**BRITISH COLUMBIA**
**MINISTRY OF FORESTS, MINES AND LANDS**

# Quesnel Timber Supply Area

## Rationale for Allowable Annual Cut (AAC) Determination

**Effective January 11, 2011**

**Jim Snetsinger, RPF**
**Chief Forester**

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## Objective of this Document

This document provides an accounting of the factors I have considered and the rationale I have employed as chief forester of British Columbia in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for the Quesnel timber supply area (TSA). This document also identifies where new or better information is needed for incorporation in future determinations.

## Acknowledgement

For preparation of the information I have considered in this determination, I am indebted to staff in the Quesnel Forest District, the Southern Interior Forest Region, and the Ministry of Forests, Mines and Lands (MFML), Forest Analysis and Inventory Branch. I am also grateful to the individuals and companies who contributed to this process.

## Description of the Quesnel Timber Supply Area

Administered by the Ministries of Natural Resource Operations and Forests, Mines and Lands, the Quesnel TSA is located in the northern part of the Southern Interior Forest Region, between the Coast Mountains on the west and the Cariboo Mountains on the east. To the west the TSA includes the Itcha-Ilgachuz mountain ranges and the intervening gently rolling terrain encompassing the Blackwater and Nazko river systems. To the east lie the Quesnel highlands, Barkerville, and the Cariboo River.

The climate, terrain and forests of the TSA are varied. West of the Fraser River, a relatively dry climate supports forests predominated by lodgepole pine. East of the Fraser River, the forests receive more rainfall and contain more spruce and subalpine fir. Overall, the TSA is covered by stands of lodgepole pine (85 percent by area), spruce (10 percent), and Douglas-fir (3 percent) with hemlock and subalpine fir, and deciduous species forming minor components.

The TSA covers about 1.6 million hectares in total, of which 1 400 103 hectares (84 percent of total area) is Crown forested land base (CFLB). Of the CFLB 965 687 hectares (69 percent) are available for timber harvesting and this area is referred to as the timber harvesting land base (THLB). About 434 416 hectares of the CFLB in the TSA are unavailable for timber harvesting as the area is important for maintaining specific biodiversity values – such as reserve area for old growth, wildlife tree patches, riparian area and area of environmental sensitivity – or as the area is uneconomic to harvest – such as area of low productivity, non-merchantable forest types and uneconomic to access.

The major population centre in the TSA is the city of Quesnel with a population of 10,023 (2009). The adjacent communities of Red Bluff, Barlow Creek, Dragon Lake and Bouchie Lake, contribute to the total population of 23,584 (BC Stats). Other communities within the TSA include Wells in the east, and Nazko and Kluskus villages in the west. The economies of the communities in the TSA are largely resource-based, and the majority are dependent on the local forest industry. Ranching, mining and tourism are also integral to communities in the TSA.

## History of the AAC

The AAC for the Quesnel TSA was first established in 1981 at 2 300 000 cubic metres. From 1981 to 1996, the AAC was adjusted to account for a mountain pine beetle outbreak (MPB) and partitions were established to encourage the harvest of deciduous stands and problem forest types. In 1996, the AAC was determined at 2 340 000 cubic metres, of which 1 965 000 cubic metres were attributable to conventional sawlogs, 300 000 cubic metres were attributable to PFTs, and 40 000 cubic metres were attributable to deciduous species.

In 2001, during the initial outbreak of the current MPB epidemic, the AAC for the Quesnel TSA was set at 3 248 000 cubic metres to facilitate the salvage of beetle-killed pine and to diminish the extent of future damage. Of the total AAC, 300 000 cubic metres were attributable to problem forest types and 20 000 cubic metres were attributable to deciduous species.

Effective October 1, 2004, the AAC for the Quesnel TSA was increased to 5 280 000 cubic metres, an increase of about 63 percent from the previous AAC. This increase, in response to the rapidly increasing mortality occurring from the expanding MPB epidemic, was to provide sufficient opportunity to salvage beetle-killed timber. Of the AAC, 20 000 cubic metres remained attributable to deciduous-leading species while the problem forest type partition increased to 450 000 cubic metres.

