BRITISH COLUMBIA

Ministry of Forests

Office of the Minister

MEMORANDUM

File: 280-20/195-30/IAPP

October 31, 2002

To: Regional Managers - Interior

From: The Honourable Michael de Jong
Minister of Forests

Re: *Interior Appraisal Manual*

I hereby approve the new *Interior Appraisal Manual*, and attach a copy of it for your use.

This manual is effective November 1, 2002, and applies to all subsequent Interior stumpage appraisals. Amendments or revisions to this manual require my further approval.

for Michael de Jong
Minister

Attachment

pc: Bill Howard, Director, Revenue Branch

All Subscribers, *Interior Appraisal Manual*

REVENUE BRANCH

Interior Appraisal Manual

Effective November 1, 2002

Cost Base
Woods: July 1, 2000
Manufacturing: July 1, 2000

BRITISH COLUMBIA

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New Interior Appraisal Manual Highlights

The new *Interior Appraisal Manual* now has a cost base of July 1, 2000. Changes by section in this year's manual are highlighted below:

Chapter 1.0	Chapter re-organized. New sub-section with terms and conventions. Revised definition in section 1.2 area of application. New sub-section regarding cutblocks within a cutting authority area. Additional clarity in section 1.7 CVP stumpage adjustments.
Section 2.1	Types of determination. Revised list (regional managers's rate eliminated).
Section 2.2	Appraisal procedure. Section reworded for clarity.
Section 2.3.	Reappraisals. Revised wording for clarity.
Section 2.3.2	Sudden and Severe damage. Revised wording for clarity.
Section 2.3.5	Minister's direction. Revised wording for clarity.
Section 2.4	Anniversary date reappraisal procedure. New section added for clarity with procedures for reappraisals.
Section 2.5	Fixed stumpage rate and extension of term. Reworded for clarity.
Section 3.3, Table 3-1	LRF update add-ons and combined product recovery factors. New update add-ons and combined product recovery factors.
Section 4.1	Cost estimates. Word "development" now included in the list of costs estimated by the appraisal co-ordinator.
Section 4.1.1, Table 4-1	Specified operations. Kinbasket Lake Barge/Ferry dropped from the list. Text removed limiting specified

	operations for root disease control.
Section 4.2.1	Comparative cruising. New subsection defining "comparative cruising", setting criteria for regional manager's approval, in the emergency bark beetle management area.
Section 4.3	Development. Reorganized for clarity.
Section 4.3.1.1.4	Existing roads and structures. Text "drainage and other pertinent structures" removed as the term "Roads" is previously defined as including same in section 4.3.
Section 4.3.2.2(4)	Additional wording permitting the use of rock % estimates from commercial road design programs.
Section 4.3.2.3	Road group 1 not currently used in Table 4-3 road groups. New subgrade cost estimate equations. New snow road cost estimate includes annual refreezing.
Section 4.3.2.4	Reference to new forest road engineering guidebook and web link. New culvert cost estimates in Table 4-4.
Section 4.3.2.5	New text requires the condition of "during the harvesting of tributary volume". New additional stabilizing material equations.
Section 4.3.3.1	Table 4-5 trend factors for ECE costs. Revised table included new factors for 1992 to 2002.
Section 4.4	"all post logging treatments" added to list of cost estimates included in the tree to truck phase.
Section 4.4.2(6)	Distance to support centre. New distance variable.
Section 4.4.2(7)	Reinstating definition of volume per tree variable (VOLTREE).
Section 4.4.3	Tree-to-truck cost estimate. New text regarding uphill heli yarding, new heli, ground skidding, highlead/grapple and skyline equations. New horse logging cost estimate.
Section 4.4.5	Prorating tree-to-truck cost estimates. Heli split into clear and partial cut.
Section 4.5.1(1)(c)(i) & (2)(d)(iii)	Truck haul variables. "regional manager" added to text referring to the prior approval requirement for the

	temorary transfer of cutting rights.
Section 4.5.2.1	Primary haul. New highway and off highway haul minimums and equations.
Section 4.5.2.2	New secondary haul equation.
Section 4.5.3	New water transportation cost estimates.
Section 4.5.4	New special transportation cost estimates.
Section 4.6	Renamed "road management" as it now encompases more road management activities not just routine road maintenance. Deactivation and access management added to the list activities included in road management. New road management cost estimates in Table 4-7.
Section 4.8.1	New district overhead cost estimates.
Section 4.8.2	New isolated cutting authority cost estimates.
Section 4.8.3	New low volume cost estimates.
Section 4.9	Basic silviculture cost estimate replaces the previous "post logging treatment costs" section (chapter 4 renumbered from there on).
Section 4.10	Manufacturing costs estimates. Text reflects new cost base of July 1, 2000. New untrended manufacturing cost estimates in Table 4-10 and a new coefficient in the manufacturing cost equation.
Section 4.11	Revised trend factors.
Chapter 5	Stumpage rate determination. Renaming of variables to include specific references to the interior. Table 5-1 eliminated as timber licences are now on full stumpage rates.
Section 6.2(1)(b)	Full appraisal. New text allowing the district manager to require the comparative cruise procedures specified in the *Cruising Manual* be followed.
Section 6.2(2)	Total coniferous volume of 2 000m^3 to 5 000 m^3. New reference to comparative cruise procedures in the *Cruising Manual.*

Section 6.5	Small business forest enterprise program (SBFEP) sales. Revised text includes reference to comparative cruise procedures in the *Cruising Manual* for volumes of 5000m3 and less.
Section 6.7.1	Special forest products and other miscellaneous rates. Table 6-1, new oil & gas seismic clearing rates.
Section 7.3.2	Calculation of species lumber selling price. Table 7-1 new LRF update add-ons for MPS.
Section 7.5.1	New text regarding "no bid" sales.
Appendix 1	New equipment and labour rates, July 1, 2000 cost base.
Data Sheet	Major changes to coincide with new equations, data requirements and facilitate the move to electronic data submissions.

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Introduction 1

1.1 Conventions and Terms of Reference

1.1.1 Terms and Conventions

Procedures	*Italics*		Indicate the formal name of a document. e.g. *Forest Act, Interior Appraisal Manual*
	Headings	1. =	Chapter
		1.1 or 1.1.1.1 =	Section of chapter 1
		1.1.1.1, (2) =	Section within chapter 1, with subsection.
		Table 4-2 =	Table 2 within chapter 4

1.1.2 Terms of Reference

The *Forest Act,* sections 103 to 108, and regulations provide the statutory authority for the determination of stumpage for Crown timber.

The *Forest Act,* section 105, requires adherence to the policies and procedures approved for the forest regions by the Minister of Forests. This *Interior Appraisal Manual,* approved by the minister, contains the policies and procedures for determining stumpage rates charged for Crown timber harvested in the area described in section 1.2.

The data used in the manual is based on a broad sampling of timber harvesting, silviculture, and manufacturing costs, and lumber and chip selling prices experienced by licensees in the interior.

1.2 Area of Application

This manual applies to the "Interior", which is defined as the entire province of British Columbia, excluding the Vancouver Forest Region (as established by the *Forest Act* and Regulations), and the North Coast Forest District.

1.3 Cutting Authority

The term "cutting authority" is defined as:

1. A cutting permit issued under:
    a. a forest licence,
    b. a timber sale licence that provides for the issuance of cutting permits,
    c. a tree farm licence,
    d. a community forest agreement,
    e. a woodlot licence, or
    f. a timber licence.
2. A timber sale licence under which cutting permits have not or will not be issued.
3. A licence to cut.
4. A road permit.

1.3.1 Cutting Authority Area

The term "cutting authority area" means the area that:

1. Timber may be harvested from, under a cutting authority, and
2. Has a unique timber mark.

1.3.2 Cutblocks within a Cutting Authority Area

A cutting authority area must only be comprised of cutblocks that:

1. Are tributary to a common point of appraisal, and
2. Must not exceed a maximum distance of ten kilometres between the furthest boundaries of the furthest cutblocks, except when required for bark beetle epidemic blanket salvage.

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 and employees of the regional revenue section, and
- director, Revenue Branch, Ministry of Forests and the employees of Revenue Branch.

1.5 Market Pricing System

The 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* after January 1, 1999.

1.6 Comparative Value Timber Pricing

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

One component of CVP is the determination of the average stumpage rate for the interior. The stumpage rate for a given stand of timber is more or less than the pre-set average rate (Interior Target Rate) (see chapter 5) depending upon whether the stand value index is more or less valuable than the average stand's value index. To determine the value index of the stand and hence to determine a stumpage rate, the forest officer will typically:

1. Estimate the selling price of the products that can be recovered from the timber stand (see chapter 3).

2. Estimate the least total cost necessary to harvest and deliver timber to a point of appraisal then add the manufacturing cost for that point of appraisal (see chapter 2 and 4).

3. Determine the Value Index (see chapter 5) of the timber stand by subtracting the estimated operating cost from the estimated selling price.

4. Determine the indicated stumpage rate by comparing the Value Index for the timber stand with the Interior Mean Value Index and adding the Interior 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 and silviculture levies (see section 6.6) 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 as specified under section 6.7.

The average stumpage rate for the interior is indexed to lumber market values as explained in chapter 5.

1.7 CVP 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 6.5.

Each quarterly stumpage adjustment will be calculated using stumpage appraisal parameters approved by the director, Revenue Branch.

Stumpage appraisal parameters are:

i. Statistics Canada interior composite index,

ii. Interior target rate,

iii. Interior base rate,

iv. Interior mean value index.

The adjusted stumpage rates reflect changes in estimated selling prices and lumber recovery factor update add-ons (as authorized in this manual since the previous adjustment), and the recalculated logging and silviculture costs based on the appropriate trend factors shown in section 4.12. The manufacturing costs used in the adjustment will be those authorized in this manual since the previous adjustment. In addition, the adjustment reflects changes in the Statistics Canada Interior Softwood Lumber Index, the Statistics Canada Pulpwood Chip Index for British Columbia, the Interior Base Rate and the Interior Mean Value Index.

Appraisal Principles and Procedures 2

2.1 Types of Determination

Stumpage rates are determined, redetermined or varied by:

1. An appraisal, reappraisal or quarterly adjustment using the comparative value pricing system,
2. an appraisal, reappraisal or quarterly adjustment using the market pricing system,
3. an Order-in-Council under the *Forest Act,* section 105, or
4. a procedure identified in chapter 6 of this manual.

2.2 Appraisal Procedure

1. An appraisal is a process used to determine a stumpage rate for a cutting authority area using the *Interior Appraisal Manual* in effect on the effective date of the cutting authority.

2. A licensee shall submit an interior appraisal data submission to the district manager when the licensee makes an application for a cutting authority.

3. The licensee shall submit to the district manager any other information required by the district manager or their designate for the purposes of the appraisal.

4. The submissions under subsections (2) to (3) of this section must be signed and sealed by a professional forester registered in the Province of British Columbia.

5. The district manager or their designate may review the licensee's submission and will notify the licensee, in writing, of any omissions, errors or provisions of the *Interior Appraisal Manual* that, in the opinion of the district manager or their designate, the signing professional forester may not have considered. The licensees signing professional forester will consider the district manager's or their designate's notification and may revise the submission.

6. The district manager or their designate shall give any information supplied by the licensee under this section to the person who determines the stumpage rate together with any other information that the district manager or their designate considers relevant to the appraisal.

7. The person who determines the stumpage rate may review the licensee's submission and information supplied by the district manager or their designate, and will notify the licensee, in writing, of any omissions, errors or provisions of the *Interior Appraisal Manual* that, in the opinion of the person who determines the stumpage rate, the signing professional forester may not have considered. The licensee's signing professional forester will consider the notification and may revise the submission.

8. To determine the stumpage rate the person who determines the stumpage rate will consider:

    a. the information provided by the licensee and the district manager or their designate, and

    b. any information available to the person who determines the stumpage rate that is relevant to the appraisal.

9. Regional staff will notify the licensee of the stumpage rate in the form of a stumpage advisory notice and will provide the licensee with a summary of the information used to determine the stumpage rate.

10. Within three (3) weeks of the date of the stumpage advisory notice, the licensee may notify regional revenue staff, in writing, of any objection to the information contained in the stumpage advisory notice that could be resolved without a review or appeal. The written objection must state the grounds for objection as well as a statement describing the relief requested. At this point, the objection is not considered a review or appeal under the *Forest Act* (section 143 to 150).

11. Regional revenue staff will notify the licensee, in writing, if the objection referred to in subsection (10) cannot be resolved. In this notification, the regional revenue staff will indicate that the three (3) week time requirement for notice for review specified in section 144 (3) of the *Forest Act*, will commence upon receipt of that notification.

2.3 Reappraisals

1. A reappraisal is a process used to redetermine a stumpage rate for a cutting authority area using the *Interior Appraisal Manual* in effect on the effective date of the reappraisal.

2. A reappraisal is based on a complete reassessment of the cutting authority area at the time of the reappraisal, as if the area has been returned to the condition it was in prior to development or harvesting.

3. At the time of a reappraisal, initial detailed engineering cost estimates may be re-estimated once after construction utilizing information as specified in section 4.3.3. However, development costs originally estimated using ministry approved competitive bids are not re-estimated in a reappraisal.

2.3.1 Annual Reappraisal

"Anniversary date" means the annual recurrence of the month and day when the term of the cutting authority began.

a. Cutting authorities that have a quarterly adjustable stumpage rate, other than road permits or cutting authorities contained in woodlot licenses, must be reappraised by the anniversary date if,

   i. timber from the cutting authority area is expected to be scaled under the cutting authority during the next year, and

   ii. there is at least 2 000 m3 of merchantable timber remaining on the cutting authority area.

b. If the conditions in (a), (i) and (ii) have not both been met,

   i. reappraisals may be made at the option of either the district manager, regional manager or licensee (see section 2.2), or

   ii. the untrended logging and silviculture cost estimates from the current appraisal will continue to be trended quarterly to determine stumpage rates.

c. Woodlot licence cutting authorities must be reappraised by the anniversary date.

d. A road permit must be reappraised by the effective date for a reappraisal of a road permit.

e. The effective date for a reappraisal under this section is:

   i. the anniversary date for a cutting authority other than a road permit, and

ii. for a road permit, June 1 of each year.

2.3.2 Sudden and Severe Damage

1. A cutting authority area that has a fixed stumpage rate or a stumpage rate that is adjusted quarterly may be reappraised if the licensee submits a written request for a reappraisal to the regional manager because of sudden and severe damage to the previously appraised timber, and the regional manager is satisfied that the sudden and severe damage has occurred.

2. Where the cutting authority area is reppraised because of sudden and severe damage, the effective date of the reappraisal is the first of the month following the occurrence of the damage, unless otherwise specified by the regional manager. A reappraisal will not be made in the case of fire damage caused by the licensee if the licensee has failed to comply with any of sections 75 through 95 of the *Forest Pricatices Code of British Columbia Act* or the *Forest fire Prevention and Suppression Regulation.*

3. Despite subsection (2) where the cutting authority area is reappraised because of sudden and severe damage the redetermined stumpage rate is based upon the remaining timber only. The reappraisal cost estimate for development takes into account volume already removed.

4. Where a cutting authority area is reappraised because of sudden and severe damage any existing bonus bid remains in effect despite a redetermination of the upset stumpage rate because of the damage.

2.3.3 Accumulated Amendments

If a cutting authority area or cutting authority (see section 1.3) is amended by increasing or decreasing the area and volume, a reappraisal of that cutting authority must take place if:

a. the accumulated amendments (either addition or deletion of merchantable timbered stumpage-bearing area) equal or exceed either 10 hectares or 10 percent of the merchantable area, whichever is less: the entire cruise must be recompiled and the stumpage rate redetermined, or

b. the amendment requires a specified operation or different logging method (see sections 4.1.1 and 4.4.1) that equals or exceeds 10 percent of the cutting authority volumes: the entire cruise must be recompiled and the stumpage rate redetermined, or

c. the amendment requires major subgrade reconstruction or replacement or reconstruction of a major drainage structure. In these instances, the cost estimate is based solely upon remaining timber volume (i.e., applicable volume).

The redetermined stumpage rate becomes effective on the first day of the month following written notice to the licensee which approves the amendment.

The fixed stumpage rate effective at the road permit anniversary date will be applied to any volume amended into the road permit until the next reappraisal. Road permits will not have a reappraisal caused by an amendment to the area or volume.

2.3.4 Minister's Direction

1. The Minister of Forests may direct that a reappraisal be made at any time and that the redetermined stumpage rate be effective on any future date, and may specify criteria and procedures for the reappraisal.

2. A reappraisal directed by the Minister of Forests, may be a re-estimation of operating cost, lumber recovery factor, or selling price, or any combination of these, as may be direct by the Minister of Forests.

2.3.5 Mathematical Error

a. If a government employee or contractor in the Ministry of Forests or a licensee (or employee or contractor of a licensee) becomes aware of what is or probably is a mathematical error in a stumpage determination, that person shall give written notice of the error ("the Notice") as follows:

   i. in the case of appraisals and reappraisals, to the appropriate regional manager, and

   ii. in the case of quarterly adjustments, to the director of Revenue Branch,

b. the Notice shall describe the stumpage determination or determinations involved and shall describe the nature and cause of the error to the extent reasonably possible,

c. upon receipt of the Notice, the regional manager or the director of Revenue Branch shall make the appropriate investigation to decide whether or not an error has, in fact, been made,

d. if the regional manager or the director of Revenue Branch decides that an error has not been made, they shall notify the person who sent the Notice of the decision and the reasons for it,

e. if the regional manager or director of Revenue Branch, decides that an error has been made, the following shall occur:

   i. the regional manager or the director of Revenue Branch, shall notify the person who sent the Notice of the decision and the reasons for it,

ii. the regional manager or the director of Revenue Branch, shall take reasonable steps to ensure that all licensees who have been affected by the error are informed of the Notice and of the nature and cause of the error,

iii. the cutting authority or authorities under which the error was made shall be reappraised or the quarterly stumpage adjustment recalculated to correct the error unless the cutting authority, the *Interior Appraisal Manual* or the application in tender for a timber sale licence specified that the stumpage rate is fixed, and

iv. the effective date of the redetermined rate shall be the first day of the month following the date on which the Notice was received by the regional manager or the director of Revenue Branch,

f. if an error has occurred and no Notice has been given with respect to it, the Notice shall be deemed to have been given on the date on which the regional manager or the director of Revenue Branch, became aware of the error or probable error,

g. no person who discovers or otherwise becomes aware of a mathematical error in a stumpage determination shall be obliged to send the Notice as required herein if that person, on reasonable grounds, believes that someone else has sent the Notice with respect to the same error,

h. the redetermined rate does not apply to timber scaled before the first of the month following the date upon which the Notice was given. No remedy will be available with respect to timber scaled before the first of the month,

i. in this section, a mathematical error is any of the following:

i. an error in transcribing or compiling approved cruise field data, or in the application of approved loss factors and taper equations,

ii. an error in a calculation made as part of the data submission,

iii. an error in transcribing the data from an approved data submission or in performing the calculation specified in the manual, and

iv. an error in the application of published appraisal parameters,

A difference between cruise estimates and actual timber quality or quantity does not constitute an error in the appraisal.

A difference between appraisal estimates of selling price or operating cost and the licensee's experience does not constitute an error in the appraisal.

Omission of data by the licensee on an approved data submission does not constitute an error in the appraisal.

2.4 Anniversary Date Reappraisal Procedure

1. The licensee shall submit to the district manager an interior appraisal data submission at least 45 days prior to the anniversary of the cutting authority.

2. The licensee shall submit to the district manager any other information required by the district manager or their designate for the purposes of the appraisal.

3. The submissions under subsections (1) and (2) of this section must be signed by a professional forester registered in the Province of British Columbia.

4. The district manager or their designate shall give the licensee the opportunity to augment or correct the information provided under subsections (1) and (2) of this section, if the district manager or their designate is of the opinion that the information provided is incomplete or in error.

5. The district manager or their designate shall give any information supplied by the licensee under this section to the person who determines the stumpage rate together with any other information that the district manager or their designate considers relevant to the appraisal.

6. The person who determines the stumpage rate may review the licensee's submission and information supplied by the district manager or their designate, and will notify the licensee, in writing, of any omissions, errors or provisions of the *Interior Appraisal Manual* that, in the opinion of the person who determines the stumpage rate, the signing professional forester may not have considered. The licensee's signing professional forester will consider the notification and may revise the submission.

7. To determine the stumpage rate, the person who determines the stumpage rate will consider:

   a. any information provided by the licensee and the district manager or their designate, and

   b. any information available to the person who determines the stumpage rate that is relevant to the appraisal.

8. Regional staff will notify the licensee of the stumpage rate in the form of a stumpage advisory notice and will provide the licensee with a summary of the information used to determine the stumpage rate.

9. Within three (3) weeks of the date of the stumpage advisory notice, the licensee may notify regional revenue staff, in writing, of any objection to the information contained in the stumpage advisory notice that could be resolved without a review or appeal. The written objection must state the grounds for objection as well as a statement

describing the relief requested. At this point, the objection is not considered a review or appeal under the *Forest Act* (section 143 to 150).

