

**Methodology for Determining the Adjustment Factor  
To Reconcile Historical Cut-Control Practices  
With the New Log Grades**

**February 2006**

**BC Forest Service**

## **Table of Contents**

Introduction	Page 1
Principles	Page 1
Guidelines	Page 2
Methodology	Page 2
Implementation	Page 5
Appendix A: Draft Adjustment Factors by Management Unit	Page 6

## **Introduction**

This paper presents the methodology for determining the volume-of-timber-harvested adjustment factor to reconcile historical cut-control practices with the new Interior log grades. The methodology is based on the guiding principle that a volume-of-timber-harvested adjustment is necessary to address the fact that dead and dry timber (endemic Grade 3 and Grade 5) is currently not cut-accountable, and will become cut-accountable on and after April 1, 2006. The method to calculate the adjustment factor will be by management unit (timber supply areas and tree farm licences) and species, based on our best estimate of the percentage of available volume of timber that is classed as endemic Grade 3 and Grade 5. The methodology also considers the increased endemic Grade 3 harvest due to the beetle epidemic.

The adjustment is intended for reconciling historical cut-control practises with the new log grades, without increasing or decreasing actual harvest volumes.

## **Principles**

1. Changes to the Interior log grades will not result in a net gain or loss of timber supply available to a licensee.
2. The proposal will consider the increased endemic Grade 3 harvest due to the beetle epidemic.
3. The proposal will strive to be fair and equitable on all impacted licensees at the management unit level, and Interior wide.
4. The proposal will strive for as simple a mechanism and process as possible, and administrative efficiency.
5. Changes will be implemented in a “planned and periodic” fashion as dictated by the beetle epidemic.

## Guidelines

- Interior grade changes will occur on April 1, 2006.
- Adjustment to the volume-of-timber-harvested is necessary to reconcile historical cut control practises with the new log grades.
- The adjustment amount will be determined by the Minister.
- Forest licences (replaceable and non-replaceable), tree farm licences, woodlots, community forests agreements, licence to cut, and BCTS are eligible for the adjustment.
- The calculation is by management unit and species.

## Methodology

### Assumption 1:

The adjustment factor is intended to reflect the proportion of stand volume that is currently non-cut-accountable, and will become cut-accountable on and after April 1, 2006. Therefore, the adjustment factor,  $F$  is

$$F = \frac{V_{non-cut-accountable}}{V_{total}} \quad (1)$$

where:  $V_{total}$  = total stand volume.

$V_{non-cut-accountable}$  = total stand volume that is non-cut-accountable

### Assumption 2:

The definitions for grades 6 and Z will remain the same after April 1, 2006, and harvests from these grades will continue to be non-cut-accountable. Therefore, to simplify the methodology and discussion, all volumes in grades 6 and Z will be excluded in the analysis, and in the discussions for the remainder of this proposal. Therefore, equation (1) can be re-written as,

$$F = \frac{V_{end\ 3,5}}{V_{net}} \quad (2)$$

where:  $V_{net}$  = total stand volume, excluding grades 6 and Z

$V_{end\ 3,5}$  = total stand volume in endemic Grade 3 and Grade 5.

Assumption 3:

Harvest billing history is the best available information on the amount of stand volume by log grades. Therefore, equation (2) can be re-defined as,

$$F = \frac{V_{end\ 3,5}}{V_{net}} \quad (3)$$

where:  $V_{net}$  = total billed volume, excluding grades 6 and Z

$V_{end\ 3,5}$  = total billed volume in endemic Grade 3 and Grade 5.

Assumption 4:

Many management units (timber supply areas and tree farm licences) have diverse species profiles. Therefore the adjustment factor will be calculated by species and management unit. To simplify the calculation and administration of the adjustment factors, the deciduous species: alder, arbutus, aspen, birch, cottonwood, and maple will be grouped together. A single factor for deciduous will be calculated by management unit.

Assumption 5:

Forestry operations depend on external factors such as market conditions. Therefore, summing past harvest billing records will provide a good approximation of the harvested volume by species and log grade. Data from 1995 onward will be used to capture at least one full business cycle.

Assumption 6:

The Interior of BC has been impacted by the mountain pine beetle infestation. As a result, the amount of Grade 3 timber has increased significantly in some areas, and a substantial amount of timber was harvested as endemic Grade 3 over the last 3 years. To establish baseline adjustment factors for the pre-beetle era, harvest records from January 1995 to December 2002 will be used.