The current AAC is currently apportioned as follows:

**Table 1. Apportionment of current AAC**

| Apportionment | Cubic metres per year | Percentage |
|---|---|---|
| Forest licences – replaceable | 1 237 548 | 23 |
| Forest licences – non-replaceable | 3 005 095 | 57 |
| BCTS Timber Sale Licence – replaceable | 939 029 | 18 |
| BCTS Timber Sale Licence – non-replaceable | 40 000 | <1 |
| Community Forest Agreement | 0 | 0 |
| Woodlot Licence | 20 512 | <1 |
| Forest Service Reserve | 37 816 | <1 |
| **Total** | **5 280 000** | **100** |

## New AAC determination

Effective January 11, 2011 the new AAC for the Quesnel TSA will be 4 000 000 cubic metres, a decrease of about 24 percent from the previous AAC. Of this total AAC, 650 000 cubic metres is attributable to non-pine volume. This AAC initiates what is

expected to be a transitional decline in the AAC until the mountain pine beetle killed trees have been harvested.

Though this decline brings the AAC in line with recent levels of harvest, it is a smaller decline than might otherwise had been necessary thanks to licensee performance and innovation. Licensee's are focussing the harvest on mountain pine beetle impacted pine-leading stands, have innovatively improved the utilization of the deteriorating pine through improvements to their processing facilities and have begun producing new products from poorer quality wood.

This AAC will remain in effect until a new AAC is determined, which must take place within 10 years of this determination.

## Information sources used in the AAC determination

Sources of data and information referenced for this AAC determination include references listed in the analysis report and the following:

- *Forest Practices Code of British Columbia Act*, 1995, regulations, guidebooks and amendments;
- *Heritage Conservation Act*, 1996;
- *Forest and Range Practices Act (FRPA)*, 2002 regulations and amendments;
- *Ministry of Forests and Range Act*, as consolidated to October 27, 2010;
- Letter from the Deputy Ministers of Forests and Environment, Lands and Parks, dated August 25, 1997, conveying government's objectives regarding the achievement of acceptable impacts on timber supply from biodiversity management;
- Letter from the Assistant Deputy Minister, Tenures and Revenue Division, MFR to all licensees concerning cut-control changes resulting from new log grades, February 24, 2006;
- Letter from the Minister of Forests and Range to the Chief Forester stating the economic and social objectives of the Crown, July 4, 2006;
- Letter from the Minister of Forests and Range to the Chief Forester stating the economic and social objectives of the Crown regarding mid-term timber supply in areas affected by the mountain pine beetle, October 27, 2010;
- Letter from the Assistant Deputy Minister, Tenures and Revenue Division, MFR to all Interior licensees concerning MFR's strategy for terminating the interim species adjustment factors for timber supply areas in the Interior, May 7, 2008;
- *Landscape Unit Planning Guide*, BC Forest Service and Ministry of Environment, Lands and Parks, March 1999;
- *Identified Wildlife Management Strategy, Volume 1*, Ministry of Environment, Lands and Parks and Ministry of Forests, February 1999;
- *Cariboo-Chilcotin Land Use Plan (CCLUP)*, October 24, 1994, as per the January 23, 1996 Higher Level Plan Declaration and amended in 1999;
- *Quesnel Sustainable Resource Management Plan, 2008;*
- *Draft Cariboo-Chilcotin Land Use Objectives Regulation;*

- *Forest and Range Practices Regulations*, 2004 and amendments;
- *Identified Wildlife Management Strategy, Procedures for Managing Identified Wildlife, Version 2004*, Ministry of Water, Land, and Air Protection;
- Site Index Adjustment of the Quesnel TSA, Final Report, 2009, Timberline Natural Resource Group Ltd;
- *Quesnel TSA Inventory Audit, June 1999*, Ministry of Forests and Range, Resources Inventory Branch;
- *Quesnel TSA Rationale for AAC Determination* effective October 1, 2004, Ministry of Forests;
- *Quesnel Timber Supply Area Timber Supply Review Data Package*, April 2009, Ministry of Forests and Range;
- *Quesnel TSA Timber Supply Analysis Public Discussion Paper*, March 2010, Ministry of Forests and Range;
- Technical review and evaluation of current and expected operating conditions through comprehensive discussions with MFR staff, including the AAC determination meeting held in Quesnel on June 14 and 15, 2010;
- First Nations Consultation Summary review, including input received from First Nations through the consultation process and comprehensive discussions with MFR staff, including the AAC determination meeting held in Quesnel on June 14 and 15, 2010; and
- Information received from the public, local governments and major licensees through the referral process.

## Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester, in determining AACs, to consider biophysical, social and economic information. Most of the technical information used in determinations is in the form of a timber supply analysis and its inputs of inventory and growth and yield data. These are concerned primarily with biophysical factors—such as the rate of timber growth and the definition of the land base considered available for timber harvesting—and with management practices.

The analytical techniques used to assess timber supply necessarily are simplifications of the real world. Many of the factors used as inputs to timber supply analysis are uncertain, due in part to variation in physical, biological and social conditions. Ongoing scientific studies of ecological dynamics will help reduce some of this uncertainty.

Furthermore, computer models cannot incorporate all of the social, cultural and economic factors that are relevant when making forest management decisions. Technical information and analysis; therefore, do not necessarily provide the complete answers or solutions to forest management decisions such as AAC determinations. Such information does provide valuable insight into potential impacts of different resource-use assumptions and actions, and thus forms an important component of the information I must consider in AAC determinations.

In determining this AAC for the Quesnel TSA I have considered known limitations of the technical information provided. I am satisfied that the information provides a suitable basis for my determination.

## Guiding principles for AAC determinations

Rapid changes in social values and in the understanding and management of complex forest ecosystems mean there is always uncertainty in the information used in AAC determinations. In making the large number of periodic determinations required for British Columbia's many forest management units, administrative fairness requires a reasonable degree of consistency of approach in incorporating these changes and uncertainties. To make my approach in these matters explicit, I have set out the following body of guiding principles. In any specific circumstance where I may consider it necessary to deviate from these principles, I will explain my reasoning in detail.

Two important ways of dealing with uncertainty are:

(i) minimizing risk, in respect of which in making AAC determinations I consider particular uncertainties associated with the information before me and attempt to assess and address the various potential current and future, social, economic and environmental risks associated with a range of possible AACs; and

(ii) redetermining AACs frequently, in cases where projections of short-term timber supply are not stable, to ensure they incorporate current information and knowledge.

In considering the various factors that Section 8 of the *Forest Act* requires the chief forester to take into account in determining AACs, I intend to reflect, as closely as possible, those forest management factors that are a reasonable extrapolation from current practices. It is not appropriate to base my decision on unsupported speculation with respect to factors that could affect the timber supply that are not substantiated by demonstrated performance or are beyond current legal requirements.

In many areas, the timber supply implications of some legislative provisions remain uncertain, particularly when considered in combination with other factors. In each AAC determination I take this uncertainty into account to the extent possible in context of the best available information.

It is my practice not to speculate on timber supply impacts that may eventually result from land-use decisions not yet finalized by government. However, where specific protected areas, conservancies, or similar areas have been designated by legislation or by order in council, these areas are deducted from the timber harvesting land base and are not considered to contribute any harvestable volume to the timber supply in AAC determinations, although they may contribute indirectly by providing forest cover to help in meeting resource management objectives such as for biodiversity.

In some cases, even when government has made a formal land-use decision, it is not necessarily possible to fully analyse and account for the consequent timber supply impacts in a current AAC determination. Many government land-use decisions must be followed by detailed implementation decisions requiring for instance further detailed planning or legal designations such as those provided for under the *Land Act* and the *Forest and Range Practices Act* (FRPA). In cases where there is a clear intent by

government to implement these decisions that have not yet been finalized, I will consider information that is relevant to the decision in a manner that is appropriate to the circumstance. The requirement for regular AAC reviews will ensure that future determinations address ongoing plan-implementation decisions.

Where appropriate I will consider information on the types and extent of planned and implemented silviculture practices as well as relevant scientific, empirical and analytical evidence on the likely magnitude and timing of their timber supply effects.

Some persons have suggested that, given the large uncertainties present with respect to much of the data in AAC determinations, any adjustments in AAC should wait until better data are available. I agree that some data are incomplete, but this will always be true where information is constantly evolving and management issues are changing. The requirement for regular AAC reviews will ensure that future determinations incorporate improved information.

Others have suggested that, in view of data uncertainties, I should immediately reduce some AACs in the interest of caution. However, any AAC determination I make must be the result of applying my judgement to the available information, taking any uncertainties into account. Given the large impacts that AAC determinations can have on communities, no responsible AAC determination can be made solely on the basis of a response to uncertainty. Nevertheless, in making my determination, I may need to make allowances for risks that arise because of uncertainty.