10. Regional revenue staff will notify the licensee, in writing, if the objection referred to in subsection (10) cannot be resolved. In this notification, the regional revenue staff will indicate that the three (3) week time requirement for notice for review specified in section 144 (3) of the *Forest Act*, will commence upon receipt of that notification.

2.4.1 Sudden and Severe Damage Reappraisal Procedure

1. The licensee shall submit to the district manager an interior appraisal data submission at the same time as the licensee requests a reappraisal.

2. Thereafter the sudden and severe damage reappraisal procedure shall be the same procedure as that required by subsections 2.4 (2) through 2.4 (8).

2.4.2 Cutting Authority Amendment Reappraisal Procedure

1. The licensee shall submit to the district manager an interior appraisal data submission at the same time as the licensee requests an amendment to the cutting authority area.

2. Thereafter the cutting authority area amendment reappraisal procedure shall be the same procedure as that required by subsection 2.4 (2) through 2.4 (8).

2.4.3 Minister Directed Reappraisal Procedure

1. The licensee shall submit to the district manager an interior appraisal data submission within thirty days of the minister's direction.

2. Thereafter the ministerial direction reappraisal procedure shall be the same procedure as that required by subsections 2.4 (2) through 2.4 (8).

2.5 Fixed Stumpage Rate and Extension of Term

Small Business Forest Enterprise Program

1. Under the small business forest enterprise program a fixed stumpage rate means that the reserve stumpage rate, levies and bonus bids will not change during the term of the cutting authority and all extension. The only exceptions are if a reappraisal is done under section 2.3.2 due to sudden and severe damage or under section 2.3.4 because of a minister's direction.

Woodlots

2. a. A stumpage rate of a cutting authority issued under a woodlot licence shall be adjusted quarterly unless a woodlot licensee chooses in accordance with this section to have a stumpage rate that is not adjusted quarterly.

   b. Where before or after the appraisal of the cutting authority area a licensee chooses to have a stumpage rate that is not adjusted quarterly, he or she may give written notice of that choice to the regional appraisal coordinator no more than 21 days after the date of the stumpage advisory notice. Where proper notice is given the stumpage rate will not be adjusted quarterly.

   c. Where prior to the anniversary date of a cutting authority a licensee who has a stumpage rate that is not adjusted quarterly wishes to have a quarterly adjusted stumpage rate after the anniversary date, the licensee must give written notice of that request to the regional appraisal coordinator prior to the issuance of the anniversary date reappraisal stumpage advisory notice. Where proper notice is given, the stumpage rate shall thereafter be adjusted quarterly.

   d. Where prior to the anniversary date of a cutting authority a licensee who has a quarterly adjusted stumpage rate wishes to have a stumpage rate that is not adjusted quarterly after the anniversary date, the licensee must give written notice of that request to the regional appraisal coordinator prior to the issuance of the anniversary date reappraisal stumpage advisory notice. Where proper notice is given, the stumpage rate shall thereafter not be adjusted quarterly.

District Average Value Index

3. Where the stumpage rate has been determined under section 6.1 or section 6.2 and the term of the cutting authority is extended, the cutting authority area must be reappraised. The reappraisal is effective on the anniversary date.

Timber Licence

4. Where the term of a cutting authority that includes the authorization to harvest timber in a timber licence area has been extended, the stumpage rate will be determined under section 6.7.2, if:

   a. the cutting authority has a term that began before May 1, 1995, and

   b. the cutting authority area has not been appraised.

2.6 Point of Appraisal

The appraiser must select the point of appraisal, from the list below, which will produce the least total harvesting and delivery cost estimate for the cutting authority area. All species, qualities and sizes of timber must be appraised to a single point of appraisal. The appraiser must estimate the cost of transporting timber to the sawmill which is nearest the point of appraisal and produces the least total harvesting and delivery cost estimate. The appraiser must then assume manufacturing costs and average market values for the zone relative to that point of appraisal.

A sawmill is defined as a conversion facility capable of producing lumber and chips, and includes the log sorting/storage areas and satellite mill yards if applicable. A sawmill does not have to be physically capable of producing lumber and chips from all the wood appraised to that site. A sawmill is considered capable of producing lumber and chips unless it has been damaged by fire or a destructive force of nature. A damaged sawmill will not be considered a location at a point of appraisal if it has not been repaired within three months of the damage. It will be reconsidered as a location at a point of appraisal on the first day of the next stumpage quarter once it is capable of producing lumber and chips again.

The logs are deemed to have reached the point of appraisal once they have entered the site, commonly the weight scale, upon which the sawmill is located. All further log handling costs except scaling (see section 4.8) are deemed to be part of the manufacturing cost estimate.

Table 2-1 Points of Appraisal

Northern Interior (Zone 5, 15, 25 & 35)			
Bear Lake	Fort St. James	Mackenzie	Smithers
Burns Lake	Fraser Lake	Prince George	Strathnaver
Clear Lake	Houston	Quesnel	Upper Fraser
Engen	Isle Pierre		Vanderhoof

Skeena (Zone 6, 16, 25 & 36)			
Terrace	Carnaby	Hazelton	Kitwanga

Southern Interior (Zone 7, 17, 25 & 37)			
Adams Lake	Galloway	Merritt	Thrums
Armstrong	Grand Forks	Midway	Valemount
Canal Flats	Kamloops	Okanagan Falls	Vavenby
Canoe	Kelowna	Park Siding	Westbank
Castlegar	Lavington	Princeton	Ymir
Craigellachie	Louis Creek	Radium	
Creston	Lumby	Revelstoke	
Elko	McBride	Slocan	

South Cariboo (Zone 8, 18, 25 & 38)					
100 Mile House	Chasm	Lytton	Squamish	Williams Lake	Boston Bar

Fort Nelson - Peace (Zone 9, 19 & 25)			
Chetwynd	Fort Nelson	Fort St. John	Taylor

2.6.1 Method of Transportation to be Used in Determining Point of Appraisal

The estimate of transportation costs for a cutting authority area must be determined by using the criteria for determining the transportation cost estimate as set out in this manual for the method of transportation referred in this manual to the point of appraisal that will produce the least total harvesting and transportation cost estimate unless:

a. that particular method of transportation is not permitted by the cutting authority, or

b. as provided in section 4.5.1(1).

In considering whether or not a particular method of transportation is not permitted by the cutting authority, the appraisal coordinator must not consider, nor take into account, nor have regard for:

1. Any destination referred to in the cutting authority.

2. Any enactment.

3. Any document other than the cutting authority.

4. Any other fact.

2.7 Calculation Conventions

1. All operating cost calculations will be performed to the full capacity of the calculating machine with the results truncated at four places of decimals and rounded to two places.

2. Results from 5 to 9 will be rounded upward and from 1 to 4 will be rounded downward.

3. Each phase cost estimate ($/m^3) (see chapter 4) will be rounded to the nearest cent and will be added to the other phase cost estimates to obtain the total cost estimate.

4. Where values are specified as limits (constraints or requirements for equations), they will be treated as absolute values and actual measurements or records will not be rounded before use unless otherwise specified in this manual.

5. MPS stumpage rate calculations will be performed according to the methods outlined in Appendix V, entitled *Specification: Calculating Stumpage Rates for Interior Appraisals for the Market Pricing System.*

6. CVP stumpage rate calculations will be performed according to the methods outlined in Appendix VI, entitled *Specifications: Calculating Stumpage Rates for Interior Appraisals.*

Interior Selling Prices 3

Selling price estimates are based on schedules of lumber and chip values collected and published by Revenue Branch. When the values are compiled and distributed, they become an integral part of this manual.

3.1 Lumber Average Market Values

Monthly market value information for the interior is obtained by Revenue Branch from lumber producers located in each of the recognized average market value zones. Average market values (AMV) for each species are compiled by dividing total sales value by total sales volume for each zone. When there is inadequate data to provide a reasonable average for a species in one zone, the data is adjusted and combined with other species in other zones. Separate AMVs are derived for small log licences which require utilization of small logs, stud, and random lumber.

The volume that is manufactured to Canadian Lumber Standard/American Lumber Standard (CLS/ALS) sizes is reported in footboard measure (fbm). Lumber manufactured in non-CLS/ALS sizes is adjusted to equivalent CLS/ALS sizes. The total volume for each species includes all sizes and grades of rough and dressed lumber in the green and dried state. Also included are railroad ties, trim blocks, finger jointed CLS/ALS lumber and machine stress rated (MSR) lumber.

The total net sales value for each species is reported in Canadian dollars, after freight, actual sales expenses incurred to a maximum of 5%, cash discounts, duty and entry charges and leased rail car costs have been deducted from the selling price.

1. Small Log AMVs

   Small log AMVs are based on dimension lumber products capable of being produced from small trees.

   Small log AMVs are used for cutting authorities with an average net volume per tree (conifers only) of less than 0.20 m^3 where the governing licence document does not require this restriction. Cutting authorities meeting this criteria will use lumber AMVs listed under "AMVs for Small Logs" which is included in the quarterly stumpage parameters published by Revenue Branch.

   The selection of a small log AMV zone (Zones 15, 16, 17, 18 and 19) will only affect AMVs and will be made at the time of appraisal or reappraisal. Lumber recovery factors (LRF) and manufacturing costs will continue to be determined by zonation based on point of appraisal.

2. AMVs for Licences which Require Utilization of Small Logs

   AMVs for licences which require utilization of small logs are based on dimension lumber products capable of being produced from trees smaller than standard timber utilization requirements. These AMVs are created by removing the effect of the LRF add-on (section 3.1 (1)) from "Small Log AMVs."

   These AMVs are used for all cutting authorities where the governing licence document restricts harvesting to stands of timber having a net average cruise volume

per tree of less than 0.20 m^3/tree. Other similarly restricted licences may also use these AMVs at the regional manager's discretion. Cutting authorities meeting this criteria and having a net average cruise volume/tree of less than 0.20 m^3/tree will use lumber AMVs listed under "AMVs for licences which Require Utilization of Small Logs" (Zone 25) which is included in the quarterly stumpage parameters published by Revenue Branch.

The selection of AMV Zone 25 will only affect AMVs and will be made at the time of appraisal or reappraisal. Lumber recovery factors and manufacturing costs will continue to be determined by zonation based on point of appraisal.

3. Stud Lumber AMVs

   Stud AMVs are compiled for two species groups; Lodgepole Pine/Douglas-fir/Larch and Spruce/Balsam. No other species are recognized as "stud species".

4. Random Lumber AMVs

   Random AMVs are compiled for all species.

5. Mandatory Grade 4 Hemlock AMVs

   Mandatory grade 4 hemlock AMVs will be used for cutting authorities where the optional utilization of grade code 4 is not provided by the cutting authority unless otherwise directed, by the director, Revenue Branch. Cutting authorities meeting this criteria will use lumber AMVs listed under "AMVs for Mandatory Grade 4 Hemlock Log Utilization" which are included in the quarterly stumpage parameters published by Revenue Branch.

   The selection of a mandatory grade 4 hemlock AMV zone (Zones 35, 36, 37 and 38) will only affect AMVs and will be made at the time of appraisal or reappraisal. Lumber recovery factors and manufacturing costs will continue to be determined by zonation based on the point of appraisal.

3.1.1 Application of Lumber Average Market Values

Application of the small log, licences which require utilization of small logs, stud and random lumber and mandatory grade 4 hemlock AMVs in appraisals for all cutting authorities are made according to the formula in section 3.3.

3.1.2 Lumber Average Market Value Zones

Refer to section 2.6 for a list of points of appraisal by lumber AMV zones.

3.2 Chip Average Market Values

Monthly market value information is obtained and compiled by Revenue Branch.

3.3 Calculation of Species End Product Selling Price

The total end product selling price in $/m^3$ is determined for each species using lumber recovery factors from the cruise compilation summary, LRF update add-ons, current applicable average market values for the species and zone and species chip yield factors. Lumber and chip prices are each calculated to the nearest cent before being totalled.

Burned Timber

In the case of burned timber, the burn percent is used to reduce the selling price of the stand by assigning a zero value to the estimated chip recovery of the burned wood. This is to compensate for an increased manufacturing cost, lower lumber and chip recovery and lower lumber and chip average market values associated with processing burned timber.

$$\text{Burn Percent} = \frac{\text{BT } m^3}{\text{Total } m^3} * 100$$

where

BT m^3 = volume of light, moderate and heavily fire-damaged timber
Total m^3 = total volume *inclusive* of burned wood

The only other adjustment to the appraisal is for heavily fire-damaged timber and is covered under section 4.4.4 (Tree to Truck Additive for Damaged Timber).

The LRFs are determined from the following formulas and tables:

1. Zonal LRF Update Add-ons and Combined Product Recovery Factors

Table 3-1 LRF Update Add-ons and Combined Product Recovery Factors

Zone	Species	LRF Update Add-ons	Combined Product Recovery Factors
Northern Interior (Zone 5)	Lodgepole Pine	84	438
	Spruce	105	438
	Balsam	96	438
	Douglas Fir	70	438
	Larch	67	438
	Cedar	45	438
	Hemlock	50	438
	White Pine	65	438
Skeena (Zone 6)	Lodgepole Pine	52	437
	Spruce	71	437
	Balsam	69	437
	Cedar	18	437
	Hemlock	21	437
Southern Interior (Zone 7)	Lodgepole Pine	78	426
	Spruce	101	426
	Balsam	90	426
	Douglas Fir	62	426
	Larch	62	426
	Cedar	43	426
	Hemlock	45	426
	White Pine	60	426
	Yellow Pine	63	426

Zone	Species	LRF Update Add-ons	Combined Product Recovery Factors
Southern Cariboo (Zone 8)	Lodgepole Pine	71	432
	Spruce	92	432
	Balsam	86	432
	Douglas Fir	59	432
	Larch	57	432
	Cedar	35	432
	Hemlock	39	432
	White Pine	55	432
	Yellow Pine	61	432
Fort Nelson-Peace (Zone 9)	Lodgepole Pine	62	434
	Spruce	79	434
	Balsam	71	434

Example: (Zone 5) Lodgepole Pine	Cruise LRF		LRF Update Add-on		Appraisal LRF
All Logs	180	+	84	=	264

2. Chip Yield Derivation

Chip Yield (BDU/m^3) = (Combined Product Recovery Factor - Appraisal LRF) * Species Chip Yield Factor

3. Chip Yield Factors

Table 3-2 Chip Yield Factors

Species	Factor (BDU/fbm)
Balsam	.00072
Cedar	.00067
Fir	.00098
Hemlock	.00089
Larch	.00119
Lodgepole Pine	.00087
Spruce	.00076
White Pine	.00078
Yellow Pine	.00095

4. Determination of Stud Log Percent

The stud log percent is determined as follows:

The stud log percent for each stud species (spruce, balsam, lodgepole pine, Douglas fir and larch) is determined from the cruise compilation summary. The stud log percent is defined as the net volume of 5 m logs with top diameters under 20 cm expressed as a percentage of the total net cruise volume. The stud log percent is calculated and rounded to the nearest whole percentage point.

The percent stud AMV is determined as follows:

- If the stud log percent is 45 or greater and less than or equal to 65:

  the percent stud AMV = (5 * stud log %) - 225,

- If the stud log percent is less than 45, the percent stud AMV = 0, and
- If the stud log percent is more than 65, the percent stud AMV = 100.

5. Shipping Differential

The Shipping Differential for the following points of appraisal are:

Table 3-3 Shipping Differentials

$0.58/m^3	$1.01/m^3	$5.80/m^3
Bear Lake	Adams Lake	Fort Nelson
Fort St. James	Clear Lake	
Mackenzie	Louis Creek	
Quesnel	Merritt	
Strathnaver	Midway	
	Okanagan Falls	
	Princeton	
	Slocan	
	Thrums	
	Westbank	
	Ymir	

6. Manufacturing Cost Differential

Table 3-4 Manufacturing Cost Differential

$5.95/m^3
Fort Nelson

7. Calculation of Total Species End Product Selling Price

a. Lumber AMV = (% Stud AMV/100) * (Stud AMV/1000)
+ (1.0 - (% Stud AMV/100)) * (Random AMV/1000),

b. Lumber SP = Lumber AMV * Appraisal LRF,

c. Chip SP = Chip Value * Chip Yield, and

d. Total Species SP = Lumber SP + Chip SP - D.

Where:	SP	=	Selling Price in $\$/m^3$
	AMV	=	The Lumber Average Market Value (of the appropriate species in the appropriate zone).
	Appraisal LRF	=	The LRF for all logs from Section 3.3 (1).
	Chip Value	=	The Chip Average Market Value (of the appropriate species for the appropriate point of appraisal)
	Chip Yield	=	The Chip Yield for all logs from section 3.3 (2).
	D	=	The Differentials for the appropriate points of appraisal from section 3.3 (5) and 3.3 (6).

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Operating Cost Estimation 4

The operating cost is the sum of the trended total logging cost estimate, the trended basic silviculture cost estimate and the manufacturing cost estimate as detailed in this chapter. The cost estimates in this chapter are applicable to all cutting authorities unless superseded by the procedures outlined in section 2.1.

4.1 Cost Estimates

The appraisal coordinator must estimate development, harvesting and transportation costs for a cutting authority area using the information that the appraisal coordinator has at the time the estimate is made in a manner that will produce the least total development, harvesting and transportation cost estimate.

The estimate of harvesting costs must be determined by using the criteria for determining the harvesting cost estimates as set out in this manual for the method of harvesting referred to in this manual which will produce the least total harvesting and transportation cost estimate unless that particular method of harvesting is not permitted by the cutting authority.

The estimate of transportation costs must be determined by using the criteria for determining the transportation cost estimates as set out in this manual for the method of transportation referred to in this manual to the point of appraisal which will produce the least total harvesting and transportation cost estimate unless:

a. that particular method of transportation is not permitted by the cutting authority, or

b. as provided in section 4.5.1(1).

In considering whether or not a particular method of harvesting or transportation is not permitted by the cutting authority, the appraisal coordinator must not consider, nor take into account, nor have regard for:

1. Any destination referred to in the cutting authority.
2. Any enactment.
3. Any document other than the cutting authority.
4. Any other fact.

Once the least cost point of appraisal has been established, the cost estimate of manufacturing for that point, as specified in section 4.11, is applied.

The phase cost estimating equations and tables in this manual were derived from a survey of logging and lumber manufacturing operations in the interior. The survey includes both employee and contractor operations. The survey collects actual costs to the licensee (including wages, benefits, overtime, depreciation, fuel, supplies, repair and maintenance, moving assistance, applicable licences, insurance, etc.) from a representative sample of interior operations. Contract costs (including contractor profit and risk margins, overhead, crew transportation, etc.) are included.

The phase cost estimates are complete and reflect average conditions, operating practices, and phase accounting allocations experienced in the survey data. Additions and subtractions to phase cost estimating equations and tables to reflect specific operating conditions are not permitted. The cost estimates have an effective cost base date of July 1, 2000.

4.1.1 Specified Operations

In addition to the logging methods and phase costs that are covered by this manual, there are specified operations which require special cost estimating. Table 4-1 contains a complete list of specified operations for which certain phase cost estimates are based on the information on hand rather than on the tables and formulas in this manual. Other phase cost estimates in this manual are combined with the specified operation cost estimate to determine the total operating cost. Where appropriate, specified operations are weighted according to the applicable net cruise volume.

Specified operations shall be recognised only when the treatment is required within the Silviculture Prescription, Cutting Authority Document or the Forest Development Plan as dictated by site conditions. Where a specific treatment is not required based on these conditions, the conventional cost estimate shall apply.

Further information on specified operations may be obtained from the regional appraisal coordinators.

Table 4-1 Specified Operations

Specified Operations	Affected Phase
Salvage of small patches of damaged or diseased timber dispersed over a large area[1]	Tree-to-Truck (section 4.4), Transportation (section 4.5.1 and 4.5.2), Road Management (section 4.6), Overhead (section 4.8.1).
Root Disease Control	Silviculture (section 4.9).
Skidder Swinging (includes all ground skidding methods)[2]	Tree-to Truck (section 4.4).

1. The regional manager or their designate will determine which of the affected phases listed in the table apply.

2. Skidder swing will only be considered between harvest methods listed in section 4.4.1 (four methods), in order to deliver logs to an existing road/landing.

4.2 Appraisal Data Requirements

The cruise and all other pertinent information required for the appraisal must be submitted by the licensee with the appropriate interior appraisal data submission to the district manager.

Unless otherwise specified by the director, Revenue Branch, cruise data must be gathered and compiled according to the approved interior standard timber utilization specifications in Table 4-2 below and in accordance with the following Ministry of Forests publications:

- *Cruising Manual* (*Cruising Manual* web site: http://www.for.gov.bc.ca/revenue/manuals/cruising/),
- *Cruise Compilation Manual*,
- Regional Publications - (e.g., *Operational Cruising Requirements in a Forest Region*), and
- Forest Service Policies - (e.g., *Timber Utilization Standards, Policies & Procedures for the Interior of the Province*).

Table 4-2 Standard Timber Utilization Requirements

Description	
The following standard timber utilization requirements must be used for all appraisals.	
Stumps (Measured on the side of the stump adjacent to the highest ground.)	
• no higher than	30.0 cm
Diameter (outside bark) at stump height	
• lodgepole pine: all timber that meets or exceeds	15.0 cm
• all other species: all timber that meets or exceeds	20.0 cm
Top diameter (inside bark or slab thickness)	
• for all species and ages, except cedar older than 141 years, all timber that meets or exceeds	10.0 cm
Top diameter (inside bark or slab thickness)	
• for cedar older than 141 years, all timber that meets or exceeds	15.0 cm
Minimum length	
• log or slab	3.0 m

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 data list in a format prescribed by the regional manager.