Assumption 7:

To address the increased amount of harvested “endemic” Grade 3 volume since 2002 due to the beetle infestation, an amount equivalent to 30% of the total billed endemic Grade 3 volume from 1995 to 2002 will be added to the numerator of equation (3) for lodgepole pine only. Therefore, the adjustment factor for a management unit, by species is,

$$F_{LP} = \frac{V_{end\ 3,5} + B}{V_{net}}, \text{ for lodgepole pine} \quad (4.1)$$

$$F_{Other} = \frac{V_{end\ 3,5}}{V_{net}}, \text{ for all other species} \quad (4.2)$$

where:  $F_{LP}$  = adjustment factor for lodgepole pine

$F_{Other}$  = adjustment factor for all other species

$V_{net}$  = total billed volume, excluding grades 6 and Z, of that species,  
from 1995 to 2002

$V_{end\ 3,5}$  = total billed volume in endemic Grade 3 and Grade 5 of that  
species, from 1995 to 2002

$B$  = 30% of the total billed volume in endemic Grade 3 for lodgepole  
pine, from 1995 to 2002.

Assumption 8:

Practical experience suggests that the endemic level of dead and dry timber should not exceed 30% of total stand volume. Therefore all adjustment factors will have an upper limit of 30%.

**Implementation**

The volume-of-timber-harvested adjustment factors are intended for reconciling historical cut-control practises with the new interior log grades. The adjustment factors are uniquely determined by species and management unit. Woodlot and community forest licences will use the set of species adjustment factors for the timber supply area where the licence or agreement is located.

The adjustment factors are to be used for cut-control purposes only. Up to and including March 31, 2006, cut-control will be assessed using the rules in place before April 1, 2006. On and after April 1, 2006, cut-control will be assessed using the volume-of-timber-harvested adjustment factors.

Suppose the adjustment factor for a particular species in a timber supply area was  $x\%$ . In application,  $(100 - x)\%$  of the total billed volume, excluding grades 6 and Z, for that species in that timber supply area would be cut-accountable. The adjustment factor by management unit and species are shown in Appendix A.

For each management unit, the need for the adjustment factor will be reviewed at the next timber supply review.