With respect to First Nations' issues, I am aware of the Crown's legal obligation resulting from recent court decisions to consult with First Nations regarding asserted rights and title (aboriginal interests) in a manner proportional to the strength of their aboriginal interests and the degree to which the decision may impact these interests. In this regard, I will consider the information provided to First Nations to explain the timber supply review (TSR) process and any information brought forward respecting First Nations' aboriginal interests including how these interests may be impacted, and any operational plans and actions that describe forest practices to address First Nations' interests, before I make my decision. As I am able, within the scope of my authority under Section 8 of the *Forest Act*, where appropriate I will seek to address aboriginal interests that will be impacted by my proposed decision. When aboriginal interests are raised that are outside my jurisdiction, I will endeavour to forward these interests for consideration by appropriate decision makers. Specific concerns identified by First Nations in relation to their aboriginal interests within the TSA are addressed in various sections of this rationale.

The AAC that I determine should not be construed as limiting the Crown's obligations under court decisions in any way, and in this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within the Quesnel TSA. It is also independent of any decisions by the Minister of Forests, Mines and Lands with respect to subsequent allocation of wood supply.

Overall, in making AAC determinations, I am mindful of my obligation as steward of the forested land of British Columbia, of the mandate of the Ministry of Forests, Mines and Lands (previously the Ministry of Forests and Range) as set out in Section 4 of the *Ministry of Forests and Range Act*, and of my responsibilities under the *Forest and Range Practices Act (FRPA)*.

## The role of the base case

In considering the factors required under Section 8 of the *Forest Act* to be addressed in AAC determinations, I am assisted by timber supply forecasts provided to me through the work of the TSR program for TSAs and Tree Farm Licences (TFLs).

For most AAC determinations, a timber supply analysis is carried out using an information package including data and information from three categories—land base inventory, timber growth and yield, and management practices. Using this set of data and a computer simulation model, a series of timber supply forecasts can be produced, reflecting different starting harvest levels, rates of decline or increase, and potential trade-offs between short- and long-term harvest levels.

From a range of possible forecasts, the one most representative of current practice is chosen as a reference harvest forecast. This is known as the 'base case' forecast, and forms the basis for comparison when assessing the effects of uncertainty on timber supply.

Because the base case represents only one in a number of theoretical forecasts, and because it incorporates information about which there may be some uncertainty, the base case forecast for a TSA is not an AAC recommendation. Rather, it is one possible forecast of timber supply, whose validity—as with all the other forecasts provided—depends on the validity of the data and assumptions incorporated into the computer simulation used to generate it.

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case forecast are realistic and current, and the degree to which any adjustments to its predictions of timber supply must be made, if necessary, to more properly reflect the current situation.

Such adjustments are made on the basis of informed judgement using current, available information about forest management that may well have changed since the original information package was assembled. Forest management data are particularly subject to revision during periods of legislative or regulatory change, or during the implementation of new policies, procedures, guidelines or plans. Thus it is important to remember that while the timber supply analysis with which I am provided is integral to the considerations leading to the AAC determination, the AAC is not determined by calculation but by a synthesis of judgement and analysis in which numerous risks and uncertainties must be weighed. Depending upon the outcome of these considerations, the resulting AAC may or may not coincide with the base case forecast. Moreover, because some of the risks and uncertainties considered are qualitative in nature, once an AAC has been determined, further computer analysis of the combined considerations may not confirm or add precision to the AAC.

## Base case for the Quesnel TSA

The 2010 timber supply analysis ("the analysis") was completed by the Ministry of Forests, Mines and Lands using the Spatially Explicit Landscape Event Simulator (SELES). Data utilized in SELES includes the future progression of the MPB epidemic as predicted by the British Columbia Mountain Pine Beetle model (version 5). In the timber supply model, forest growth, the projected spread of the MPB, the length of time that MPB-killed pine has been dead (years since death) and harvesting is tracked at the stand level on an annual basis for the first 20 years. The remainder of the 250-year forecast horizon is tracked on a decadal basis in the model.