The net cruise volume (m^3) is the gross volume (m^3) less decay, waste and breakage by species. The cutting authority total net cruise volume is calculated by multiplying the net cruise volume per hectare (m^3/ha) by the total merchantable timbered area (ha) to be harvested, net cruise volume is rounded to the nearest cubic metre as required in the *Cruising Specifications*.

Each reappraisal uses a cruise volume by species which is the original net cruise volume adjusted on the basis of approved amendments to the cutting authority since the last appraisal (see section 2.3).

4.2.1 Comparative Cruising

Comparative cruising is defined as the borrowing of cruise data from an existing, appropriately comparable, cutting authority in place of site specific data for an appraisal of a new cutting authority. If there is time to perform a full cruise, then the timber will be cruised. However, comparative cruise data may be utilized for cutting authorities with volumes greater than 5 000 m^3 if:

- the regional manager has determined that the timber is in imminent danger of being destroyed,
- the area is in an approved Emergency Bark Beetle Management Area (EBBMA) as designated by the Minister of Forests and within an approved Emergency Management Unit (EMU) as designated by the beetle management coordinator,
- the licensee has previously harvested comparative cutting authority's in a timely manner, and
- the regional manager has determined that the requirement to perform a full operational cruise will delay expeditious harvesting and result in further damage.

Comparative cruise data will be chosen following procedures set out in section 2.1.2.3 of the *Cruising Manual.*

For cutting authorities with volumes of 5 000 m^3 or less refer to section 6.2.

4.3 Development

Development costs are estimated for each of three categories:

1. New construction.
2. Reconstruction and replacement.
3. Access management.

   Throughout this section the term "roads" includes roads, drainage and other pertinent structures.

   a. A total cost ($) is calculated for each category of section 4.3.1, and 4.3.1.1. These category costs are summed to provide a total development cost estimate.

   b. In order to calculate a unit ($/m^3) cost by category, the applicable volume will be the total net cruise volume (as defined in section 4.2) or the remaining volume (section 4.3.1(2)). Where the cutting authority document requires obligatory utilization of deciduous timber, the deciduous volume must be included in the applicable total net cruise volume.

Tributary Volume

The costs for development works may only be allocated to the first tributary cutting authority, subject to section 4.3.1.1.5. A cutting authority is considered to be tributary:

1. If timber from the cutting authority is appraised over the development works in question, or
2. If the development works occur on a main service road. A main service road is defined as a main access road to the operation, necessary to maintain and supply the day-to-day harvesting activities of the cutting authority being appraised. To qualify, a main service road must be used on a regular basis for transportation of bulk fuels, supplies, equipment and the harvesting crew.

Development Cost Estimating

1. Tabular cost estimates are made for construction of roads and drainage structures using the applicable equations in section 4.3.2 of this manual. Tabular estimates must be used for an appraisal when physical dimensions and conditions fall within the tabular limitations.
2. Detailed engineering cost estimates are made when the physical dimensions and conditions of a road section or a drainage structure exceed the tabular limitations of the manual. A detailed engineering estimate is made according to section 4.3.3. Projects eligible for this costing method are listed in section 4.3.3.

Where applicable, these cruised volumes and development cost estimates must be segregated on the basis of legal boundaries.

4.3.1 Development Cost Categories

Development cost allocation (section 4.3.1.1) applies to all cost estimates made under this section.

New Construction

1. New construction is defined as the following construction phases: subgrade construction, placement of additional stabilizing material and the construction and installation of drainage and other pertinent structures.

   New construction costs are allocated to the first tributary cutting authority (subject to section 4.3.1.1.5).

   a. Road Cost Estimates

      i. Tabular cost estimates

         Each road section cost estimate is determined from the appropriate tables (section 4.3.2). These section costs are totalled to give a road cost estimate for each road. The road costs for all roads are then totalled to give a total cost for tabular roads.

      ii. Detailed engineering cost estimates

         Each project cost is estimated according to section 4.3.3. These projects may include: (see section 4.3.3 for a complete listing).

   The total of the estimated costs for each project is summed to give a total cost ($) for engineered roads.

   b. Drainage Structure Cost Estimates

      Each drainage structure cost estimate is determined either from the appropriate table (section 4.3.2.4) or as a detailed engineering cost estimate (section 4.3.3).

      Where materials are reused by the original purchaser at a second or subsequent location, the cost estimate will include dismantling, transportion and installation at the new site. The initial materials cost and delivery costs are excluded.

      Where used bridge materials are purchased from a legally non-associated party, the cost of purchase and shipping those materials will be included in the cost estimate. The requirements of section 4.1 still apply.

The total of the estimated costs for all bridges are summed to give a total cost for bridges.

The total costs for tabular roads, engineered roads, and bridges are totalled and then divided by the total net cruise volume to give a unit cost ($/m^3$) for new construction.

Reconstruction and Replacement

2. Reconstruction and Replacement are defined as:

   a. replacement or structural repair of a major drainage structure (e.g., replacing stringers, cross ties, or cribbing), or

   b. major resurfacing, which means resurfacing sections of more than 0.3 km in length that were initially surfaced but have deteriorated due to long term wear and tear, or

   c. major reconstruction, which means restoring at least 0.1 km of road (per occurrence) that requires complete rebuilding of the subgrade.

   The costs approved under this section must not qualify under routine maintenance as described in section 4.6.

   Bridges replaced on forest service roads that are included in the Forest Renewal B.C. five year "Bridge Replacement Program on Forest Service Roads", or are otherwise funded by the Crown will not be included in any appraisal. Other major forest service road reconstruction or upgrades that are funded by the Crown will not be included in appraisals.

   Where a Ministry of Transportation (public) road requires reconstruction or upgrade to forest service standards for hauling Crown timber, the project must be approved in advance by the director of Revenue Branch before it can be included in an appraisal of tributary timber. The detailed engineering cost estimate for each project must be based on arms length competitive bids. The approved project costs may be apportioned to multiple users as per section 4.3.1.1.5.

   Reconstruction and replacement cost estimates are determined as detailed engineering cost estimates (section 4.3.3) and must be approved in advance by the district manager. The cost estimates may be applied to remaining tributary timber (i.e., applicable volume) provided the project was not known of or planned for at the time of appraisal. If the cost estimate is not applied to the remaining tributary volume, it must be applied to the first tributary cutting authority appraised over the reconstruction or replacement. Section 4.3.1.1.5 may be applicable for main roads. Cost estimates for reconstruction and replacement are not to exceed the tabular costs for new construction under similar conditions.

> Costs will not be recognized if the licensee has been negligent or has not followed approved plans or standards as defined under the *Forest Practices Code* and Regulations.

Access Management

3. Access management is defined as the temporary removal of a major drainage structure or construction of a barrier, including a gate, excavation, or placement of boulders with the purpose of temporarily eliminating all vehicle access.

   The access management required in the cutting authority must be based on a formal access management strategy approved in the forest development plan.

   Costs may be determined for more than one removal/replacement of the structure/barrier if the cutting authority term warrants it.

   Costs under this section are included under road management as described in section 4.6 or overhead as described in section 4.8.1.

4.3.1.1 Development Cost Allocation

Where proration is required for section 4.3.1.1.1, 4.3.1.1.2 and 4.3.1.1.3:

$$\text{Crown Share} = \text{Total Estimated Cost} * \frac{\text{Appraised Timber Volume}}{\text{Total Timber Volume}}$$

Where:

Crown Share ($)	=	Dollar amount to be allocated to stumpage-bearing timber in the cutting authority being appraised.
Total Estimated Cost ($)	=	Dollar amount of the total development cost estimate.
Appraised Timber Volume (m^3)	=	Volume of Crown timber that is tributary to the project and under the control of the licensee or a company legally associated with the licensee, including volume in all areas contributing to the allowable annual cut determination.
Total Timber Volume (m^3)	=	Total volume of Crown and private timber that is tributary to the project and under the control of the licensee or a company legally associated with the licensee.

In all cases volumes are estimated from the latest approved operational or inventory cruise data and maps of the area within the drainage to the height of land.

The Crown share is a dollar amount which is included in the appraisal of a tributary cutting authority, subject to section 4.3.1.1.5.

Development cost estimate is allocated according to the outline below (see also Appendix III).

4.3.1.1.1 Development Cost Estimates on Crown Lands

1. Development providing access to appraised timber only:

   Total estimated costs are included in the appraisal.

2. Development providing access to non-appraised timber only:

   Cost estimates are not included in the appraisal.

3. Development in appraised timber areas providing access to both appraised and non-appraised timber held by the licensee or a company legally associated with the licensee:

   All costs are prorated between appraised and non-appraised timber. The appraised timber portion is then included in the appraisal.

4.3.1.1.2 Development Cost Estimates for Full Appraisal on Timber Licence (TL) Cutting Authorities

New development will be allocated as in section 4.3.1.1.1.

4.3.1.1.3 Development Cost Estimates on Private Land

When a new or reconstructed road or structure on private land is required for Crown timber extraction, the estimated cost of the road or structure will be included in the appraisal of a tributary cutting authority according to the procedures of section 4.3.1.1 and the following guidelines:

1. Development provides access to appraised timber only:

   The total estimated costs are included in the appraisal.

2. Development provides access to non-appraised timber only:

   Cost estimates are not included in any appraisal.

3. Development provides access to both non-appraised and appraised timber.

   All cost estimates are prorated between non-appraised and appraised timber (section 4.3.1.1) and then the Crown portion is included in the appraisal.

4.3.1.1.4 Existing Roads and Structures

The following are defined as existing roads for the cutting authority being appraised and are not eligible for inclusion in development cost estimates:

1. Costs of constructed roads that have been previously considered in appraisals of Crown timber within another cutting authority.

2. Roads previously constructed and used to haul non-appraised timber (excluding right-of-way).

3. Roads previously constructed all or in part for purposes unrelated to logging the cutting authority area being appraised.

4. Roads previously constructed, repaired or reconstructed on private land before August 1,1996.

5. If the existing road requires reconstruction or replacement after August 1, 1996, the cost estimate is made as described in section 4.3.1. If the existing road is on private land, road and land use charges may be recognized as described in section 4.7.

   A road on private land that has previously been included in an appraisal because it was required for only short term timber extraction (as per previous policy) shall continue to be included upon reappraisal.

4.3.1.1.5 Extended Road Amortization

Where the development cost estimate exceeds $\$4.00/m^3$ a written agreement may be made which apportions the main access road cost estimate to two or more tributary cutting authorities. The main access road ends at the far boundary of the first cutting authority being appraised.

The agreement is subject to the following conditions:

1. Only main access roads serving the tributary cutting authorities (as defined in section 4.3) may be considered.

2. With exception of woodlot licences, each cutting authority must be in the licensee's approved forest development plan.

3. For woodlot licences, each cutting authority to which costs are amortized must be approved and appraised during the ten year period from the signing of the agreement. Reappraisals may continue to carry the costs until the cutting authority expires.

4. The agreement must be reviewed by the regional manager or the regional manager's designate prior to being signed by the licensee and the licensor before it can be included in the appraisal or reappraisal.

5. The amount apportioned will be a fixed lump sum which will be trended to the manual cost base and as provided for in section 4.12 but not otherwise revisited.

6. The term of the agreement must not exceed the terms of the cutting authorities.

7. The agreement will only be valid under CVP and confers no obligation for the Crown to compensate licensees for any unamortized costs.

4.3.2 Tabular Cost Estimates

These roads are generally a single lane width with turnouts. These roads may or may not be stabilized (ballasted or surfaced) with additional materials.

4.3.2.1 Subgrade Construction

The subgrade construction cost estimate includes:

- clearing,
- grubbing,
- stripping,
- debris disposal,
- stump removal,
- ditch construction,
- turnout construction (not landings),
- material costs, and
- installation of culverts with diameters up to 950 mm or the equivalent cross-section area or single log abutment culverts up to 3.4 m span.

Right-of-way felling and logging is excluded.

4.3.2.2 Subgrade Construction Variables

For appraisal purposes the following subgrade construction variables are recognized:

1. Section length: (L)

   Road sections are recorded in multiples of 0.1 km. Each section should be representative of a single moisture class. Each section should be 1 km or longer, although some individual section lengths less than 1 km but greater than 0.1 km are acceptable for extreme variations of slope or percent rock. The section length includes that portion traversing through landings. For ground skidding, short roads (up to and including 100 m long) that access single landings are included in the tree-to-truck cost estimates (section 4.4) and are not eligible for development cost estimates.

2. Road Type:

   - Operational Roads (OP): - are generally built under the authority of a road permit but portions may be constructed under the cutting authority. An operational road exists within a cutblock when the road accesses timber beyond the cutblock or is intended to access timber beyond the block as shown on a forest development plan, and there is a physical separation of the blocks or cutting authorities. Blocks or cutting authorities that share a common boundary are not considered separate for the purposes of defining the road type.

   - Block Roads (BLOCK): - are generally built under the cutting authority and include roads which are located completely within the cutblock, continuous to the edge of a cutblock, which access separate portions of a cutblock covered under the same silviculture prescription, or access a series of cutblocks that share a common boundary. Those cutblocks that share boundaries may be included in the cutting authority being appraised or a different cutting authority.

   - Snow Roads (WINTER): - snow roads are a form of overland construction that uses clean snow and ice as fill. Suitability of materials is not an issue as all are frozen. Stripping is limited to large stumps that cannot be easily covered with snow or ice. Cuts into mineral or organic soil must not exceed 0.3 m in depth for sustained distances or 0.5 m in depth for distances up to 5 m. This road type includes operational and block road categories. Stabilizing costs are not applicable. Snow (winter) roads constructed on side slopes of greater than 15% are appraised as block roads.

3. Uphill Side Slope: (SLOPE %)

   Uphill side slope percent may show a variation (+/- 15% about the average) within any section length and represents the average of all slopes in the section to a maximum of 50%. To derive an average for uphill side slope percent, several representative cross-section measurements are taken along the section length and the sum of one-half of the distance on each side of the measurement is applied as a weight against the measurement at that cross-section. The uphill side slope percent is measured at right angles to the road centreline and is recorded to the nearest integer. Where the road is located on a bench, the uphill side slope of the bench is used.

4. Percent Rock: (ROCK %)

   Rock includes bedrock and large boulders. It may be rippable or may require drilling and blasting. Rock percent may show a variation (+/- 15% about the average) within any section length and represents the average of all rock percents in the section to a maximum of 50%. To derive an average percent rock, several representative cross-section measurements are taken along the section length and the percent rock calculated. The sum of one-half of the distance on each side of where the measurements were taken is applied as a weight against the percent rock calculated at that cross-section. The percent rock is determined as follows:

$$\text{ROCK \%} = \frac{h^2}{H^2} * 100$$

Where:

h = the vertical cut height of all rock measured from the bottom of the ditch

H = the total vertical cut height of all materials above the bottom of the ditch

To determine the percent rock for roads not yet constructed, constructed roads on similar land/rock forms are used as a guide. Alternately, where estimates of rock volume from commercial road design programs are available for tabular sections, that information may be used to estimate the rock percent.

5. Soil Moisture Regime (SMR):

   Those biogeoclimatic zones/subzones with site series identified as "M", "VM" or "W" in the shaded area of the table in Appendix IV are considered "Wet" for appraisal purposes.

6. Biogeoclimatic Zones

CWH/MH	-	Coastal Western Hemlock/Mountain Hemlock
BWBS	-	Boreal White and Black Spruce
ICH	-	Interior Cedar Hemlock
SBS	-	Sub Boreal Spruce
SBPS	-	Sub Boreal Pine/Spruce
ESSF	-	Engelmann Spruce - Subalpine Fir
IDF	-	Interior Douglas Fir

4.3.2.3 Subgrade Cost Estimate

For each operational and block road the subgrade cost estimate in $/km is determined from the equation for the appropriate road group.

Road Group	
2	14512 + (101 * SLOPE%) + (135 * ROCK%) + (3100 * SBS) + (3181 * OP)
3	1283 + (545 * SLOPE%) + (9682 * OP) ($2,176/km set as minimum. If equation yields less than $2,176/km then use $2,176/km)
4	5404 + (296 * SLOPE%) + (5556 * SMR) + (5518 * OP)
5	4989 + (159 * SLOPE%) + (171 * ROCK%) + (4831 * SMR) + (4054 * OP)
6	-1218 + (551 * SLOPE%) + (369 * ROCK%) + (8241 * OP) + (3202 * ESSF) ($2,817/km set as minimum. If equation yields less than $2,817/km then use $2,817/km)
7	6093 + (6179*ESSF) + (22592 * ESSF*OP) + (6024 * BWBS*OP) + (14525*SBS*OP)
8	2567 + (6249* OP) - (5547*IDF*OP)
9	2956 + (182 * SLOPE%) + (237 * ROCK%) + (4348 * OP)

10	8429 + (176 * SLOPE%) + (331 * ROCK%)
11	2698 + (474 * SLOPE%) + (371 * ROCK%) + (5329 * OP) + (27430 * CWH/MH) ($5,287/km set as minimum. If equation yields less than $5,287/km then use $5,287/km)
12	7296 + (324 * SLOPE%) + (258 * ROCK%) + (4686 * OP)

Where:

Road groups are defined in Table 4-3.

OP	=	1 if an Operational Road, otherwise = 0
SMR	=	1 if Soil Moisture Regime is "wet". Otherwise SMR = 0.
ESSF	=	1 if road construction is within this biogeoclimatic zone. Otherwise ESSF = 0
ICH	=	1 if road construction is within this biogeoclimatic zone. Otherwise ICH = 0
BWBS	=	1 if road construction is within this biogeoclimatic zone. Otherwise BWBS = 0
SBS	=	1 if road construction is within this biogeoclimatic zone. Otherwise SBS = 0
IDF	=	1 if road construction is within this biogeoclimatic zone. Otherwise IDG = 0
CWH/MH	=	1 if road construction is within this biogeoclimatic zone. Otherwise CWH/MH = 0

Snow roads

The subgrade cost estimate for all new and annual refreezing of snow roads (winter) is $2,718/km.

Table 4-3 Road Groups

Road Group #	Districts Included	Within the Geographic Boundary of a TSA, SB and TFL
1	Forest districts in this group have been redistributed, Kispiox to group 2 and Kalum to group 11	
2	Bulkley - (Cassiar) Kispiox Lillooet	
3	Lakes, Morice	
4		Williams Lake TSA, SBs J, K & L Prince George TSA, SBs G & H, TFLs 30, 53 Quesnel TSA, SBs E, F, G, H & I, TFL52 100 Mile House TSA, SBs, G & H
5	Vanderhoof	Prince George TSA, SBs C, E, F & I, TFL5
6		Mackenzie TSA, SBs G through P, Prince George TSA SB's A & B
7	Dawson Creek Fort St. John Fort Nelson	Mackenzie TSA, SBs A through F
8	Chilcotin	Williams Lake TSA, SBs F, G, H, I and P Quesnel TSA, SBs A, B, C & D, TFL5 100 Mile House TSA, SBs A, B, C, D, E, F
9	Kamloops Merritt Penticton Vernon	
10	Boundary Cranbrook Invermere	
11	Arrow Columbia (Golden, Revelstoke) Kalum Kootenay Lake	
12	Clearwater Robson Valley Salmon Arm	Williams Lake TSA, SBs M & N

Woodlot and Timber Licence cutting authorities are assigned to the road group for the area in which they are geographically located.

4.3.2.4 Drainage Structures

An appraisal may include a cost estimate for large drainage structures only where their requirement is substantiated by field data. Such structures shall be placed so as to maintain the natural drainage pattern of the area crossed by the proposed road. All pipe culverts under 950 mm in diameter and all single log abutment culverts under 3.5 m span length are included in the subgrade cost estimates (see section 4.3.2.1).

See page 37 of the *Forest Road Engineering Guidebook* (June 2002) for a detailed description.

See pages 104 (Pipe Culverts) and 106 (Log Culverts) of the *Forest Road Engineering Guidebook* (June 2002) for detailed description.

An electronic version of the above guidebook can be accessed at:

www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/Guidetoc.htm

1. Culverts

   The cost estimates for the supply and installation of culverts from 0.95 m to 1.8 m in diameter are determined from Table 4-4 that follows. Detailed engineering cost estimates are required for larger metal culverts (culverts smaller than 0.95 m are included in the subgrade costs). No interpolation of values is permitted. Total installation cost for culverts includes all costs of transporting the culvert to the jobsite and all costs of installation of the culvert to the final subgrade stage.