**Appendix A: Adjustment factors by management unit and species**

management unit	deciduous	balsam	cedar	douglas fir	hemlock	larch	lodge-pole pine	spruce	yellow pine	white pine	white bark pine	cy-press
100 Mile House	2.2%	10.5%	2.8%	5.2%	1.2%	0.9%	10.0%	3.7%	30.0%	30.0%	2.6%	0.0%
Arrow	0.3%	13.5%	3.7%	6.4%	1.6%	6.1%	25.8%	6.8%	7.7%	30.0%	20.7%	0.0%
Boundary	0.6%	14.9%	3.4%	5.4%	1.7%	5.1%	15.0%	5.5%	3.1%	30.0%	12.9%	0.0%
Bulkley	2.3%	28.3%	2.2%	0.0%	1.3%	0.0%	16.2%	10.9%	0.0%	0.0%	0.0%	0.0%
Cassiar	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cranberry	0.0%	30.0%	1.2%	0.0%	1.5%	0.0%	9.5%	5.3%	0.0%	0.0%	0.0%	0.0%
Cranbrook	6.6%	18.1%	7.0%	3.0%	1.1%	3.1%	12.9%	5.1%	2.2%	30.0%	16.1%	0.0%
Dawson Creek	0.2%	1.9%	0.0%	0.0%	0.0%	2.4%	1.2%	1.4%	0.0%	0.0%	0.0%	0.0%
Fort Nelson	1.2%	13.2%	23.9%	0.0%	0.0%	10.6%	8.7%	3.9%	0.0%	0.0%	0.0%	0.0%
Fort St. John	0.2%	2.5%	0.0%	0.0%	0.0%	2.2%	3.5%	1.5%	0.0%	0.0%	0.0%	0.0%
Golden	0.3%	13.7%	4.8%	4.5%	4.1%	5.2%	16.4%	6.9%	30.0%	30.0%	3.3%	0.0%
Invermere	0.0%	13.9%	5.6%	3.6%	1.5%	2.7%	13.6%	3.6%	3.2%	30.0%	5.7%	0.0%
Kalum	0.3%	3.8%	5.3%	0.0%	2.1%	0.0%	24.6%	11.3%	0.0%	0.0%	0.0%	27.5%
Karmloops	1.3%	13.5%	1.9%	3.3%	3.6%	3.9%	9.8%	5.1%	15.2%	30.0%	13.1%	0.0%
Kispiox	1.5%	26.9%	1.6%	0.0%	1.5%	0.0%	24.2%	13.5%	0.0%	0.0%	0.0%	30.0%
Kootenay Lake	3.4%	15.9%	4.3%	5.5%	2.6%	5.3%	13.5%	7.3%	4.6%	30.0%	23.2%	0.0%
Lakes	6.6%	17.6%	0.0%	0.7%	30.0%	0.0%	5.8%	6.2%	0.0%	0.0%	0.0%	30.0%
Lillooet	2.8%	10.1%	0.5%	1.0%	5.2%	3.0%	10.4%	6.2%	12.7%	28.1%	30.0%	0.0%
MacKenzie	1.0%	10.5%	0.0%	0.0%	0.0%	0.0%	4.4%	5.1%	0.0%	0.0%	0.0%	0.0%
Meritt	15.5%	9.5%	0.7%	2.0%	6.0%	1.6%	5.2%	7.6%	3.9%	26.3%	30.0%	0.0%
Morice	6.4%	19.3%	19.6%	0.4%	30.0%	0.0%	11.0%	10.6%	0.0%	0.0%	0.0%	0.0%
Nass	1.6%	17.1%	3.6%	0.0%	1.7%	0.0%	20.2%	14.3%	0.0%	0.0%	0.0%	0.0%
Okanagan	0.4%	12.0%	4.7%	5.1%	3.1%	3.1%	10.3%	5.6%	4.7%	30.0%	30.0%	0.0%
Prince George	0.8%	10.9%	18.4%	8.2%	23.0%	0.4%	8.9%	7.2%	30.0%	30.0%	0.0%	0.0%
Quesnel	1.6%	9.0%	1.7%	2.2%	0.6%	0.0%	12.4%	5.6%	0.0%	0.0%	0.0%	0.0%
Revelstoke	1.0%	16.4%	4.7%	8.6%	5.2%	9.0%	18.8%	7.2%	8.2%	30.0%	30.0%	0.0%
Robson Valley	4.2%	10.5%	3.5%	8.1%	11.7%	9.9%	16.3%	5.8%	0.0%	30.0%	0.0%	0.0%
Williams Lake	1.3%	11.9%	1.2%	6.2%	3.9%	3.2%	11.7%	3.9%	30.0%	30.0%	19.5%	0.0%
TFL 01	0.2%	4.6%	3.2%	0.0%	2.2%	0.0%	21.1%	10.9%	0.0%	0.0%	0.0%	0.0%
TFL 03	0.0%	3.1%	1.8%	1.0%	0.6%	2.2%	5.0%	1.3%	3.1%	11.6%	5.1%	0.0%
TFL 05	0.5%	4.3%	0.2%	3.2%	0.5%	0.0%	7.4%	2.9%	0.0%	11.1%	0.0%	0.0%
TFL 08	2.3%	14.5%	4.2%	4.2%	2.3%	4.2%	16.6%	6.9%	1.2%	30.0%	14.7%	0.0%
TFL 14	2.2%	13.7%	12.4%	2.0%	0.5%	2.1%	10.6%	3.5%	4.0%	27.8%	12.3%	0.0%
TFL 15	0.0%	15.2%	1.2%	1.4%	0.3%	0.9%	11.8%	6.0%	0.7%	30.0%	0.0%	0.0%
TFL 18	1.3%	9.0%	1.6%	3.4%	1.9%	0.0%	7.3%	4.7%	30.0%	30.0%	0.0%	0.0%
TFL 23	1.4%	19.7%	5.5%	6.1%	3.6%	9.3%	25.3%	5.7%	10.2%	30.0%	29.8%	0.0%
TFL 30	0.8%	12.1%	14.1%	16.1%	7.1%	0.0%	18.7%	11.5%	0.0%	0.0%	0.0%	0.0%
TFL 33	0.0%	12.6%	2.9%	5.3%	3.7%	4.6%	11.3%	4.2%	30.0%	20.3%	0.0%	0.0%
TFL 35	2.1%	8.1%	0.6%	2.8%	1.0%	2.5%	5.7%	2.5%	0.0%	30.0%	0.0%	0.0%
TFL 41	0.0%	4.1%	5.0%	0.6%	3.9%	0.0%	0.0%	6.5%	0.0%	0.0%	0.0%	8.6%
TFL 42	0.1%	10.4%	0.0%	3.7%	0.0%	0.0%	12.2%	8.3%	0.0%	0.0%	0.0%	0.0%
TFL 48	0.4%	3.5%	0.0%	0.0%	0.0%	0.0%	2.6%	2.8%	0.0%	0.0%	0.0%	0.0%
TFL 49	0.8%	11.2%	1.9%	5.4%	3.4%	3.6%	11.2%	5.8%	4.2%	30.0%	0.0%	0.0%
TFL 52	1.2%	7.1%	0.2%	2.5%	0.7%	0.0%	13.8%	4.1%	0.0%	0.0%	0.0%	0.0%
TFL 53	1.5%	8.1%	0.0%	3.0%	0.3%	0.0%	7.2%	5.7%	0.0%	0.0%	0.0%	0.0%
TFL 55	0.3%	24.0%	3.2%	4.7%	4.1%	9.4%	26.6%	11.1%	30.0%	30.0%	20.5%	0.0%
TFL 56	0.0%	28.3%	3.7%	10.4%	4.5%	30.0%	30.0%	11.2%	0.0%	30.0%	30.0%	0.0%