Cutting Authorities With 5 000 m^3 or Less Volume, 6-3
Cutting Authority, 1-4
Cutting Authority Area, 1-4

D

Damaged Timber, 3-9
Data Requirements, 4-22
Definitions for In-Place & Quarry Rock RMC (hardness), 4-21
Detailed Engineering Cost Estimates, 4-5, 4-6, 4-22
Development Cost Allocation, A-5
Development Cost Categories, 4-6
Development Costs on Private Land, 4-10
Development Works, 4-5
Distance, 4-27
District Manager, 2-3
Drainage Structures, 4-16
Dump, Sort, Boom and Scale, 4-28

E

Existing Roads and Structures, 4-10
Extended Road Amortization, 4-11

F

Fixed Rate Cutting Authorities, 2-5
Fixed Stumpage Rate and Extensions of Term, 2-9
Forest Service Roads, 4-32

G

General and Administrative Overhead, 4-33

H

Helicopter Logging, 4-25

I

Immature Coniferous Timber, 2-13
Indicated Stumpage Rate, 5-2
In-place Unit Cost Estimates, 4-20
Isolated Cutting Authority, 4-35

L

Land Drop Operations, 4-25
Least Total Harvesting Cost Estimate, 4-2
Levy, Development, 6-6
Log Bridges, 4-16
Log Grade Percentage Criteria, 3-4
Log Selling Prices, 7-4

Log Transportation, 4-27
Low Volume Cost Estimate Additive, 4-35
Low Volume Cypress Exception, 3-11

M

Main Service Road, 4-5
Market Pricing System, 1-6
Market Pricing System Introduction, 7-2
Market Value Indexing, 5-5
Mathematical Error, 2-7
Mean Value Index, 5-4
Minister's Direction, 2-6
Misc. Timber Pricing Policies, 6-1
Miscellaneous Stumpage Rates, 6-7
MPS Principles and Procedures, 7-3
MPS Stumpage Calculations, 7-5

N

Nearest Community, 4-34
New Construction, 4-6
No Trucking of Stabilizing Material, 4-20

O

Operating Cost Estimation, 4-1
Operational Overhead, 4-33
Other Land Use Charges, 4-32
Other Roads, 4-32
Overhead, 4-33

P

Partially Harvested Timber, 6-4
Percentage of the Indicated Stumpage Rate, 5-8
Permanent/Portable Bridges, 4-16
Permitted Roads, 4-32
Point of Appraisal, 2-11
Prescribed Minimum Stumpage Rate, 7-9

R

Reappraisal, 2-5
Reappraisal at Anniversary Date, 2-6
Reconstruction and Replacement, 4-7, A-4
Responsibility for Stumpage, 1-5
Rock Mass Classification, 4-13

Routine Maintenance and Deactivation, 4-31

S

Selling Price Estimation, 3-1
Small Business Forest Enterprise Program, 2-9
Small Business Forest Enterprise Program (SBFEP) Sales, 6-5
Source of Log Grade Percentage for Each Cutting Authority, 3-6
Special Forest Products, 6-7
Specified Operations, 4-3
Stabilizing Cost Estimate, 4-21
Stumpage Rate Adjustments, 1-9
Stumpage Rate Determination, 5-1
Subgrade Cost Estimates, 4-13
Sudden and Severe Damage, 2-5

T

Tabular Cost Estimates, 4-5
Tabular Road and Bridge Cost Estimates, 4-12
Terms of Reference, 1-2
Time Schedule, 2-3
Total Logging Cost Estimate, 4-36
Total MPS Stumpage Rate, 7-9
Total Overhead, 4-33
Total Volume of 2 000 to 5 000 m^3, 6-3
Total Volume of less than 2 000 m^3, 6-3
Towing Cost Estimates, 4-29
Towing or Barging, 4-28
Tree-To-Truck, 4-24
Tributary, 4-5
Truck Hauling, 4-27
Trucking of Stabilizing Material, 4-21
Types of Determination, 2-2

V

Value Index, 5-3
Value Indexes by District and Species, 6-2

W

Water Drop Operations, 4-25
Water Transportation, 4-28
Woods Run, 4-33