Table 4-4 Culvert Cost Estimates

INSTALLED COST ESTIMATE ($)

	Circular or oval pipes				
Equivalent Round Diameter (m)	1.0	1.2	1.4	1.6	1.8
X-Section Area (m^2)	0.78	1.13	1.54	2.00	2.54
Length (m)					
9	1387	2112	2969	3957	5077
10	1570	2376	3328	4426	5670
11	1753	2639	3686	4894	6263
12	1937	2903	4045	5363	6856
13	2119	3167	4404	5831	7449
14	2303	3430	4762	6300	8043
15	2486	3694	5121	6768	8635
16	2669	3957	5480	7237	9228
17	2852	4221	5839	7706	9822
18	3035	4484	6198	8174	10414
19	3218	4748	6556	8643	11008
20	3401	5011	6915	9111	11601
21	3584	5275	7274	9580	12193
22	3767	5538	7632	10049	12787
23	3950	5802	7991	10517	13380
24	4133	6066	8350	10986	13973
25	4316	6329	8709	11454	14566
26	4499	6593	9067	11923	15159
27	4682	6856	9426	12391	15752
28	4865	7120	9785	12860	16345
29	5048	7383	10144	13328	16938
30	5231	7647	10502	13797	17531

2. Log Bridges

   Cost estimates for both log bridges and non-log bridges, where required and not included in subgrade cost estimates, are made as detailed engineering cost estimates (section 4.3.3).

   Bridge costs include:

   - crib back-fills to a maximum distance of 15 m on either end,
   - site preparation,
   - protection features such as rip rap,
   - material and equipment supply and delivery,
   - installation.

4.3.2.5 Additional Stabilizing Material

Road stabilization is the placement of gravel or broken rock on the road subgrade to provide stable support and a running surface for logging equipment using the road during the harvesting of tributary timber (see section 4.3.3 (12) for cost estimates pertaining to the use of special materials). Where stabilizing material developed during the subgrade or ditch construction is insufficient, a cost estimate for additional stabilizing material to be trucked in from selected borrow pits may be included in the appraisal.

Unit Cost Estimate

The unit cost estimate ($/km) for the additional stabilizing material includes:

- borrow pit preparation,
- rock drilling, explosives, loading of explosives and blasting,
- loosening and/or pushing materials in borrow pits when required (e.g., compacted or cemented gravel, oversize material, etc.),
- loading gravel trucks,
- truck hauling, and
- spreading and compacting the material.

The cost estimates assume borrow pits are located adjacent to the road side and are not part of the subgrade excavation. If a new road needs to be constructed to access the borrow pit, then an access road cost estimate is required in addition to the in-place unit cost estimates.

For each road, the additional stabilizing material cost estimate ($/km) is determined from the equation for the appropriate road group.

Road Groups	Equation
2	17040
3	19124 + (29771 * QROCK)
4	17769
5	9632
6	10752 – (3633 * SBS)
7	10304 + (328 * D)
8	10667
9	10232
10	12557
11	12889 + (27746 * QROCK) + (23258 * CWH/MH)
12	15183

Where:

Road groups are defined in Table 4-3.

D = Distance in kilometres from source of ballast to the centre of the section that requires ballast (rounded to the nearest 0.1 km)

QROCK = 1 if road is stabilized with quarry rock that requires drilling and blasting. Otherwise QROCK = 0

CWH/MH = 1 if road construction is within this biogeoclimatic zone. Otherwise CWH/MH = 0

SBS = 1 if road construction is within this biogeoclimatic zone. Otherwise SBS = 0

Also see detailed engineered costs section 4.3.3 (3).

No cost estimate for additional stabilizing material is allowed for any snow roads.

4.3.2.6 Cattle Guards, Remedial Fences and Pipeline Crossings

Where the cutting authority specifies the installation of cattle guards, wing fences or remedial fences, the installed cost using new or recycled material is estimated as follows:

1.	Cattle Guards	$3177 each
2.	Remedial Fences and Wing Fences[1]	$685 per 100 m
3.	Pipeline Crossings	$3400 each

All costs include materials, transportation and installation.

4.3.3 Detailed Engineering Cost Estimates

Where the tabular cost estimating procedures of this manual cannot be used due to their physical limitations, the cost of a project shall be estimated by preparing a detailed engineering cost estimate. The regional manager may approve standardized procedures to generate cost estimates for use in projects as listed below.

Where specific development projects involve detailed engineering cost estimates, based on approved road layout and design plans, the district manager shall be advised of project details no later than 60 days before the start of work on the project.

For appraisal purposes, the estimated development project costs are made on the basis of the site-specific data including the definitions found in section 4.3.2.2 for common subgrade construction variables and the equipment and labour rates specified in Appendix I. Due consideration is given to arm's length competitive bids for any specific project. The appraisal estimate is not constrained in any way by a licensee's actual costs.

If the ECE is re-estimated once after construction as provided in section 2.3 (using more accurate on site information) the new detailed engineering cost estimate replaces the original (used in the initial appraisal). Apportionment agreement or bid tender cost estimates are not re-estimated only trended. ECE's are not re-estimated due to labour and/or equipment rates being updated periodically in Appendix I.

Where road sections estimated as a detailed engineered cost estimate are contiguous with tabular cost estimates, costs for mobilization and demobilization will only be allowed for special equipment not required for the construction of the tabular roads. The following specific situations are considered for detailed engineering cost estimates:

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[1] Fencing that is required to remedy, reduce, or manage the impact of timber harvesting activities on range management.

1. New construction and upgrading of forest service roads that meet the criteria and conditions provided in the Main Access Roads Policy.

2. Road construction on uphill side slopes greater than 50 percent.

3. When rock percent exceeds 50 percent, or terrain class 4 and 5.

4. End haul construction (of roads and landings) requiring removal by truck of excavated material to a separate area to avoid side casting on steep and/or sensitive sites.

5. Overland construction to provide a roadbed by trucking in material for extensive filling; see page 81 of Forest Road Engineering Guidebook for a more detailed description.

6. For log bridges and non-log bridges that are not included in the subgrade cost estimates, eligible costs include site planning and the same phases as listed in section 4.3.2.4(2). All ice bridge construction including construction for additional logging seasons.

7. Structural maintenance of bridges, substructure and cribwork.

8. Reconstruction of roads and pertinent structures. Cost estimates for reconstruction are not to exceed the tabular cost for new construction under similar conditions.

9. Upgrade of roads and pertinent structures. Road upgrade resulting in a change in the standard of the road and structure or where the licensee was not obligated to carry out road maintenance prior to the appraisal. Where road maintenance obligations exist, road upgrade is limited to widening the running surface, vertical and horizontal realignment, and additional culverts.

10. Replacement of road running surfaces for uninterrupted lengths over 0.3 km. Lengths less than 0.3 km are included in road maintenance (section 4.6).

11. Metal culverts greater than 1.8 m in diameter when specified in the cutting authority, or road permit. Metal culverts greater than 30 m in length regardless of diameter also qualify. The cost estimate includes all costs of transporting the culvert to the jobsite and all costs of installation of the culvert to the final subgrade stage.

12. Placement of additional stabilizing material where geo-tech fabric, corduroy, crushed and/or screened rock/gravel are used.

13. Retaining walls, railway crossings and other special structures (may include multiple culverts, baffled culverts, arched culverts and other structures determined by the appraisal coordinator).

The data which may be required for excavation and fill estimates are:

1. Plans, profiles, cross-sections showing the ground and design grade lines.

2. Volume summary sheets showing excavation quantities by various soil types, for subgrade and stabilization.

3. Type of construction equipment and quantity of material to be used, or ministry approved competitive bid costing.

4. Location of borrow and waste areas to calculate material haul distances.

The data required for bridges, culverts and for other unusual structures are:

1. Where the bridge span is 15.4 m or less and the crib height is 5.4 m or less and a permanent structure is proposed, an economic life cycle comparison between a log structure and the permanent proposal is required.

2. Where the bridge span is greater than 15.4 m, and/or the crib height is 5.4 m or more and for pipe culverts greater than 1.8 m in diameter or 30 m in length: plans, specifications and design for the proposed structure; detailed estimate of costs of materials; equipment and labour or ministry approved competitive bid pricing; amount of timber accessed by the structure and the number of years of use for harvesting all timber are required.

3. Where bridge materials are reused the cost estimate will include dismantling, transportation and reinstallation at the new site, but will exclude initial materials purchased and initial delivery costs.

Costs that may be included in the detailed engineered cost estimate are:

1. Freight (for materials).

2. Provincial sales tax (for materials).

3. Supervision of construction of complex structures by a professional engineer.

4. Bridge certification by a professional engineer (maximum of three field trips) unless otherwise approved by the regional appraisal coordinator (the costs for professional engineers are permitted whether they are on the licensees staff or hired under contract).

5. Site plans, designs and layouts.

6. Where equipment is not, or will not be already on site for adjoining tabular road, bridge or culvert construction, then the costs of mob and demob may be included in the engineered cost estimate.

GST and supervision costs other than as stated above, are not to be included in the engineered estimate.

Where different timber volumes are used for separate cost estimates, the unit costs are rounded to the nearest cent before totalling.

In some cases, the detailed engineering cost estimates may be apportioned to two or more licensees' tributary cutting authorities, as described under section 4.3.1.1.5.

4.3.3.1 Trending of Detailed Engineering Costs

All detailed engineering costs must be adjusted to match the cost base of the manual in effect at the time of the appraisal or reappraisal (refer to Table 4-5). This includes development costs in apportionment agreements, ministry approved competitive bid tenders, and ECE's prepared using Appendix I.

Table 4-5 Trend Factors for ECE Costs

ECE Cost Year	Multiply by this Trend Factor to Match the 2000 Cost Base
1992	1.445
1993	1.290
1994	1.154
1995	1.045
1996	0.986
1997	0.917
1998	0.968
1999	1.017
2000	1.000
2001	1.000
2002	1.000

4.4 Tree-to-Truck

Cost estimates included in the tree-to-truck phase of the logging operation include, but are not limited to, expenses incurred for:

- felling
- skidding
- yarding
- bucking
- sorting (bush, dryland, and water)
- loading
- landing construction, rehabilitation and reconstruction (excluding end haul)
- fuel and equipment moves
- pest control
- grass seeding
- all post logging treatments
- crew accommodation for accessible operations
- contractor overhead and profit, fringe benefits
- three metre knockdown
- lop and scatter
- landing burning (includes fireguards)
- roadside debris piling and disposal
- skid and back spar trail construction and rehabilitation/slashing
- slashing
- crew transport
- spur roads for ground skidding of less than or equal to 100 m length (see section 4.3.2.2(1))

4.4.1 Harvesting Methods

Each of the following harvesting methods is recognized only when it is identified on the cutting permit map which is submitted by the licensee with the application for a cutting authority, or with an application for an amendment to a cutting authority. If no harvesting method is identified on the map the method appraised will be the ground skidding clear cut method.

- Helicopter,
- Horse,
- Ground Skidding, and
- Overhead Cable Logging.

4.4.2 Tree-to-Truck Variables

For appraisal purposes the following variables are recognized, based on all compiled cruise plots segregated by logging method where applicable (see section 4.4.5). Where the utilization of deciduous is mandatory, all applicable variables are to include the deciduous component.

1. Biogeoclimatic Zone

   A separate biogeoclimatic zone may be recognized for each harvest method (section 4.4.1) as part of the regional constant.

2. Slope (SLOPE%)

   The average side slope percent is derived from an area weighted average of the maximum side slope percentage on all cruise plots, rounded to the nearest whole percentage point.

If helicopter yarding is uphill the slope is set at 0.

3. Volume per Hectare (VOLHA)

   The average net cruise volume per hectare (m^3/ha), rounded to the nearest cubic metre. For partial cutting, it is based on the actual volume per hectare being harvested.

4. Percent Blowdown (BD%)

   The percentage of the net cruise volume classified as blowdown.

5. Partial Cut Variables (PCUT, DPCUT)

   The term partial cutting includes all forms of harvesting, other than clear cutting.

   Clear cutting is defined as those areas with block opening sizes equal to or greater than 1 hectare and where the volume removal is equal to or greater than 90 percent based on the net volume measured to Standard Timber Utilization Requirements.

   Partial cut areas that have less than 90 percent volume removal are not to be averaged with those areas that are equal to or greater than 90 percent. Clear cut areas are to be stratified out before calculating an overall weighted partial cut percent for the cutting authority.

   a. PCUT

      Where a partial cut is comprised of openings of less than 1 hectare in size, the PCUT percent is based on the cumulative volume of these openings divided by the volume of the block area surrounding them.

The percent partial cut is determined as:

$$PCUT = \frac{\text{Net cruise volume required to be removed using a partial cut system}}{\text{Total net cruise volume on the area where Partial Cutting is required}} * 100\%$$

(except if partial cut percent > = 90% then PCUT = 0).

b. Partial cut dummy variable (DPCUT)

DPCUT = 1 if partial cut percent is greater than 0 and less than 90, otherwise DPCUT = 0.

6. Distance to Support Centre (DS)

Accessible cutting authorities: (see section 4.8.2), the one-way distance to support centre is the distance over continuous road access from the geographic centre of the cutting authority to the main post office (or other location designated by the regional appraisal coordinator) in a community from the following list. The distance to support centre includes the distance covered by a daily barge or ferry service. Where there is more than one block in the cutting authority, the weighted average distance to support centre must be calculated using the individual distances and the individual block volumes. Where more than one alternative is possible, the least cost alternative is used. The distance is measured to the nearest kilometre. The following is a list of communities by forest region.

Prince Rupert

Burns Lake	Kitwanga	Smithers	Terrace
Houston	New Hazelton	Stewart	
Kitimat			

Kamloops

Boston Bar	Kamloops	Merritt	Princeton
Clearwater	Kelowna	Pemberton	Salmon Arm
Hope	Lillooet	Penticton	Vernon

Prince George

Chetwynd	Fort St. James	Mackenzie	Valemount
Dawson Creek	Fort St. John	McBride	Vanderhoof
Fort Nelson	Fraser Lake	Prince George	

Nelson

Canal Flats	Creston	Grand Forks	Nakusp
Castlegar	Fernie	Greenwood	Nelson
Cranbrook	Golden	Invermere	Revelstoke

Cariboo

100 Mile House	Quesnel	Williams Lake

For isolated cutting authorities (see section 4.8.2), the distance to support centre is the one-way road distance from the geographic centre of the cutting authority to the isolated camp or where there is no isolated camp, to a community from the list above. Where more than one alternative is possible, the least cost alternative is used. The distance is measured to the nearest kilometre.

The following distance variables are included:

- NEWDIST200 = 0 IF DS<= 100 km
  = (DS-100) if DS>100 km and <= 200 km
  = 100 if DS>200 km
- NEWDIST250 = 0 if DS<= 100 km
  = (DS-100) if DS>100 km and <=250 km
  = 150 if DS>250 km
- DIST200S150 = 0 if DS<=150 km
  = (DS-150) if DS>150 km and <=200 km
  = 50 if DS>200 km

7. Volume per Tree (VOLTREE)

   The average net cruise volume per tree (m^3), rounded to two decimals. For partial cutting, it is based on the trees to be harvested.

8. Gross Volume per Tree (GVOL)

   Gross volume per tree (m^3) is computed as: VOLTREE/(1 - defect %/100).

   Where:

   Defect is the estimate of decay, waste and breakage (DWB) percent of the coniferous gross volume from the cruise summary for the trees to be harvested. Where utilization of deciduous volume is mandatory under the licence, defect percent is taken from the stand volume of the cruise summary. Defect percent is recorded to the nearest whole percentage point for appraisal calculation purposes.

9. Small Tree Volume (SMALL TREEVOL)

   SMALLTREEVOL = Average net merchantable volume (m^3) per tree if <0.34 m^3/tree. If >= 0.34 m^3/tree SMALLTREEVOL = 0.

10. Small Tree Dummy Variable (SMALLTREED)

    SMALLTREED = 1 if average net merchantable volume per tree <0.34 m^3/tree, otherwise = 0.

11. Heli Yarding Distance (HELIYARD)

    The average loaded horizontal yarding distance (in kilometres) flown by helicopter measured to the nearest 0.1 km.

12. Skyline Yarding Distance (SKYYARD)

    Average skyline slope distance (m).

13. Species Percent

    Where a phase cost estimate includes a specific species variable, the appropriate species volume (from the Harvest Method Summary of the Cruise Compilation) should be entered on the appraisal data submission. The percent will be calculated automatically.

He	- Hemlock	Sp	- Spruce
Fi	- Fir	Pl	- Lodgepole Pine
La	- Larch	Ba	- Balsam
Ce	- Cedar		

14. FNP = Fort Nelson, Peace River area consisting of the Fort Nelson, Fort St. John and Dawson Creek Forest Districts.

15. Biogeoclimatic Zones

CWH/MH	-	Coastal Western Hemlock/Mountain Hemlock
ICH	-	Interior Cedar Hemlock
SBS	-	Sub Boreal Spruce
SBPS	-	Sub Boreal Pine/Spruce
ESSF	-	Engelmann Spruce – Subalpine Fir
MS	-	Montane Spruce
IDF	-	Interior Douglas Fir

4.4.3 Tree-to-truck Cost Estimate

Tree-to-truck costs estimates are determined for each harvesting method as follows:

1. Helicopter Logging

$\$/m^3$ = CONSTANT - (5.51*SLOPE%/100) + (14.43*BD%/100) + (3.96*DPCUT) + (14.25*DIST200S150/100) + (4.92*HELIYARD)

> If yarding uphill, slope percent is set to 0.

Where CONSTANT =

	Biogeoclimatic Zone	
REGION	**ICH**	**OTHER**
Nelson	61.33	65.03
Other	57.73	61.43

2. Horse Logging

   No variables are recognized for this method. The cost estimates are applied to the volume of timber to be clear cut or partial cut.

   $\$/m^3 = 25.95$

3. Ground Skidding

   The ground skidding equipment options include, but are not limited to, rubber tired skidder, crawler tractor, soft track skidder, small cat skidding, hoe chucking, long line skidding, clambunk forwarders, low ground pressure skidders, harvester forwarders and cut-to-length processors. A system does not have to skid wood all the way from the stump to the landing to be included. Some wood may be moved part way by longlining or hoe chucking before being skidded by some other system to the landing. Two variations are recognized:

   a. Clear Cut,

   b. Partial Cut

The tree-to-truck cost estimate for both variations is determined from the equation as follows:

$\$/m^3$ = CONSTANT + (6.68 * SLOPE%/100) - (4.67 * VOLHA/1000) + (3.45 * BD%/100) + (6.96 * DEFECT%/100) + (2.59 * DPCUT) + (6.57 * SMALLTREED) - (19.28 * SMALLTREEVOL) + (1.71 * NEWDIST200/100)

Where CONSTANT =

REGION	Biogeoclimatic Zone					
	SBS	**ICH**	**IDF**	**ESSF**	**SBPS**	**Other**
Cariboo	16.20	20.10	18.66	19.02	14.69	17.41
FNP	15.47	19.37	17.93	18.29	13.96	16.68
Kamloops	15.05	18.95	17.51	17.87	13.54	16.26
Prince George*	14.58	18.48	17.04	17.40	13.07	15.79
Prince Rupert	13.96	17.86	16.42	16.78	12.45	15.17
Other	17.29	21.19	19.75	20.11	15.78	18.50

* Excluding FNP.

4. Overhead Cable Logging

Overhead cable logging cost estimates will be recognized when required. The method includes both highlead (spar) mobile (grapple) yarders and skyline yarders, but variations in machine size, spar/boom height, winch line capacity and yarding technique are not recognized.

Variations recognized within the method are:

a. Highlead and Grapple

The tree-to-truck cost estimate for clear cut and partial cut is determined from the equation as follows:

$\$/m^3$ = CONSTANT + (13.21 * SLOPE%/100) - (8.05 * VOLHA/1000) - (3.59 * GVOL) + (0.52 * GVOLSQR) + (5.45 * BD%/100) + (4.73 * DPCUT) + (3.26 * NEWDIST250/100) + (2.91 * PL%/100)

Where CONSTANT =

	Biogeoclimatic Zone				
REGION	**CWH/MH**	**ICH**	**MS**	**ESSF**	**OTHER**
Cariboo	31.86	28.28	28.81	29.30	26.16
Kamloops	33.36	29.78	30.31	30.80	27.66
Nelson	36.06	32.48	33.01	33.50	30.36
Other	34.75	31.17	31.70	32.19	29.05

b. Skyline and Intermediate Support Skyline

Skyline yarding estimates will be recognized where the average yarding distance is greater than 300 m, or intermediate supports are required.

The average yarding distance is determined by:

1. Drawing a series of transects (minimum four) with their origin at the landing, being equi-angle apart and measured to the back-line. This is done for each block; blocks will not be amalgamated for the purpose of average yarding distance calculation. The volume for the system is the sum of the volumes of qualifying blocks.

2. Yarding distance will be measured as slope distance from the centre of the landing to the falling boundary.

3. The sum of transect lengths divided by the number of transects equals the average yarding distance.

4. The exception to the above; where the ministry and the licensee agree that Forest and Land Management is better served by the use of a skyline system in a particular logging chance, then the average yarding distance greater than 300 meters requirement is waived.

The tree-to-truck cost estimate is determined from the equation as follows:

$\$/m^3 =$ CONSTANT + (16.04 * SLOPE%/100) - (7.20 * GVOL) + (2.19 * GVOLSQR) + (1.52 * SKYYARD/100)

Where CONSTANT =

	Biogeoclimatic Zone	
Region	**ICH**	**Other**
Kamloops	30.67	33.97
Nelson	27.52	30.82
Other	22.70	26.00

4.4.4 Tree-to-Truck Additive for Damaged Timber

The following cost estimate additives are recognized for heavy fire damage (HFD), and dead/live useless snags (DUS). The data is collected as specified by the *Cruising Manual*. The additional costs incurred to harvest blowdown timber are recognized in the tree-to-truck ground skidding and overhead cable logging equations (sections 4.4 (3), 4.4 (4)).

The following additive is determined for all cable and ground skidding harvesting methods and is added to the tree-to-truck cost estimate.

$$\$/m^3 = 0.04 * (DT - 15)$$

Where: DT is the Damaged Timber percent

$$DT = HFD + DUS$$

If: DT is less than 15 percent, DT = 15

If: DT is more than 100 percent, DT = 100

$$\text{Heavy Fire Damage \%} = \frac{\text{Conifer HFD Volume}(m^3) * 100}{\text{Total Net Conifer Volume}(m^3)}$$

$$\text{Dead / Live Useless Snags \%} = \frac{\text{Conifer DUS Snags / ha} * 100}{\text{Net Merchantable Conifer Stems / ha} + \text{Conifer DUS Snags / ha}}$$

4.4.5 Prorating Tree-to-Truck Cost Estimates

Where more than one harvesting method is required, a proration of costs is necessary.

The variables for each required harvesting method must be based on a cruise compilation of only those plots located within the area to be harvested by the method.

The additive for damaged timber is also determined for each applicable method.

The final prorated tree-to-truck cost estimate is determined according to the following equation where each component is rounded to the nearest cent before totalling:

$$\$/m^3 = \frac{({}^{Cost}\text{Heli(C)})({}^{V}\text{Heli(C)})}{(\text{TNCV})} + \frac{({}^{Cost}\text{Heli(P)})({}^{V}\text{Heli(P)})}{(\text{TNCV})} + \frac{({}^{Cost}\text{Horse})({}^{V}\text{Horse})}{(\text{TNCV})} + \frac{({}^{Cost}\text{OC(C)})({}^{V}\text{OC(C)})}{(\text{TNCV})} +$$

$$\frac{({}^{Cost}\text{OC(P)})({}^{V}\text{OC(P)})}{(\text{TNCV})} + \frac{({}^{Cost}\text{GS(C)})({}^{V}\text{GS(C)})}{(\text{TNCV})} + \frac{({}^{Cost}\text{GS(P)})({}^{V}\text{GS(P)})}{(\text{TNCV})} + \frac{({}^{Cost}\text{SK})({}^{V}\text{SK})}{(\text{TNCV})}$$

Where:

Cost	=	cost estimate ($/m3) including any damaged timber additive
V	=	volume (m3) required to be logged by each system
Heli (C)	=	helicopter logging (clear cut)
Heli (P)	=	helicopter logging (partial cut)
Horse	=	horse logging
GS (C)	=	ground skidding (clear cut)
GS (P)	=	ground skidding (partial cut)
OC(C)	=	overhead cable logging (clear cut)
OC(P)	=	overhead cable logging (partial cut)
SK	=	skyline logging
TNCV	=	total net cruise volume (m^3)

4.5 Log Transportation

The log transportation phase covers all aspects of log movement from the place of initial loading to the point of appraisal, including truck haul, rail, water and other specialized transportation. The use of section 4.5.1, 1., c. does not affect any other provision that requires the use of the least cost point of appraisal.

4.5.1 Truck Haul Variables

1. Cycle Time:

   For appraisal purposes, weighted average Cycle Time (CT) is the estimated time in hours (rounded to the nearest 0.1 hour) for transporting logs from the centre of a cutting authority area to:

   a. the least cost point of appraisal,

   b. the appraisal place of unloading in the case of water or rail transport, or

   c. where the harvest transfer to control a bark beetle infestation has passed the economic test specified by the Ministry of Forests, and;

      i. if the Minister of Forests or regional manager has given approval for the temporary transfer of cutting rights from one timber supply area or TFL to another timber supply area or TFL in order to control a bark beetle infestation, the place that would have been the point of appraisal if the timber had been harvested in the timber supply area or TFL from which the cutting rights have been transferred, or

      ii. if the regional manager has given approval for the temporary transfer of cutting rights within a timber supply area in order to control a bark beetle infestation, the place that would have been the point of appraisal if the transfer of cutting rights had not taken place.

   Paragraphs c., i. and ii. above expire December 31, 2002.

2. To determine weighted average cycle time:

   a. establish the geographical centre point of each cutblock and project this point to the nearest road for measurement purposes,

   b. from this centre point, determine the cycle time to the nearest junction serving all cutblocks,

   c. weight the cycle time for each cutblock by the volume on the cutblock and determine the average weighted cycle time to the junction. If the cutblock volume is not available, the cutblock area is used, and

   d. determine the cycle time from the junction to:

i. the least cost point of appraisal,

ii. the appraisal place of unloading,

iii. if the economic test is passed and the Minister of Forests, or regional manager has given approval for the temporary transfer of cutting rights from one timber supply area or TFL to another timber supply area or TFL in order to control a bark beetle infestation, the place that would have been the point of appraisal if the timber had been harvested in the timber supply area or TFL from which the cutting rights have been transferred, or

iv. if the economic test is passed and the regional manager has given approval for the temporary transfer of cutting rights within a timber supply area in order to control a bark beetle infestation, the place that would have been the point of appraisal if the transfer of cutting rights had not taken place.

and add this to the average weighted cycle time from 'c.' above.

Paragraphs iii. and iv. above expire December 31, 2002.

The cycle consists of loading, hauling, weighing, unloading, return time, and unavoidable delays. The cycle time will normally be determined by taking into consideration all the factors that may affect it: distance, expected rate of speed, necessary delays, expected standard of roads and their maintenance, traffic density, and seasonal weather conditions.

In many cases standard cycle time schedules from specific road junctions to the point of appraisal have been developed and should be used (Sector times).

Unavoidable delays are periods when the truck is on the job but not operating due to unpredictable delays such as; tightening binder chains, minor repairs made by driver, checking and adjusting brakes, minor delays prior to loading and unloading, refuelling, etc. Unavoidable delay time does not include any breakdown which requires shop repair, the services of a skilled mechanic, or a spilled load of logs. The time for load, unload and unavoidable delay is set at 75 minutes for cable yarding systems (see section 4.4.3 (4)) and 60 minutes for all other systems (see section 4.4.3 (1), (2), & (3)).

3. Haul Method

Cost estimates do not recognize different types of logging trucks. The estimate is based upon the possible haul method, either highway or off-highway and not specifically on the licensee's particular method.

Highway hauling is assumed when loaded logging trucks must travel in part over roads administered under the *Highway Act*, without truck-to-truck transfer, to the point of appraisal, or on roads administered under the *Highway (Industrial) Act* where prolonged known road restrictions prevent the use of oversize loads, or in all instances where the volume per tree is less than 0.20 m^3.

Off-highway hauling is assumed when loaded logging trucks can travel over roads administered under the *Highway (Industrial) Act* to the point of appraisal, or to a recognized reload. Where prolonged known restrictions (e.g., bridge load limit, narrow road, through rock cut, WCB Regulations, etc.) prevent the use of oversize loads, highway haul is assumed.

4.5.2 Truck Haul Cost Estimates

4.5.2.1 Primary Haul

The primary truck haul cost estimate is determined from the following equation.

1. Highway Haul

   For all highway haul equations if the CT is greater than 0 then the minimum is $0.12/$m^3$. If CT = 0 then $/$m^3$ = 0.

   $/$m^3$ = CONSTANT + (2.02 * CT) - (1.46 * CE%/100) + (0.24 * FI%/100) + (1.92 * HE%/100) – (2.24 * WH%/100) – (0.63 * SP%/100)

   Where:

REGION	:	Nelson	Prince George *	Other
CONSTANT	=	0.35	-0.44	0.08

   * Excluding FNP

2. Off-Highway Haul

   For all off-highway haul equations if CT is greater than 0 then the minimum is $0.02/$m^3$. If CT = 0 then $/$m^3$ = 0.

   $/$m^3$ = CONSTANT + (1.39 * CT) – (2.48 * CE%/100) + (1.42 * HE%/100) – (0.81 * SP%/100)

Where:

REGION	:	Cariboo	FNP	Kamloops	Nelson	Other
CONSTANT	=	1.26	1.05	1.11	1.32	0.56

For both highway and off-highway.

CT = Cycle time to the nearest 0.1 hours

CE =	Cedar	LA =	Larch
HE =	Hemlock	SP =	Spruce
PL =	Lodgepole Pine	PW =	White Pine

For both hauling equations, the species listed are the species percents taken from the appraisal data submission to the nearest 1.0 percent.

4.5.2.2 Secondary Haul

The secondary haul cost estimate is made when logs must be truck hauled between the dewater and reload site to the appraisal point.

$$\$/m^3 = 1.763 * CT$$

CT for the secondary haul is determined using the method described in section 4.5.1(2).

4.5.3 Water Transportation Cost Estimate

A water transportation cost estimate is made when logs must be transported by water between the cutting authority and the point of appraisal or reload. The estimate includes the costs of strapping logs on the truck, dumping, booming, developing and operating dumping and booming grounds, and towing. The cost estimate for reservoir lakes applies to all marine appraisals and to Arrow, Kinbasket, Ootsa, Revelstoke and Williston Lakes. All other lakes receive the natural lake cost estimate.

1. Dump and Boom:

   Reservoir Lakes and Marine: $\$/m^3 = \$3.77$

   Natural Lakes: $\$/m^3 = \$1.90$

2. Tow:

   All $\$/m^3 = 0.8208 + 0.005490 * d$

   Where; d = one-way tow distance in kilometres

3. Dewater and Reload:

   All $/m^3 = $2.30

   Only considered if the mill infeed is not located on the same lake, or a dam transfer is required. Otherwise dewatering is part of the manufacturing cost estimate.

4.5.4 Special Transportation Systems

A special transportation system is recognized in the appraisal where geographic conditions dictate its use.

The cost estimates include all costs associated with servicing the appropriate cutting authorities, excluding all on-site costs of owning and operating a camp facility.

The recognized special transportation systems are as follows:

1. Railway

   a. Truck-to-Rail Transfer

      When logs are appraised by railway for part of the way between the cutting authority and the point of appraisal, the cost estimate for the truck-to-rail transfer part of the phase is:

      B.C. Rail - Dease Lake Extension: $/m^3 = $4.01

      All Other Railways: $/m^3 = $3.43

   b. Railway Transportation

      The railway transportation cost estimate is based on the following table for the points of origin shown. Otherwise, the best information on hand is used.

Table 4-6 BC Rail Log Transportation

Origin	Cost Estimate ($/m^3)	Point of Appraisal
Leo Creek	8.15	Fort St. James
Lovell	10.92	Fort St. James
Bear Lake	15.71	Fort St. James
Minaret Creek	17.17	Fort St. James
Niteal	14.89	Fort St. John

2. Barge/Ferry Used for Truck Haul (Private)

   When a truck haul road is interrupted by a body of water and the operation of a barge system is feasible to provide the road link for logging trucks, the cost estimate for this phase, regardless of ownership is:

Reservoir Lakes	$\$/m^3 = \$3.84$
Natural Lakes	$\$/m^3 = \$2.00$

3. Barge/Ferry Not Used for Truck Haul (Private)

   The cost estimate includes all costs associated with the operation of the systems and includes bubble systems where applicable.

   When a cutting authority can be served only by water, and daily (operating days only) ferry/barge services are feasible for crew transportation, the cost estimate for this phase, regardless of ownership is:

All lakes	$\$/m^3 = \$0.74$

4. Francois Lake Ferry (Private/Public)

   When the least cost truck haul includes using the Francois Lake Ferry crossing, the cost estimate for the ferry phase is:

Francois Ferry	$\$/m^3 = \$0.31$

4.6 Road Management

Where the licensee is obliged to carry out road management, it includes but is not limited to, the following:

- grading
- snowplowing and freezing in
- sanding
- spot gravelling (< 0.3 km distance)
- culvert repairs and thawing
- culvert removal (< 950 mm)
- culvert replacement (< 950 mm)
- non-structural maintenance of bridges
- bridge re-decking/wearing surface replacement
- ditching
- road use charges paid to other licensees
- all access management
- seasonal erosion control
- roadside treatments
- sign maintenance
- dust control
- brushing
- minor flood and storm damage repair
- slough removal
- water bar construction (seasonal)
- road ripping
- cross ditch construction
- grass seeding
- all deactivation

The cost estimate for all routine maintenance carried out on logging operations depends on the geographic location of the cutting authority area (refer to Table 4-7).

Cutting authorities issued under forms of tenure not located administratively within a tree farm licence area or timber supply area will be assigned the routine road maintenance cost estimate for the TFL or TSA/supply block in which the cutting authority is geographically located.

The geographic location is recognized by forest region, timber supply area and supply block, and tree farm licence as follows.

Table 4-7 Road Management Cost Estimates

Region	TFL #	TSA	TSA #	Supply Block	$/m3
Prince Rupert		Bulkley	3	All	2.37
		Cassiar	4	All	2.37
		Cranberry	42	All	2.37
		Kalum	10	All	2.37
		Kispiox	12	All	2.37
		Lakes	14	All	1.51
		Morice	20	All	1.49
		Nass	43	All	2.37
	1				2.37
	41				2.37

Region	TFL #	TSA	TSA #	Supply Block	$/m3
Kamloops		Kamloops	11	1	2.15
		Kamloops	11	2, 3, 4	1.32
		Lillooet	15	All	2.37
		Merritt	18	All	0.96
		Okanagan	22	1, 2, 3	2.56
		Okanagan	22	4, 5	2.00
		Okanagan	22	6, 7, 8, 9	2.74
	15				2.56
	18				2.15
	33				2.74
	35				1.32
	49				2.00

Region	TFL #	TSA	TSA #	Supply Block	$/m3
Prince George		Dawson Creek	41	All	2.23
		Fort Nelson	8	All	2.23
		Fort St. John	40	All	2.23
		Mackenzie	16	All	1.80
		Prince George	24	A, B, C	1.80
		Prince George	24	D	1.54
		Prince George	24	E, F, I	1.46
		Prince George	24	G, H	2.48
		Robson Valley	17	All	2.15
	48				2.23
	30				2.48
	53				2.48
	42				1.80

Region	TFL #	TSA	TSA #	Supply Block	$/m3
Nelson		Arrow	1	All	3.02
		Boundary	2	C,D,G	3.02
		Boundary	2	E,F	2.56
		Cranbrook	5	All	1.90
		Golden	7	All	4.53
		Invermere	9	All	1.90
		Kootenay Lake	13	All	2.75
		Revelstoke	27	All	4.53
	3				3.02
	23				3.02
	8				2.56
	14				1.90
	55				4.53
	56				4.53

Note: TFL 13 has been rolled into a forest licence and therefore dropped from the table.

Region	TFL #	TSA	TSA #	Supply Block	$/m3
Cariboo		Quesnel	26	A, B, C, D	0.54
		Quesnel	26	E, F, G, H, I	2.48
		Williams Lake	29	A, B, C, D, E, I	1.08
		Williams Lake	29	F, G, H, J	1.15
		Williams Lake	29	K, L	1.27
		Williams Lake	29	M, N	2.51
		100 Mile House	23	All	1.24
	5				1.46
	52				2.48

4.7 Road and Land Use Charges

Prior to a road or land use charge being included in an appraisal, the licensee must:

a. submit a "Request for Approval of a Road Use Charge" form with the appraisal data submission; and

b. receive written approval of the road or land use charge from the regional manager.

1. Charges as a Share of Road Maintenance

   a. No recognition is made of such charges. The routine road maintenance cost estimate, section 4.6, includes all relevant costs whether incurred directly by the licensee or by payment to another party for services performed.

2. Charges Other Than for Road Maintenance

   There are three main categories of road status:

   a. Forest Service Roads

      A road that is declared, determined, built, maintained or modified by the ministry, as defined in forest legislation. No road use charges will be considered in appraisals,

   b. Permitted Roads

      Roads built on Crown land, authorized by road permit or other cutting authority documents. This category also includes foreshore leases, camp areas and dryland sorts. No road use charges will be considered in appraisals,

   c. Other Roads

      Road use charges for roads on Indian Reserves or on private land owned by an arm's length third party and not subject to a lease held by the licensee, their affiliate or an agent of either, may be considered in appraisals provided there is no lower cost route capable of development through Crown land.

      The charges recognized must be reasonable, must not exceed compensation that might be determined under forest legislation and must be proven through the presentation of auditable documents.

3. Other Land Use Charges

   Only non-governmental land use charges will be considered in appraisals.

4.8 Administration and Other Costs

4.8.1 Overhead

Overhead cost estimates are for the related administration and supervisory activities attributed to development, tree-to-truck, transportation and basic silviculture that occur at the head office, branch office and camp or operation.

Overhead costs include:

- Office Operations,
- Scaling,
- Cruising,
- Environmental Protection,
- Consultants fees (section 4.3.3),
- Archaeological surveys,
- Waste and Residue surveys,
- Right-of-way easements,
- Foreshore and other land leases,
- Tree marking Beetle probing & Pheromone baiting,
- Engineering (road layout, survey including geotechnical surveys, and design, other than those applicable as engineered cost estimate.

Cost estimates by forest district are shown in the following table:

Table 4-8 Overhead Cost Estimates

District	$/m^3	District	$/m^3
100 Mile House	7.64	Kispiox	6.84
Arrow	9.25	Kootenay Lake	9.82
Boundary	7.83	Lakes	6.89
Bulkley (Cassiar)	6.62	Lillooet	9.64
Chilcotin	7.01	Mackenzie	6.63
Clearwater	8.80	Merritt	7.29
Columbia (Golden, Revelstoke)	11.01	Morice	6.18
Cranbrook	8.08	Penticton	7.37
Dawson Creek	7.30	Prince George	6.84
Fort Nelson	6.12	Quesnel	6.89
Fort St. James	6.28	Robson Valley	8.69
Fort St. John	6.28	Salmon Arm	7.97
Horsefly	6.93	Vanderhoof	6.87
Invermere	9.68	Vernon	7.63
Kalum	9.64	Williams Lake	7.85
Kamloops	7.51		

4.8.2 Isolated Cutting Authority Areas

An isolated cutting authority area has no continuous road access to the nearest support centre (listed in section 4.4.2(6)). The exception is where there is continuous road access, but the route is not routinely used to transport people, equipment or supplies to the cutting authority area. Continuous road access includes public ferry service, private daily ferry and daily barge service.

For isolated cutting authorities not serviced by camps the isolation cost estimate covers, the costs of moving people, equipment and supplies to and across the non-road portions of the route to the cutting authority area whether by crew boat, periodic barge service, air, or rail.

For isolated cutting authorities serviced by camps, the isolation cost estimate includes the depreciation, maintenance and operating costs of any camp facilities and the non-recoverable costs incurred for a cookhouse, family quarters, bunk houses, shop, office and other pertinent buildings. However, the costs of moving people, equipment or supplies by road from the isolated camp location to the cutting authority are covered by the distance variable in the tree-to-truck equation.

The cost estimates for isolated cutting authorities with the following access are:

Rail access:	$\$/m^3 = 8.14$
Water access:	$\$/m^3 = 6.06$

4.8.3 Low Volume Cost Estimate

All fully appraised cutting authorities are eligible for a specific low volume cost estimate in addition to all other phase cost estimates.

1. Where the licence to which the cutting authority belongs has an allowable annual cut of Crown timber greater than 0 m^3 and less than 3 000 m^3;

   $\$/m^3 = 8.35$

   In a case where the AAC of a licence has been temporarily increased through a determination made by either a district manager or a regional manager under section 8(6) of the *Forest Act*, the AAC, as it was prior to the temporary increase, will be used to determine whether or not the licensee is entitled to receive this cost estimate in the appraisal.

2. Where the licence to which cutting authority belongs has an AAC of 3 000 m^3 or greater and the net cruise volume for the cutting authority is less than 3 000 m^3;

The cost estimate is:	Ground Skidding	$\$0.87/m^3$
(prorated by volume)	Highlead & Grapple	$\$0.98/m^3$
	All Other	$\$0.00/m^3$

3. Where the licence to which cutting authority belongs has no AAC and the cutting authority net cruise volume is less than 3 000 m^3;

$$\$/m^3 = 0.00$$

4.9 Basic Silviculture Cost Estimate

Basic silviculture cost estimates are made for all cutting authorities where basic silviculture is required.

Basic silviculture treatment regime(s) cost estimates include all treatment costs that are required to achieve the free-growing stocking standards, as referred to in the *Silviculture Practices Regulation* (B.C. Reg. 108/98).

The following table lists the treatment regimes and associated cost estimates ($/ha) for each group of forest districts.

Table 4-9 District Silviculture Groupings

Group 1	Group 2	Group 3	Group 4
Columbia	Arrow Kalum Lillooet Kootenay Lake	Clearwater Invermere Robson Valley	Salmon Arm Cranbrook

Group 5	Group 6	Group 7	Group 8
Kispiox Boundary Kamloops Penticton Vernon	Merritt Dawson Creek Williams Lake Horsefly 100 Mile House	Prince George Quesnel Bulkley (Cassiar) Fort St. James Mackenzie Morice Lakes Vanderhoof	Chilcotin Fort St. John Fort Nelson

Table 4-10 Treatment Regime Cost Estimates

Regime	Group 1 $/ha	Group 2 $/ha	Group 3 $/ha	Group 4 $/ha	Group 5 $/ha	Group 6 $/ha	Group 7 $/ha	Group 8 $/ha
A	3624	2984	2991	3060	2465	2511	2391	2442
B	3011	2534	2539	2582	2100	2046	1969	2033
C	1787	1854	1929	2615	1474	1371	1315	1358
D	1242	1855	2075	3589	1407	1201	1138	1164
E	2422	2100	2040	2202	1759	1599	1605	1626
F		2014	1961		1702	1627	1591	1629
G	889	1311	1443	2768	972	916	777	886
H	3087	2294	2125	2396	1961	2115	1955	2025
I		1607	1421	1697	1407	1463	1338	1436
J		411			294	307	248	342
K		94	82	93	65	90		
M	2012	1571	1476	1885	1213	1520	1335	1446

All regimes assume a combination of manual and chemical brushing and weeding (i.e., a blended cost estimate).

Where stump removal for root disease control is required, a cost estimate may be determined as a specified operation as described in section 4.1.1.

The area requiring basic silviculture treatment includes only the portion of the land on which the licensee is required to establish a free-growing crop of trees, as specified in the *Forest Practices Code of British Columbia Act*. Basic silviculture treatment may not be required on some cutting authorities (e.g., right-of-way, licence-to-cut (gravel pit)).

Basic silviculture cost estimates will not be included in the appraisal where silviculture is specified as not required in the licence document, cutting authority or by applicant's agreement.

The net area to be reforested (NAR) is to be taken from the cruise area with appropriate net down factors. The NAR must not be larger than the area directly attributed to the appraised volume of the cutting authority.

Individual areas of non-commercial brush (NCBR) of less than four hectares growing on productive forest land are included in the applicable treatment regime(s) used to calculate the basic silviculture cost estimate. Subject to approval by the district manager, these areas are eligible for a cost estimate of 1.2 times the applicable treatment regime(s) cost. Individual areas of NCBR greater than 4 ha in size must not be included in the appraisal.

In the case of mixed stands where the cutting authority document requires mandatory utilization of deciduous timber, the deciduous area is included in the applicable treatment regime(s) used to calculate the basic silviculture cost estimate and the deciduous volume is included in the total net merchantable volume for the calculation of silviculture cost estimates.

Each treatment regime cost estimate is determined as follows:

($) = treatment regime cost ($/ha) * [Net merchantable area + (NCBR * 1.2)]* R

Where:

Net merchantable area = Net area to be reforested.

NCBR = individual areas of non-commercial brush of 4 hectares or less in size.

R = volume removal factor and is calculated for each treatment regime area.

$$R = \frac{\text{Volume Required to be Harvested}}{\text{Total Net Cruise Volume}}$$

Where:

R = 1 if the entire volume is required to be harvested (i.e., clearcut).

R = 1 for treatment regime G in all cases.

The Basic Silviculture Cost Estimate is determined as follows:

$$\$/m^3 = \frac{\text{Summation of Treatment Regime Cost Estimates}}{\text{Total Net Volume}\,(m^3)}$$

Each portion, by area, of a cutting authority that requires less than 90 percent volume removal must have one or more separate treatment regime cost estimates (i.e., partial cut areas and clear cut areas may not be combined). Any areas with 90 percent or more removed will be considered a clear cut and deemed equal to 100%.

4.10 Manufacturing Cost Estimates

In the interior, appraisal calculations include estimates of the cost of manufacturing lumber and chips. Manufacturing cost estimates are developed from a survey of sawmills and encompass all phases of manufacturing beginning with the dewatering of logs or unloading of logging trucks at the mill log yard, (land or water or satellite log yards), and ending when the lumber and chips have been loaded on rail cars or trucks for transport to market.

The survey collects actual costs to the licensee, including wages, benefits, overtime, depreciation, fuel, supplies, repair, maintenance, applicable licences, insurance, etc. from a representative sample of interior operations.

The cost estimates reflect average conditions, operating practices, and phase accounting allocations experienced in the survey data. Because of this averaging, no additions to or subtractions from these estimates are permitted to reflect operation-specific conditions.

The estimates have an effective cost base date of July 1, 2000, and will be used for all appraisals, reappraisals and adjustments of stumpage rates.

Table 4-10 Untrended Manufacturing Cost Estimates

Untrended Manufacturing Cost Estimates ($/m^3) 2000 Cost Survey Base		
	Species	**Manufacturing cost ($/m^3) 0% Decay**
Northern Interior (Zone 5)	LO	34.71
	SP	34.28
	BA	37.39
	FI, LA, WH, YE	52.14
	CE	46.27
	HE	42.93
Skeena (Zone 6)	LO	30.15
	SP	29.62
	BA	33.03
	CE	40.19
	HE	36.99
Southern Interior (Zone 7)	LO	38.56
	SP	37.31
	BA	41.06
	FI, LA, WH, YE	56.72
	CE	50.38
	HE	49.40

Untrended Manufacturing Cost Estimates ($/m^3) 2000 Cost Survey Base		
	Species	**Manufacturing cost ($/m^3) 0% Decay**
Southern Cariboo (Zone 8)	LO	37.68
	SP	36.83
	BA	40.37
	FI, LA, WH, YE	55.52
	CE	46.37
	HE	45.02
Fort Nelson/Peace (Zone 9)	LO	31.77
	SP	31.29
	BA	33.72

To derive the manufacturing cost estimate for decay % from 1 to 50, use the above table values in the following equation:

The cost estimate is calculated to four decimal places, then rounded to the nearest cent. Where decay exceeds 50 percent, the manufacturing cost estimate for 50 percent decay is used.

Manufacturing cost ($/m^3) = decay % * 0.1783 + base value from table.

For a list of points of appraisal by zone, refer to section 2.6.

4.11 Cost Trend

Cost trend factors are separately applied to the total logging, silviculture and manufacturing cost estimates. The factors cover the period from the effective date of the cost base to the effective date of the rate calculation. Cost trend factors are applied at the appraisal effective date and at the date of each stumpage adjustment.

For trend factors applicable prior to November 1, 2002, refer to earlier *Interior Appraisal Manuals.*

Appraisal Effective Dates From October 1, 1994 to July 31, 1995

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	1.154	1.0
January 1 to March 31, 2003	1.154	1.0
April 1 to June 30, 2003	1.154	1.0
July 1 to September 30, 2003	1.154	1.0

Appraisal Effective Dates From August 1, 1995 to July 31, 1996

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	1.045	1.0
January 1 to March 31, 2003	1.045	1.0
April 1 to June 30, 2003	1.045	1.0
July 1 to September 30, 2003	1.045	1.0

Appraisal Effective Dates From August 1, 1996 to November 30, 1997

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	0.986	1.0
January 1 to March 31, 2003	0.986	1.0
April 1 to June 30, 2003	0.986	1.0
July 1 to September 30, 2003	0.986	1.0

Appraisal Effective Dates From December 1, 1997 to August 31, 1998

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	0.917	1.0
January 1 to March 31, 2003	0.917	1.0
April 1 to June 30, 2003	0.917	1.0
July 1 to September 30, 2003	0.917	1.0

Appraisal Effective Dates From September 1, 1998 to September 30, 1999

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	0.968	1.0
January 1 to March 31, 2003	0.968	1.0
April 1 to June 30, 2003	0.968	1.0
July 1 to September 30, 2003	0.968	1.0

Appraisal Effective Dates From October 1, 1999 to August 31, 2000

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	1.017	1.0
January 1 to March 31, 2003	1.017	1.0
April 1 to June 30, 2003	1.017	1.0
July 1 to September 30, 2003	1.017	1.0

Appraisal Effective Dates From September 1, 2000 to June 30, 2001

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	1.0	1.0
January 1 to March 31, 2003	1.0	1.0
April 1 to June 30, 2003	1.0	1.0
July 1 to September 30, 2003	1.0	1.0

Appraisal Effective Dates From July 1, 2001 to October 31, 2002

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	1.0	1.0
January 1 to March 31, 2003	1.0	1.0
April 1 to June 30, 2003	1.0	1.0
July 1 to September 30, 2003	1.0	1.0

Appraisal Effective Dates On or After November 1, 2002

Appraisal Effective Date or Stumpage Adjustment Date	Trend Factor	
	Logging and Silviculture	Manufacturing
November 1 to December 31, 2002	1.0	1.0
January 1 to March 31, 2003	1.0	1.0
April 1 to June 30, 2003	1.0	1.0
July 1 to September 30, 2003	1.0	1.0

Stumpage Rate Determination 5

5.1 Indicated Stumpage Rate (ISR)

The indicated stumpage rate is determined by comparing the value index of the stand being appraised to the value index of other stands, as explained in the following sections.

5.2 Value Index

The stumpage rate charged on each cutting authority is tied 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 Interior Mean Value Index

The interior mean value index (IMVI) is the benchmark against which individual stands of timber are compared. The interior mean value index is recalculated and published by Revenue Branch at the time of each quarterly stumpage adjustment and becomes an integral part of this manual.

5.4 Market Value Indexing

At the times specified in section 1.7, target rates are adjusted upwards or downwards to reflect changes in the value of softwood lumber and wood chips as indicated by Statistics Canada.

Statistics Canada has replaced the 1992=100 based price series with new series that have a base of 1997=100. For the January 1, 2002, and all subsequent target rates, the 1997=100 price series must be converted to a 1992=100 base before beginning calculation of the composite index described in section 5.4.2.

5.4.1 Converting Indexes From 1997=100 Base to 1992=100 Base

Interior softwood lumber is represented by Statistics Canada price index P4798 (1997=100) which replaces P2459 (1992=100). To convert P4798 to a 1992=100 base, for use in section 5.4.2, multiply by a link factor of 1.752.

Wood chips are represented by Statistics Canada price index P4856 (1997=100) which replaces P2513 (1992=100). To convert P4856 to a 1992=100 base, for use in section 5.4.2, multiply by a link factor of 1.138.

5.4.2 Calculating the Interior Composite Index (ICI)

The average lumber and chip indexes from the appropriate three-month period (shown below) are combined, with lumber receiving a weight of 88.0 percent and chips 12.0 percent. The combined index is then multiplied by a normalization factor of 1.520. This factor equates the new lumber/chip composite index (1992=100) with the Statistics Canada lumber index (1981=100) at April 1, 1998. During the calculations described above, no rounding is done. The final composite index (INDEX) is rounded to one decimal place before being entered into the appropriate formula below.

5.4.3 Calculating the Interior Target Rate

Interior Target Rate (ITR) Calculation

1. If the ICI is less than or equal to 161 then,

$$ITR = \frac{INDEX}{139.0} * 8.59$$

2. If the ICI is greater than 161, but less than or equal to 169.9 then,

$$ITR = 9.95 + \left| \frac{(INDEX - 161)}{25} * 9.35 \right|$$

3. If the ICI is greater than 169.9 then,

$$ITR = 13.28 + \left| \frac{(INDEX - 169.9)}{49} * 6.74 \right|$$

Where: ITR = Target Rate ($/m^3$)

Quarterly Stumpage Rate Adjustment Date	ICI based on Statistics Canada price indexes for the months of:
January 1	Preceding August, September, October
April 1	Preceding November, December, January
July 1	Preceding February, March, April
October 1	Preceding May, June, July

For the quarterly stumpage adjustments on January 1, 2002, April 1, 2002, July 1, 2002 and October 1, 2002, the ITR will be reduced by $1.18/m^3 to adjust for the salvage of bark beetle infested timber.

The applicable index is published by Revenue Branch at the time of each quarterly stumpage adjustment and becomes an integral part of this manual.

5.5 Interior Base Rate (IBR)

The interior base rate is redetermined and published by Revenue Branch at the time of each quarterly stumpage rate adjustment and becomes an integral part of this manual.

5.6 Calculation of Stumpage Rate

5.6.1 Calculation of Indicated Stumpage Rate

The indicated stumpage rate for a cutting authority is defined as:

$$ISR = IBR + (VI - IMVI)$$

Where:

ISR = Indicated Stumpage Rate

IBR = Interior Base Rate as defined in Section 5.5

VI = Value Index for the cutting authority as defined in Section 5.2

IMVI = Interior Mean Value Index, as defined in Section 5.3

5.6.2 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.

5.6.3 Reserve Stumpage Rate

For each cutting authority area, except those containing timber licence volume, the reserve stumpage rate is determined by selecting the greater of:

- the indicated stumpage rate, or
- the prescribed minimum stumpage rate.

5.6.4 Upset Stumpage Rate

The upset stumpage rate is the total of the reserve stumpage rate plus any silviculture and development levies which may be charged as defined in section 6.6.

5.6.5 Total Stumpage Rate

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

Miscellaneous Timber Pricing Policies 6

6.1 Average Value Indexes by District and Species

A new table of average value indexes by district and species is prepared at the time of each quarterly stumpage adjustment and becomes an integral part of this manual at that time.

This table may be used by the Forest Officer to determine the value index for cutting authorities of less than 2 000 m^3, as explained in section 6.2.

6.2 Cutting Authorities With 5 000 m^3 or Less Volume

1. Total coniferous volume of less than 2 000 m^3:

   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. For extensions of the cutting authority see section 2.5 (3).

      The upset stumpage rate for cutting authorities with 500 m^3 or less volume, awarded under the small scale salvage program (SSSP), will be one-half of 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 (i.e., timber cruised or scaled) or obtained from one or more comparable cutting authorities (e.g., similar stand and terrain characteristics, etc.). When choosing the comparative cruise data, the district manager may require that procedures in section 2.1.2.3 of the *Cruising Manual* be followed. The total stumpage rate is adjustable for the term of the cutting authority, except as provided in section 6.5.

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

2. Total coniferous volume of 2 000 m^3 to 5 000 m^3.

   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 authorities, as per section 2.1.2.3 of the *Cruising Manual.*

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

   These cutting authorities 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 6.5.

6.3 Right-of-way Cutting Authorities

1. The stumpage rate for a road permit will be determined using Ministry of Forests stumpage billing records.

2. The stumpage rate for a road permit is the weighted average sawlog stumpage rate for:

   a. cutting authorities, other than a road permit, that are located in the same forest district as the area to which the road permit applies, and that are issued under the licence that entitles the licensee to apply for the road permit,

   b. a licence to cut or a timber sale licence under which cutting permits have not or will not be issued, that entitles the licensee to apply for the road permit,

   c. if there are no records from which the stumpage rate may be determined under (a) or (b),

      i. all the cutting authorities, other than road permits, that are for areas located in the same forest district as the area to which the road permit applies, or

      ii. if the licence that the cutting authority is issued under has an annual allowable cut of Crown timber less than 3 000 m^3 per year, all the cutting authorities, other than road permits, that are for licences that have an annual allowable cut of less than 3 000 m^3 in the same forest district as the area to which the road permit applies.

3. The weighted average sawlog stumpage rate is the sum of the stumpage billed for sawlogs of grade code ( ) blank during the billing period referred in subsection 4, divided by the sum of the volume of those sawlogs.

4. The billing period referred to in subsection 3 for a road permit appraisal or reappraisal, with an effective date between June 1 of one year (the first year) and May 31 of the following year, is the twelve-month billing period ending March 31 in the first year.

The costs of roads constructed under road permits are eligible for inclusion as development cost estimates under section 4.3 in the appraisal of the first tributary cutting authority. These roads will not be considered as existing roads under section 4.3.1.1.4 (2).

All road permits will be reappraised in accordance with section 2.3 (1).

6.4 Partially Harvested Timber

Where decked timber, or timber which has been felled and bucked, such as on right-of-way, is sold without competition; and where the stumpage value is over $3,000 or volume exceeds 300 m^3, a full cost estimate appraisal is completed upon an "as is, where is" basis.

Phase costs may be based on borrowed data from a representative cutting permit, adjusted for partial phase.

If the timber volume is being sold competitively, the timber may be priced according to the procedures in section 6.2.

6.5 Small Business Forest Enterprise Program (SBFEP) Sales

For appraisal purposes, the SBFEP includes:

- All timber sale licenses (TSL) 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 stumpage 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 a comparable cutting authority. For cutting authorities with volumes greater than 5 000 m^3, refer to section 4.2.1. For cutting authorities with 5 000 m^3 or less, comparative cruise data will be chosen following procedures set out in section 2.1.2.3 of the *Cruising Manual.*

A licensee's election of fixed stumpage rates also 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.

6.6 Levies (CVP 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 (trended at the time of the appraisal).

2. Development Levy:

A development cost estimate is made for every cutting authority that requires development.

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 approved by the regional manager (trended at the time of the appraisal).

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

6.7 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.

6.7.1 Special Forest Products and Other Miscellaneous Rates

Table 6-1 is to be used for determining stumpage rates for the specified products from all sources of Crown timber when scaled.

Table 6-1 Miscellaneous Stumpage Rates

All Forest Regions

Species	Product	Reserve Stumpage Rate
Cedar	Shakes	$6.00/$m^3$
Cedar	Blanks	$7.20/$m^3$
Cedar	Fence Posts	$3.00/$m^3$
Cedar	Mining Timbers & Fence Rails	$3.00/$m^3$
All Species	Firewood	$0.50/$m^3$
All Species	Bolts/Blocks	$5.30/$m^3$
Yew	All	$0.25/$m^3$
All Species	Grades: 3, 4, 5 and 6	$0.25/$m^3$
All Deciduous	All (except grades 3, 4, 5 and 6)	$0.50/$m^3$
All Species (except Cedar)	Fence Rails, Mining Timbers, Fence Posts	$1.20/$m^3$
All Species	Pickets & Palings, Mine Cribbing, Car Stakes, Round Stakes & Sticks, Rails (Split), Lagging (Split), Orchard Props	$1.20/$m^3$
All Species	Christmas Tree: under 3m 3-5 m over 5 m	$0.20/each $1.00/each $1.50/each
All Species	Logs salvaged below the high water levels of Reservoir Lakes and the Slocan, Kootenay, Mineral, Babine and Ootsa Lakes	$0.25/$m^3$
All Species	Trees classified as "Dead Potential" on Cruise-based cutting authorities	$0.25/$m^3$
All Coniferous	For logs harvested from the Alex Fraser (UBC), Aleza Lake (UBC and UNBC) and Fort St. James (UNBC) Research Forests	$0.25/$m^3$
All Species	Firmwood Reject	NIL

Forest District Specific

Description	District	Reserve Stumpage Rate
Gross area cleared for seismic lines, gas or oil well sites and right-of-way to well sites	Cranbrook Dawson Creek Ft. Nelson Ft. St. John	$3,009/ha $1,644/ha $1,644/ha $1,644/ha

* For pipe line rights-of-way a stumpage rate may be determined by using the above rates for cutting authorities containing less than 1 000 m^3, of merchantable volume. For cutting authorities of 1 000 m^3 and over see section 6.2.

6.7.2 Miscellaneous Stumpage Rates for Timber Licences

The stumpage rates in Table 6-2 apply only to timber licence cutting authorities that are not appraised and have a cutting authority term that began before May 1, 1995.

For each species of timber in column 1 of Table 6-2, the stumpage rate immediately opposite that species in columns 2, 3 and 4 respectively, apply to sawlogs scaled in the indicated forest regions on and after April 1, 2002.

Table 6-2 Miscellaneous Stumpage Rates for Timber Licences

Column 1 Species of timber	*Forest Region* Column 2 Vancouver except the Mid-Coast and Queen Charlotte forest districts (that part west of the Cascades Mountains) $/cubic metre	Column 3 Prince Rupert and the Mid-Coast and Queen Charlotte forest districts (that part west of the Cascades Mountains) $/cubic metre	Column 4 All forest regions and those parts of regions east of the Cascade Mountains $/cubic metre
Fir	30.50	25.00	22.80
Spruce	26.40	22.30	20.20
Balsam	15.80	12.70	17.80
Cedar	30.30	24.90	34.20
Hemlock	15.50	12.90	18.40
Cypress	34.60	29.40	24.60
White pine	20.70	19.00	34.60
Yellow pine	20.70	19.00	17.30
Larch	20.70	19.00	22.80
Lodgepole pine	10.50	8.70	19.50
Other conifers	20.70	19.00	24.60
All non-conifers	1.00	1.00	0.50
All species Grades 3, 4, 5, and 6	N/A	N/A	0.25
All species Firmwood reject	Nil	Nil	Nil
All species grade Y	0.25	0.25	N/A

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Market Pricing System 7

The market pricing system (MPS) policy provided in this chapter is to be used only for 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 timber sale licences (TSL), where directly referenced in chapter 7.

7.1 MPS Introduction

The market pricing system 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 (4) 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 stand of timber based on the results of previous similar timber stands that were sold competitively.

MPS can only be used where complete appraisal data is available for the cutting authority area. Where data is not available see section 6.2 of this manual.

The MPS upset rate and bonus bid applies to coniferous sawlogs only. All deciduous species, special forest products and grade 3, 4, 5 or 6 logs have a default price listed under section 6.7.

7.2 MPS Principles and Procedures

7.2.1 MPS Appraisals

The initial upset stumpage rate will be calculated using the *Interior Appraisal Manual* and monthly parameters (selling prices and consumer price index (CPI)) in effect on the date of calculating (appraisal effective date). This rate plus the bonus bid remains in effect from the date of award of the sale until the next quarterly adjustment.

7.2.2 MPS 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.

At the time of the quarterly adjustment, the MPS upset rate will be re-calculated based on the equations applicable for the appraisal effective date and the cutting authority data. The monthly parameters effective for the month of the adjustment will be used in the calculation instead of the original values. All other data remain unchanged.

This process is repeated quarterly until the cutting authority is reappraised.

7.2.3 Reappraisals for MPS Appraisals

Revised data and revised monthly parameters will be used with the equations in effect on the reappraisal date. The original bonus bid remains in effect.

7.2.4 Calculation Conventions

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

7.2.5 Methodology

Calculating the upset stumpage rate for small business forest enterprise program (SBFEP) timber sales, issued under section 20 and 21 of the *Forest Act* after September 1, 1999, will be done using the following methodology:

1. Calculate a selling price (SP) of the products that can be recovered from the stand using sections 7.3.1 and 7.3.2 with the variables as defined.

2. Calculate the market stumpage price using the equation in section 7.4.2, the variables for the stand, and the SP calculated in section 7.3.

3. Calculate the upset stumpage rate by discounting the market stumpage price calculated in section 7.4.2 using the discount factor in section 7.5.

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 6.7.

7.3 MPS Selling Prices

Selling prices for MPS are based on three-month averages of schedules of lumber values collected and published monthly by Revenue Branch. When the MPS values are compiled and distributed they become an integral part of this manual.

7.3.1 MPS Lumber Average Market Values

Monthly market value information for the interior is obtained by Revenue Branch from lumber producers located in each average market value zone. The zones are defined by point of appraisal (see section 2.5). Average market values (AMV) for each species are compiled by dividing total sales value by total sales volumes for each zone.

The volume that is manufactured to Canadian Lumber Standard/American Lumber Standard (CLS/ALS) sizes is reported in foot board measure (fbm). Lumber manufactured in non-CLS/ALS sizes is adjusted to equivalent CLS/ALS sizes. The total volume for each species includes all sizes and grades of rough and dressed lumber in the green and dried state. Also included is finger-jointed lumber and machine stress rated lumber.

The total net sales value for each species or species group is reported in Canadian dollars FOB mill. These sales values are rolled up into three-month averages each month. There is approximately a one-month lag in reporting.

7.3.2 Calculation of Species Lumber Selling Price

The total lumber selling price (SP) in $\$/m^3$ is determined for each species using lumber recovery factors (LRF) from the cruise compilation summary, LRF update add-ons and current applicable lumber average market values (AMV) for the species and zone.

1. Zonal LRF update add-ons are found in Table 7-1, by species.
2. Lumber AMVs as published every month.
3. Calculation of total species lumber selling price.
    a. Appraisal LRF = Cruise LRF + LRF update add-on
    b. Species SP ($/m3) = Species AMV($/mbm)/1000 * Appraisal LRF
4. The stand SP is the volume-prorated sum of the species SP.

Table 7-1 LRF Update Add-ons for MPS

Species	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Balsam	96	69	90	86	71
Cedar	45	18	43	35	-
Douglas Fir	70	-	62	59	-
Hemlock	50	21	45	39	-
Larch	67	-	62	57	-
Lodgepole Pine	84	52	78	71	62
Spruce	105	71	101	92	79
White Pine	65	-	60	55	-
Yellow Pine	-	-	63	61	-

7.4 Market Stumpage Price Calculation

The market stumpage price is calculated as detailed in this section. It is assumed that the market stumpage price will approximate the final stumpage rate, including the bonus bid, based on the variables used.

7.4.1 Market Stumpage Price Variables

MSP	=	Market Stumpage Price for the cutting authority in ($/$m^3$).
CPIF	=	B.C. Consumer Price Index (P110000) for current month divided by the base CPI of 109.3.
SP	=	Lumber Selling Price ($/$m^3$). See Section 7.3.
DC	=	Estimated Development Cost Borne by the Licensee ($) calculated using Section 4.3 and divided by the total net cruise coniferous volume.
VOL	=	Total net cruise volume of coniferous timber (m^3).
S%	=	Average cruise side slope for ground and cable yarding systems (does not include the area for horses and helicopter yarding systems).
VPT	=	Prorated net cruise coniferous volume per tree (m^3) for ground and cable yarding systems. Plus horse and helicopter systems use average VPT = 0.5490.
VPH	-	Net cruise coniferous volume per hectare (m^3/ha).
BWDN%	=	Blowdown as a percent of net cruise coniferous volume for ground and cable yarding systems. Does not include the volume for horse and helicopter yarding systems.
BURN%	=	Species volume prorated total burn percent.
CY%	=	Overhead cable yarding coniferous volume (includes skyline) as a percent of total net cruise coniferous volume.
HP%	=	Helicopter yarding coniferous volume as a percent of total net cruise coniferous volume.
HORSE%	=	Horse yarding coniferous volume as a percent of total net cruise coniferous volume.

CYCLE	=	Hauling round trip cycle time from the landing to the point of appraisal or water dumpsite and return (hrs). See section 4.5.1.
WH%	=	White Pine species volume as a percent of the total net cruise coniferous volume.
HECE	=	Combined hemlock, balsam and cedar dummy variable.
Z9	=	Fort Nelson Peace selling price zone, dummy variable.
SAL	=	Damaged timber salvage dummy variable.

7.4.2 Market Stumpage Price Equation

Using the variables defined in section 7.4.1, the selling price calculated in section 7.3.2 and the equation below, calculate the market stumpage price (MSP).

$$MSP = [44.1590 + 0.1895 * SP/CPIF - 0.9615 * DC/CPIF + 0.1747 * (VOL/1000) - 0.1327 * S\% + 9.0319 * \ln(VPT) + 0.009378 * VPH - 12.7571 * (BWDN\%/100) - 7.7502 * (CY\%/100) - 35.8595 * (HP\%/100) - 9.7689 * (HORSE\%/100) - 21.9802 * (BURN\%/100) - 2.0871 * CYCLE - 7.8954 * HECE + 29.5252 * (WH\%/100) - 7.9152 * Z9 - 5.4166 * SAL - 0.5179 * (1/VPT)] * CPIF$$

For the above equation the following definitions apply:

- if the percentage of hemlock, balsam and cedar volume in the cutting authority is greater than or equal to 50 percent of the total net cruise coniferous volume, then HECE = 1, otherwise enter 0,
- if the selling price zone is Fort Nelson Peace (9) then Z9 = 1, otherwise enter 0,
- if the total net cruise coniferous volume is greater than 50 000, then VOL = 50 000,
- if horse or helicopter log appraisals, then VPT = 0.5490.
- if the cutting authority is for the salvage of damaged or diseased timber at risk of being lost, then SAL = 1 otherwise enter 0.

7.5 MPS Stumpage Rate

7.5.1 MPS Upset Stumpage Rate

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.

Where a timber sale licence advertised under section 20, with stumpage rates calculated using MPS, does not receive any bid, the timber sale licence may be awarded directly under the authority of section 23(1)(e) of the *Forest Act*. The MPS upset stumpage rate advertised for the timber sale will be used.

Where the regional manager is satisfied that there is substantive recent evidence that a section 20 timber sale licence is unlikely to sell at the MPS upset stumpage rate and is for emergency bark beetle harvest, the timber sale may be advertised with an upset stumpage rate not less than the cost incurred to plan, layout, develop access, administer and reforest the timber sale area. These costs should be developed on a timber sale specific basis, however a district average cost can be used to streamline the workload. This minimum cost based upset stumpage rate is not to be used on direct award timber sales.

7.5.2 Upset Stumpage Rate Calculation

The upset stumpage rate (USR) is calculated by multiplying the Market Stumpage Price (MSP) by the difference between 1 and the discount factor (DF) as follows:

USR = MSP * (1-DF)

Where:

USR = Upset stumpage rate
MSP = Market Stumpage Price as defined in Section 7.4.2
DF = 0.30

7.5.3 Prescribed Minimum Stumpage Rate

The minimum stumpage rate is prescribed by the minimum stumpage rate regulation (BC Regulation 354/87). The current minimum stumpage rate is $0.25 per cubic metre.

7.5.4 Total MPS Stumpage Rate

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

7.6 Deciduous and Miscellaneous Forest Products

The stumpage rates for deciduous sawlogs, all species grade 3, 4, 5 and 6 logs and other miscellaneous forest products are found in section 6.7.

Appendices

Appendix I Equipment and Labour Rates

(Cost Base July 1, 2000)

MACHINE DESCRIPTION	TYPICAL MODEL	$/HOUR
Crawler Tractor	Cat D9N, (years: 1992 thru 1996)	188.52
Crawler Tractor	Cat D8NLGP, Komatsu D135	169.56
Crawler Tractor	Cat D7H, Liebherr PR742, Fiat Allis FD255	149.06
Crawler Tractor	Komatsu D75A, D65EX	132.40
Crawler Tractor	Cat D6, JD 850C	127.53
Rock Drill (includes labour)	Compressor: 750 cfm on tank chassis	196.25
Grader	Cat 14G, Komatsu GD705, 725	107.29
Front End Loader (Gravel)	Cat 970F, Komatsu WA45031, Case 921B	133.17
Front End Loader (Logs)	Cat 972G, Komatsu WA500-1, Volvo 4600	144.19
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 235C, Hitachi EX400, Komatsu PC400LC	224.85
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 231B, Cat 330L/N/R, Hitachi WX350	185.38
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 229D/EL300/330, Komatsu PC300L	163.68
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 225, Hitachi EX270/300, JD 792/892D	150.15
Hydraulic Excavator incl. Brush Guard & Thumb	Cat EL240, Komatsu PC200LC6/JD790ELC	138.89
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 320BL, Hitachi EX200LC-5, JD200LC	129.86
Gradall	Gradall G1000, XL5200	149.82
Logging Truck (Highway)	All Triaxle	90.89
Logging Truck (Off Highway)	All (note: 1998 rate trended forward)	138.21
Self Loading Log Truck	Highway log truck + 4.5 t deck crane	103.86
Gravel Truck	10.7 m^3	75.74
Gravel Truck Articulated (labour included)	25 - 29 tonne: Cat D30C/D, Terex 2766/3066	117.28
Lowbed	5 axle unit: tandem tractor and lowbed	81.92
Lowbed	150 tonne ***Same as Off-Hwy Truck	138.21
Concrete Mix Truck	6.1 m^3	86.28
Concrete Vibrator (labour not included)	5 m^3	4.10
Concrete Mixer (labour not included)	0.17 m^3	6.49
Crane - Truck Mounted	18 tonne	89.35
Soft Track Skidder	KMC 2100/2400	123.43
Rubber Tired Skidder	Clark Ranger F68, Franklin 595	84.74
Vibrator Compactor	Clark 668 + plus 2.7 - 3.6 t roller	97.04
Tractor and Grid Roller	Clark 668 + plus grid roller	97.30
Labourer	Includes 40% payroll loading	29.57
Roadman	Includes 40% payroll loading	29.81
Crib/Culvert Maker, Powderman	Includes 40% payroll loading	31.31
Landingman	Includes 40% payroll loading	31.71
Rockdriller & Powderman (load & blast only)(2 per)	Includes 40% payroll loading	68.16
Bridgeman	Includes 40% payroll loading	37.60
Powersaw (labour not included)	All	4.61
Faller, including powersaw cost	Includes 40% payroll loading	57.44

NOTES

2000 cost surveys, Province of British Columbia Hydro and Power Authority and B. C. Rail Equipment Rental Rate Guide, (rates based on a 3 year old machine), and IWA agreement rates including payroll loading.

- The above rates will be used for all engineered estimates made under this manual,
- The machine rate includes labour for the operator (all found). There are no additions,
- Crew transportation, supervision, and camp/cookhouse costs, where applicable, are included in the standard phase costs of the manual. No additions are required, however, those licensees that incur camp costs (a camp is defined as a permanent structure(s) where capital costs were incurred to establish the camp that must have a cookhouse and a bunkhouse) and recovers the said camp costs from the contractor, and credits an account, in the books of the licensee; is permitted an additive of $50.00 per "person day" for staying at the camp; and
- Use of equipment rates not listed in this appendix must be approved by the Regional Appraisal Co-ordinator.

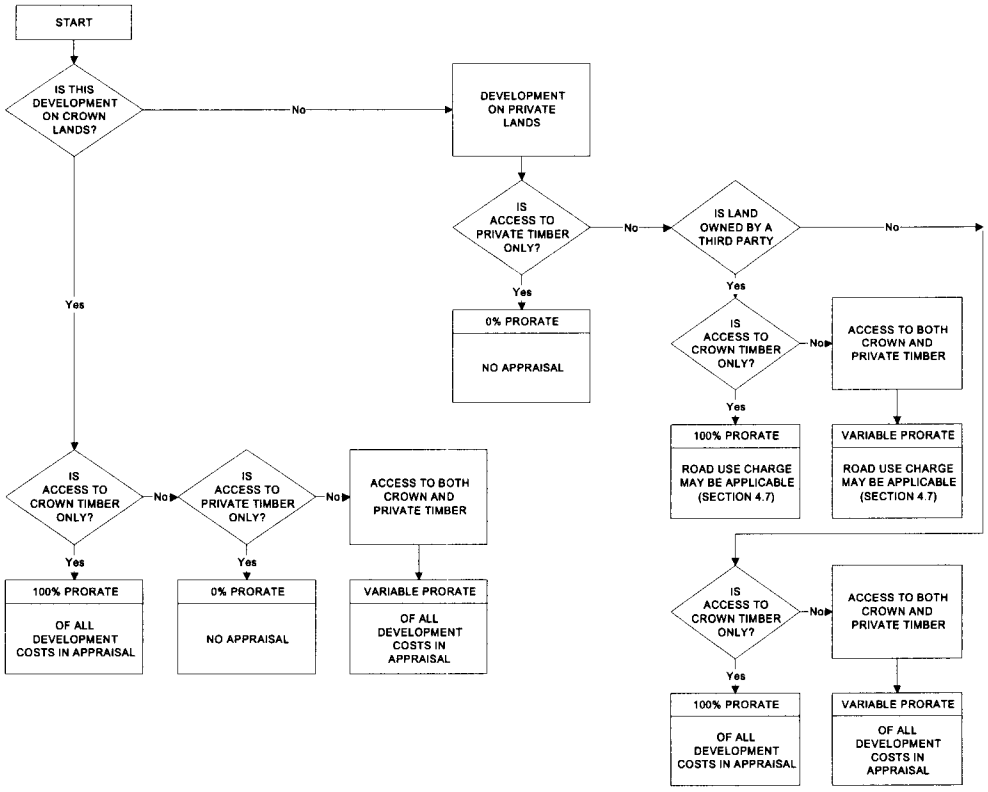
Appendix II Lumber Recovery Factors (board feet/cubic metre)

Species

Log Top Diameter (cm)	Cedar	Hemlock, Cypress, White Pine, Dry Belt Fir	All Others
4.5 - 5.49	91	91	91
5.5 - 6.49	97	102	103
6.5 - 7.49	103	111	113
7.5 - 8.49	108	120	123
8.5 - 9.99	115	129	134
10.0 - 14.9	132	151	158
15.0 - 19.9	156	172	185
20.0 - 24.9	177	187	202
25.0 - 29.9	197	199	217
30.0 - 34.9	215	210	226
35.0 - 39.9	227	217	234
40.0 - 44.9	235	222	240
45.0 - 49.9	238	228	246
50.0 - 54.9	239	233	252
55.0 - 59.9	239	237	258
60.0 - 64.9	237	240	263
65.0 - 69.9	233	241	266
70.0 - 74.9	228	240	267
75.0 - 79.9	223	237	265
80.0 - 84.9	217	234	263
85.0 - 89.9	210	231	261
90.0 - 94.9	201	227	259
95.0 - 99.9	193	224	257
100.0 +	184	221	254

Source: Appendix 11A of the Cruise Compilation Design Manual

Appendix III Development Cost Allocation



Crown Timber = Appraised timber including appraised Timber Licences

Private Timber = Non-appraised timber

Variable Prorate = A tributary-volume type prorate between appraised and non-appraised timber

Appendix IV Relative Soil Moisture to Absolute Soil Moisture Conversion Table

Region	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide) 0	1	2	3	4	5	6	7
CAR	BG	xh3	ED	ED	ED	ED	ED	SD	M	W
CAR	BG	xw2	ED	ED	ED	ED	ED	SD	M	W
CAR	IDF	xm	ED	ED	VD	VD	MD	SD	M	W
CAR	IDF	xw	ED	ED	VD	VD	MD	SD	M	W
CAR	IDF	dk3	ED	VD	VD	VD	MD	F	M	W
CAR	IDF	dk4	ED	VD	VD	VD	MD	F	M	W
CAR	IDF	u	ED	VD	VD	MD	MD	F	VM	W
CAR	IDF	mw2	VD	VD	VD	MD	SD	F	VM	W
CAR	MS	xk	VD	VD	VD	VD	MD	F	M	W
CAR	MS	xv	VD	VD	VD	MD	SD	F	VM	W
CAR	ICH	dk	VD	VD	VD	MD	SD	M	VM	W
CAR	ICH	mk3	VD	MD	MD	SD	F	M	VM	W
CAR	ICH	wk2	VD	MD	SD	F	F	M	VM	W
CAR	ICH	wk4	VD	MD	SD	F	F	M	VM	W
CAR	SBPS	xc	ED	ED	VD	VD	MD	SD	M	W
CAR	SBPS	dc	ED	ED	VD	MD	SD	F	M-VM	W
CAR	SBPS	mk	ED	VD	VD	MD	SD	F	M-VM	W
CAR	SBPS	mc	VD	VD	VD	MD	SD	F	M-VM	W
CAR	SBS	dw1	VD	MD	MD	SD	SD	F	M	W
CAR	SBS	dw2	VD	MD	MD	SD	SD	F	M	W
CAR	SBS	mh	VD	MD	MD	SD	SD	M	VM	W
CAR	SBS	mw	VD	MD	MD	SD	F	M	VM	W
CAR	SBS	mc1	VD	MD	MD	SD	F	M	VM	W
CAR	SBS	mc2	VD	MD	MD	SD	F	M	VM	W
CAR	SBS	wk1	VD	MD	SD	F	F	M	VM	W
CAR	ESSF	xv	VD	VD	MD	MD	SD	F	M	W
CAR	ESSF	dc2	VD	MD	MD	SD	SD/F	M	VM	W
CAR	ESSF	wc3	MD	MD	SD	F	M	M	VM	W
CAR	ESSF	wk1	MD	MD	SD	F	M	M	VM	W
KAM	BG	xh1	ED	ED	ED	ED	ED	SD	M	W
KAM	BG	xh2	ED	ED	ED	ED	ED	SD	M	W
KAM	BG	xw1	ED	ED	ED	ED	ED	SD	M	W
KAM	PP	xh1	ED	ED	ED	ED	VD	SD	M	W
KAM	PP	xh2	ED	ED	ED	ED	VD	SD	M	W
KAM	IDF	xh1	ED	ED	VD	VD	MD	SD	M	W
KAM	IDF	xh2	ED	ED	VD	VD	MD	SD	M	W

Region	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide) 0	1	2	3	4	5	6	7
KAM	IDF	xw	ED	ED	VD	VD	MD	SD	M	W
KAM	IDF	dk1	ED	VD	VD	VD	MD	F	M	W
KAM	IDF	dk2	ED	VD	VD	VD	MD	F	M	W
KAM	IDF	dm1	ED	VD	VD	VD	MD	F	M	W
KAM	IDF	mw1	VD	VD	VD	MD	SD	F	VM	W
KAM	IDF	mw2	VD	VD	VD	MD	SD	F	VM	W
KAM	IDF	ww	VD	VD	VD	MD	SD	F	M	W
KAM	MS	xk	VD	VD	VD	VD	MD	F	M	W
KAM	MS	dc	VD	VD	VD	MD	SD	M	VM	W
KAM	MS	dm1	VD	VD	VD	MD	SD	M	VM	W
KAM	MS	dm2	VD	VD	VD	MD	SD	M	VM	W
KAM	ICH	mk1	VD	MD	MD	SD	F	M	VM	W
KAM	ICH	mk2	VD	MD	MD	SD	F	M	VM	W
KAM	ICH	mw2	VD	MD	MD	SD	F	M	VM	W
KAM	ICH	mw3	VD	MD	MD	SD	F	M	VM	W
KAM	ICH	wk1	VD	MD	SD	F	F	M	VM	W
KAM	ICH	vk1	MD	MD	SD	F	M	M	VM	W
KAM	SBS	mm	VD	MD	MD	SD	F	M	VM	W
KAM	ESSF	xc	VD	VD	MD	MD	SD	M	VM	W
KAM	ESSF	dc1	VD	MD	MD	SD	SD/F	M	VM	W
KAM	ESSF	dc2	VD	MD	MD	SD	SD/F	M	VM	W
KAM	ESSF	dv	VD	MD	MD	SD	SD/F	M	VM	W
KAM	ESSF	mw	VD	MD	MD	SD	F	M	VM	W
KAM	ESSF	wc1	MD	MD	SD	F	M	M	VM	W
KAM	ESSF	wc2	MD	MD	SD	F	M	M	VM	W
KAM	ESSF	wc4	MD	MD	SD	F	M	M	VM	W
KAM	ESSF	vc	MD	SD	SD	F	M	VM	VM	W
KAM	ESSF	vv	MD	SD	SD	F	M	VM	VM	W
NEL	PP	dh1	ED	ED	ED	VD	VD	SD	M	W
NEL	PP	dh2	ED	ED	ED	VD	VD	SD	M	W
NEL	IDF	xh1	ED	ED	VD	VD	MD	SD	M	W
NEL	IDF	dm1	ED	VD	VD	VD	MD	F	M	W
NEL	IDF	dm2	ED	VD	VD	VD	MD	F	M	W
NEL	MS	dk	VD	VD	VD	VD	MD	SD	M	VM	W
NEL	MS	dm1	VD	VD	VD	VD	MD	SD	M	VM	W
NEL	ICH	xw	VD	VD	VD	VD	MD	SD	M	VM	W
NEL	ICH	mk1	VD	MD	MD	SD	F	M	VM	W
NEL	ICH	mw1	VD	MD	MD	SD	F	M	VM	W

Region	BEC Zone	Subzone	0	Relative Soil Moisture Regime Class (from field guide) 1	2	3	4	5	6	7
NEL	ICH	mw2	VD	MD	MD	SD	F	M	VM	W
NEL	ICH	mw3	VD	MD	MD	SD	F	M	VM	W
NEL	ICH	wk1	VD	MD	SD	F	F	M	VM	W
NEL	ICH	vk1	MD	MD	SD	F	M	M	VM	W
NEL	ESSF	dc1	VD	MD	MD	SD	SD/F	M	VM	W
NEL	ESSF	dk	VD	MD	MD	SD	SD/F	M	VM	W
NEL	ESSF	wc1	MD	MD	SD	F	M	M	VM	W
NEL	ESSF	wc2	MD	MD	SD	F	M	M	VM	W
NEL	ESSF	wc4	MD	MD	SD	F	M	M	VM	W
NEL	ESSF	wm	MD	MD	SD	F	F	M	VM	W
NEL	ESSF	vc	MD	SD	SD	F	M	VM	VM	W
PG	ICH	mm	VD	MD	MD	SD	F	M	VM	W
PG	ICH	wk1	VD	MD	SD	F	F	M	VM	W
PG	ICH	wk3	VD	MD	SD	F	F	M	VM	W
PG	ICH	wk4	VD	MD	SD	F	F	M	VM	W
PG	ICH	vk2	MD	SD	SD	F	M	M	VM	W
PG	BWBS	dk1	VD	MD	MD	SD	SD	F	M-VM	W
PG	BWBS	dk2	VD	MD	MD	SD	SD	F	M-VM	W
PG	BWBS	mw1	VD	MD	MD	SD	F	M	VM	W
PG	BWBS	mw2	VD	MD	MD	SD	F	M	VM	W
PG	BWBS	wk1	VD	MD	SD	SD	F	M	VM	W
PG	BWBS	wk2	VD	MD	SD	SD	F	M	VM	W
PG	BWBS	wk3	VD	MD	SD	SD	F	M	VM	W
PG	SBPS	mc	VD	VD	VD	MD	SD	F	M-VM	W
PG	SBS	dw1	VD	MD	MD	SD	SD	F	M	W
PG	SBS	dw2	VD	MD	MD	SD	SD	F	M	W
PG	SBS	dw3	VD	MD	MD	SD	SD	F	M	W
PG	SBS	dh	VD	MD	MD	SD	SD	F	M	W
PG	SBS	dk	VD	MD	MD	SD	SD	F	M-VM	W
PG	SBS	mh	VD	MD	MD	SD	SD	M	VM	W
PG	SBS	mw	VD	MD	MD	SD	F	M	VM	W
PG	SBS	mc2	VD	MD	MD	SD	F	M	VM	W
PG	SBS	mc3	VD	MD	MD	SD	F	M	VM	W
PG	SBS	mk1	VD	MD	MD	SD	F	M	VM	W
PG	SBS	mk2	VD	MD	MD	SD	F	M	VM	W
PG	SBS	wk1	VD	MD	SD	F	F	M	VM	W
PG	SBS	wk2	VD	MD	SD	F	F	M	VM	W
PG	SBS	wk3	VD	MD	SD	F	F	M	VM	W

Region	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide) 0	1	2	3	4	5	6	7
PG	SBS	vk	MD	SD	SD	F	M	M	VM	W
PG	ESSF	mm1	VD	MD	MD	SD	F	M	VM	W
PG	ESSF	mv1	VD	MD	SD	SD	F	M	VM	W
PG	ESSF	mv2	VD	MD	SD	SD	F	M	VM	W
PG	ESSF	mv3	VD	MD	SD	SD	F	M	VM	W
PG	ESSF	mv4	VD	MD	SD	SD	F	M	VM	W
PG	ESSF	wc2	MD	MD	SD	F	M	M	VM	W
PG	ESSF	wc3	MD	MD	SD	F	M	M	VM	W
PG	ESSF	wk1	MD	MD	SD	F	M	M	VM	W
PG	ESSF	wk2	MD	MD	SD	F	M	M	VM	W
PR	ICH	mc1	VD	MD	SD	SD	F	M	MV	W
PR	ICH	mc1a	VD	MD	SD	SD	F	M	MV	W
PR	ICH	mc2	VD	MD	SD	SD	F	M	MV	W
PR	ICH	wc	MD	MD	SD	F	F	M	VM	W
PR	ICH	vc	MD	SD	SD	F	M	M	VM	W
PR	BWBS	dk1	VD	MD	MD	SD	SD	F	M-VM	W
PR	BWBS	dk2	VD	MD	MD	SD	SD	F	M-VM	W
PR	SBPS	mc	VD	VD	VD	MD	SD	F	M-VM	W
PR	SBS	dk	VD	MD	MD	SD	SD	F	M-VM	W
PR	SBS	mc2	VD	MD	MD	SD	F	M	VM	W
PR	ESSF	mk	VD	MD	MD	SD	F	M	VM	W
PR	ESSF	mc	VD	MD	SD	SD	F	M	VM	W
PR	ESSF	wv	MD	SD	SD	F	F	M	VM	W
PR	CWH	ws1	VD	MD	MD	SD	F	M	VM	W
PR	CWH	ws2	VD	MD	MD	SD	F	M	VM	W
PR	CWH	vm1	MD	SD	SD	F	F	M	VM	W
PR	CWH	vm2	MD	SD	SD	F	F	M	VM	W
PR	CWH	wm	SD	SD	SD	F	F	M	VM	W
PR	CWH	vh2	SD	SD	F	F	M	VM	W	W
PR	MH	mm1	SD	SD	F	F	F	M	VM	W
PR	MH	mm2	SD	SD	F	F	F	M	VM	W
PR	MH	wh	SD	SD	F	F	F	M	VM	W
VAN	IDF	ww	VD	VD	VD	MD	SD	F	M	W
VAN	ESSF	mw	VD	MD	MD	SD	F	M	VM	W
VAN	CDF	mm	VD	VD	MD	MD	MD	SD	F	W
VAN	CWH	xm	VD	MD	MD	SD	F	M	VM	W
VAN	CWH	dm	VD	MD	MD	SD	F	M	VM	W
VAN	CWH	ds1	VD	MD	MD	SD	F	M	VM	W

Region	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide) 0	1	2	3	4	5	6	7
VAN	CWH	ds2	VD	MD	MD	SD	F	M	VM	W
VAN	CWH	ms1	VD	MD	MD	SD	F	M	VM	W
VAN	CWH	ms2	VD	MD	MD	SD	F	M	VM	W
VAN	CWH	ws2	VD	MD	MD	SD	F	M	VM	W
VAN	CWH	mm1	MD	SD	SD	F	F	M	VM	W
VAN	CWH	mm2	MD	SD	SD	F	F	M	VM	W
VAN	CWH	vm1	MD	SD	SD	F	F	M	VM	W
VAN	CWH	vm2	MD	SD	SD	F	F	M	VM	W
VAN	CWH	wh1	SD	SD	SD	F	F	M	VM	W
VAN	CWH	wh2	SD	SD	SD	F	F	M	VM	W
VAN	CWH	vh1	SD	SD	F	F	M	VM	W	W
VAN	CWH	vh2	SD	SD	F	F	M	VM	W	W
VAN	MH	mm1	SD	SD	F	F	F	M	VM	W
VAN	MH	mm2	SD	SD	F	F	F	M	VM	W
VAN	MH	wh	SD	SD	F	F	F	M	VM	W

NOTES: ED = Extremely Dry (0, extreme xeric)
VD = Very Dry (1, xeric)
MD = Moderately Dry (2, sub-xeric)
SD = Slightly Dry (3, sub-mesic)
F = Fresh (4, mesic)
M = Moist (5, sub-hygric)
VM = Very Moist (6, hygric)
W = Wet (7, sub-hydric)

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BRITISH COLUMBIA

Ministry of Forests

INTERIOR APPRAISAL DATA SUBMISSION

Licence _____ Cutting Permit _____ Mark _____

Licencee _____

ACKNOWLEDGEMENTS

This Appraisal Data Submission contains, as of this date, truthful information on the timber to be harvested, site conditions, harvesting, development, and silviculture plans and other information, all prepared according to the *Interior Appraisal Manual.*

Check if appropriate

☐ I certify that there have been no changes, to the data elements, specified operation or detailed engineering methodologies, or amendments to the cutting authority since the last appraisal or reappraisal.

☐ I certify that there are less than 2 000 cubic metres of merchantable timber remaining on the cutting authority area and that no timber is expected to be harvested during the next year. I am requesting that the current stumpage rate be extended.

Check one of the boxes below:

☐ I certify I personally completed the work described herein.

☐ I certify that the work described herein fulfils standards acceptable of a Registered Professional Forester and that I did personally supervise the work.

☐ I certify that I have reviewed this document and while I did not personally supervise the work described, I have determined that this work has been done to standards acceptable of a Registered Professional Forester.

Registered Professional Forester:

Name: R.P.F. #	RPF's Signature and Seal:
Phone: ( )	
Fax: ( )	
E-mail Address:	
Date (ccyy/mm/dd):	

The information contained in this package may be released under the *Freedom of Information and Protection of Privacy Act.*

INTERIOR APPRAISAL DATA SUBMISSION

Reference Information

Mark: _____ Ref Mark: _____

Effective Date: _____ Expiry Date: _____

Admin Forest District _____ Geographic Forest District _____

Tenure Type _____ TSA _____ Supply Block _____ TFL _____

Woodlot Annual Rate Adjustment Selection ☐ Annually Adjusting ☐ Quarterly Adjusting

Appraisal Type (Check one): New ☐ Reappraisal ☐ SBFEP Advertise ☐

Point of Appraisal _____

Rate Calculation Method (Check one) CVP ☐ MPS ☐

Comparative Cruise ☐ Yes ☐ No

Specified Operation ☐ Yes ☐ No

Salvage ☐ Yes ☐ No

Cruise Information/Tree-to-Truck:

Cruise Information

Species	Volume❶	Decay	Stud Log	LRF	Burn	Revenue Office Use Only	
	m^3	%	%		%	Comp. Ind.	S.P. Zone
BA							
CE							
FI							
HE							
LA							
LO							
SP							
YE							
WH							
TOTAL *		Other species tied to:					

* To be harvested.

❶ From the Cutting Permit Summary of the Cruise Compilation.

INTERIOR APPRAISAL DATA SUBMISSION

Cruise Information/Tree-to-Truck (cont'd)

Cruise Information (cont'd)

Total Net Cruise Volume _____ m^3

Total Net Cruise Area _____ Ha

Obligatory Deciduous Volume _____ m^3

Sampling Error % (at 2 stand dev. _____ %

Mandatory Small Log Utilization Yes ☐ No ☐

CP Avg. Vol/Tree _____ m^3/tree

CP Avg. Vol/ha _____ m^3/ha

CP Average Slope _____ %

CP Predominant BGC zone _____

Mandatory Grade 4 Hemlock Yes ☐ No ☐

Tree-to Truck

Support Centre _____ **Distance to Support Centre** _____ **(km)(one way)**

	Conventional		Overhead Cable			Other Systems		
	Ground Skidding		Highlead/Grapple		Skyline	Helicopter		Horse
	Clear Cut	Partial Cut	Clear Cut	Partial Cut		Clear Cut	Partial Cut	
Vol. To be harvested (m^3)								
Lodgepole Pine Vol (m^3)								
Biogeoclimatic zone								
Net Vol./tree (m^3)								
Volume/hectare (m^3)								
Stand defect (%)								
Partial cut (%)								
Average slope (%)								
Blowdown (%)								
Heavy fire damage (%)								
Dead useless snags (%)								
Skyline Yarding Dist. (m)								
Heli Yarding Dist (m)								
Uphill Yarding?						☐	☐	

INTERIOR APPRAISAL DATA SUBMISSION

Log Transportation (Section 4.5)

A. Truck Haul

Primary Highway ☐ Off Highway ☐ Primary Cycle Time _____ hours

If Secondary Haul Secondary Cycle _____ hours

COMMON JUNCTION CALCULATION				
Cut Block	**Volume (m3) (A)**	**Distance (km)**	**Time (minutes)**	**M3 x minutes (B)**

PRIMARY CYCLE TIME CALCULATION							
Road			Distance	Speed (km/hr)		Time (nearest 1.0 min)	
Identifier	Primary	Secondary	D (km)	Loaded	Empty	Loaded	Empty
				SUBTOTAL		L =	E =

Load Handling, Delay in minutes ☐

Total Cycle Time, Minutes (L + E + D) ☐ Divided by 60 = _____ hrs (0.1)

INTERIOR APPRAISAL DATA SUBMISSION

B. Water Transportation (Section 4.5.3)

Lake Name			Code	
Dump & Boom	Yes	☐	No	☐
Lake Tow	_____			km
Dewater/Reload	Yes	☐	No	☐
Road Management	Yes	☐	No	☐
Approved Road Use Charges	_____			($/m^3)

C. Special Transportation Systems (Section 4.5.4)

Description		Location		Code	*Applicable Vol. (m^3)
1. Railway					
Truck to Rail Transfer	No ☐	- BC Rail Dease Lk	Yes ☐	RTD	_____
		- All other railways	Yes ☐	RTA	_____
Rail Transportation	No ☐	Leo Creek	Yes ☐	RLE	_____
		Lovell	Yes ☐	RLO	_____
		Bear Lake	Yes ☐	RBL	_____
		Minaret Lake	Yes ☐	RMT	_____
		Niteal	Yes ☐	RNL	_____
2. Barge Ferry Used for Truck Haul					
	No ☐	- Reservoir Lakes	Yes ☐	BUK	_____
				BUO	_____
				BUR	_____
				BUW	_____
		- Natural Lakes	Yes ☐	BUA	_____
3. Barge Ferry Used for Crew Transportation					
	No ☐	All Lakes	Yes ☐	BFA	_____
4. Francois Lake Ferry (Private/Public)					
	No ☐	Yes ☐			

Specified Operation * (Section 4.1.1) Description _____ Cost _____ $/m^3

* Complete only when different from cutting authority.

INTERIOR APPRAISAL DATA SUBMISSION

Administration and Other Costs (Section 4.8)

Isolated Cutting Authority (Section 4.8.2)	No ☐	Yes ☐	Rail (Code 4)
		Yes ☐	Lake or Ocean (Code 3)

Specified Operation (Section 4.1.1)

Description _____ Cost _____ $/m^3

INTERIOR APPRAISAL DATA SUBMISSION

Road and Drainage Structures (New, Reconstruction & Upgrade)

1. Culverts (Tabulated) (Section 4.3.2.4)

Applicable Volume * _____ (m^3)

Circular Pipe Diameter (m)	Circular Pipe Length (m)	Number

* Applicable Volume: Complete only when different from Cutting Authority Volume.

INTERIOR APPRAISAL DATA SUBMISSION

3. Tabular Road Construction Data (New Construction Only) (Section 4.3.2)

Applicable Volume: _____ (m^3)

						Subgrade			Stabilizing Material		
Road Identifier	Road Group	Biogeo climatic Zone	Road Section Number	Road ❶ Type O, B, W	Section Length (km)	Soil ❷ Moisture (blank, W)	Side Slope (%)	Rock (%)	Stab. Length (km)	Mat. ❸ Type (blank, Q)	Ballast ❹ Haul Distance (km)
Total Length						Attach additional pages where necessary.						

❶ Road Type - Must enter one of "O" = operational road, "B" = block road, or "W" = snow (winter) road.

❷ Soil Moisture (SMR) - If the road section is wet (Section 4.3.2.2(5)) enter "W". Otherwise leave blank.

❸ Material Type - If the stabilizing material is quarried rock enter "Q". Otherwise leave blank.

❹ Ballast Haul Distance - One way.

INTERIOR APPRAISAL DATA SUBMISSION

4. Other Structures (Section 4.3.2.6)

Fencing (in 100's of metres) _____

No. of Cattle Guards _____

No. of Pipeline Crossings _____

5. Allocated Development

Identifier	Description	Cost Base Year of Original Cost	Original Cost ($)	Trended Cost($)*	Applicable Volume (m^3)

6. Engineered Development

Identifier	Description	Cost Base Year of Original Cost	Original Cost ($)	Trended Cost($)*	Applicable Volume (m^3)	Amended Check if Yes
						☐
						☐
						☐
						☐

* Trended to the cost base of the current manual

INTERIOR APPRAISAL DATA SUBMISSION

Engineered Construction Cost Estimates

Licence: _____ C.P.: _____ Estimate Date: _____

Name and/or Location: _____

Description: _____

Effective date of Engineered Estimate: _____

	Type	Function	Hours	Rate/Hour	Total
1. Comp. Bid Costs:	N/A	N/A	N/A	N/A	
2. Machine Cost:					
3. Labour Cost:					
4. Materials Cost:					
5. Freight & Haulage for materials only:					
6. Engineering (if applicable)					
Total Cost (July 1, 2000)					

1. Refer to Appendix 1 of the *Interior Appraisal Manual* for further information on equipment, labour and material rates.
2. List each machine employed and work performed.
4. Freight and haulage is allowed for permanent type bridges (i.e., steel, concrete, or glu-lam).
5. Cost of design and engineering for log bridges is not allowed. Cost of design inspection and supervision for other more complex structures by a professional engineer not on salary may be allowed.
6. No GST to be included, PST is allowed on materials.

INTERIOR APPRAISAL DATA SUBMISSION

Basic Silviculture (Section 4.9)

Treatment Regime	Net Merchantable (ha)	Treatment Area (hectares) NCBR ** (individual areas of 4 ha or less)	Removal Factor

Specified Operation (Root Disease Control) (Section 4.1.1)

Total Cost ($) _____

** If more than 4 ha confirm that individual areas are smaller than 4 ha in size.

INTERIOR APPRAISAL DATA SUBMISSION

Ministry of Forests

Request for Approval
Road and Land Use Charge in Appraisals

Region _____ Right-of-way Acquisition

District _____ Request Form

Location _____ File No. _____ (FS 959)

Licensee _____

Private Land Owner _____

Cutting Authorities Affected (Volumes and Time Frame):
Reason for Request:
Determination of Cost Estimates (provide details of Calculation):

Mandatory Attachments: Map ☐ And Agreement for Charges ☐

Is this Road Use Agreement made at 'arms length'? Yes ☐ No ☐

Requested by: Licensee _____ Date _____

Requested by: District _____ Date _____

Region _____ Date _____

Approved _____ Date _____

Comments _____

INTERIOR APPRAISAL DATA SUBMISSION

Small Business Forest Enterprise Program

Sale Date _____ Sale Term _____ Years _____ Months Sale Type _____

	Sawlogs	Grades 3, 4, 5, 6 ($/m^3)	Deciduous ($/m^3)	Override Sawlog Levy ($/m^3)
Include Development Levy *	☐ Yes ☐ No			
Include Silviculture Levy	☐ Yes ☐ No			
Bonus Bid ($/m^3)				

Rate Adjustment Type ☐ Fixed ☐ Adjustable

* **Levies**: District Manager may waive either levy, or both, where no Crown expenditure is required and/or the timber will be sold through competition. Levies added if no choice made.

BCTS Allocated Development

Identifier	Description	Cost Base Year of Original Cost	Original Cost ($)	Trended Cost($) *	Applicable Volume (m^3)

* Trended to the cost base of the current manual.

Mandatory Utilization (for Residue and Waste Billing, **SBFEP ONLY)**

Identify from the following list **only** those species, grades and products that are **non-competitive**, but subject to mandatory utilization.

Species	Grade (Circle all Applicable)				Miscellaneous Product (List all Applicable)
CE	S/L	3	4	5	
HE	S/L	3	4	5	
LO	S/L	3	4	5	
Deciduous		AS	BI	CO	
All Others	S/L	3	4	5	

BRITISH COLUMBIA

Ministry of Forests

INTERIOR APPRAISAL DATA SUBMISSION

Control Sheet

Region: _____ **District** _____

Licence _____	Cutting Permit _____	Mark _____

Forest District				
Receipt of Submission in District Office		Date CCYY	MM	DD
Data Submission Reviewed By: (Print Name)	Signature:	Date CCYY	MM	DD
Comments:				

Forest Region			
Reviewed by:	Date CCYY	MM	DD