Guided by current practice, provincial policy and the objective to maintain a sustained harvest flow, the base case harvest projection reflects volume from both live and dead standing trees. Dead and deteriorating trees, though not necessarily usable in producing sawlogs, are considered usable for some form of forest product, such as bioenergy, until the trees fall over 20 years following mortality. In the base case harvest is prioritized to stands with the greatest volume per hectare, while ensuring all forest cover objectives are met, that no stands with less than 120 cubic metres per hectare are harvested and a sustainable harvest of non-pine leading stands is maintained.

In the base case, an initial harvest of 5.28 million cubic metres per year – the level of the current AAC – was maintained for 10 years before declining over four years to a mid-term harvest level of 720 000 cubic metres per year. In decade six, the harvest level increases to a long-term level of 2.52 million cubic metres per year. Throughout the entire 250-year forecast, including the mid-term, 600 000 cubic metres per year of the total harvest level is sustained from non-pine leading stands, which are predominately spruce. Thus, of the mid-term harvest level of 720 000 cubic metres per year, 120 000 cubic metres per year is from pine-leading stands that survived MPB attack.

The transition from harvesting natural stands to harvesting managed stands begins in the first decade and by the sixth decade most of the harvested volume originates from managed stands. Some natural stands are not harvested until late in the forecast period, because they are required to meet old forest retention targets.

Over the next 10 years, while primarily dead pine stands are being harvested, the average age stands are forecast to be harvested is between 120 and 140 years. Once all of the dead pine stands have either been harvested or have deteriorated to the point where they fall over, the average harvest age increases to 175 years as the harvest is now limited to the remaining older non-pine stands. During the subsequent 50 years as the harvest transitions from older, non-pine natural stands to younger, managed stands, the average harvest age decreases to less than 70 years.

The current THLB is four percent smaller than in the 2004 analysis, due primarily to the exclusion of spatially-explicit old growth management areas. Other significant changes include: improved managed stand productivity estimates that result in a net increase in average site index for pine stands; and revised shelf life definition based on the years since death that a MPB-killed stand remains standing and economically useful for some form of wood product instead of length of time that a MPB-killed stand remains

economically useful for the production of sawlogs that results in a 10-year increase in shelf life from 10 years in 2004 to 20 years for this analysis.

I have reviewed in detail the assumptions and methodology incorporated in the base case; as well as the total growing stock, the harvest contributions from managed and unmanaged stands, the average volumes per hectare, the total area harvested annually, and the average ages of the forest stands harvested. Based on my review, I am satisfied, subject to the qualifications accounted for in various sections of this document, that the information presented to me provides a suitable basis from which I can assess the timber supply for the Quesnel TSA. In addition to the base case forecast, I have been provided with alternative harvest flows and a number of sensitivity analyses carried out using the base case as a reference. This and other information noted below have been helpful in the considerations and reasoning leading to my determination.

Where I have concluded that an assumption was appropriately modelled in the base case, I will not discuss my considerations of it in this document, other than to note my agreement with the approach that is already documented in the analysis. Conversely, I will explain my consideration of any assumption that concerns me for any reason, such as lack of new information or clarity in the analysis report, apparent divergence from current management practice, or a high level of public or First Nations input.

## Consideration of Factors as Required by Section 8 of the *Forest Act*

As previously noted, in this document I will not discuss factors for which I accept the modelling assumptions applied in the base case. These factors are listed in Table 2, grouped according to the section of the *Forest Act* to which they apply. The data package, public discussion paper and technical report contain more information on each of these factors.

**Table 2. List of factors for which base case modelling assumptions have been accepted**

| *Forest Act* section and description | Factors accepted as modelled |
|---|---|
| 8(8)(a)(i) Composition of the forest and expected rate of growth | Crown Forested Land Base (CFLB)<br>Protected area including parks, ecological reserves and Goal 2 CCLUP[1] protected area<br>Woodlots<br>Non-forest area<br>Caribou no-harvest area<br>Old growth management area (OGMA)<br>Unstable terrain<br>Low productivity sites<br>Class 'A' lake and riparian area<br>Economic and physical operability<br>Archaeological sites<br>Age class distribution<br>Species profile |

[1] Cariboo Chilcotin Land Use Plan (CCLUP).

| | |
|---|---|
| | Recently harvested area<br>Site productivity<br>Volume estimates for existing, natural, unmanaged stands<br>Minimum harvestable age |
| 8(8)(a)(ii) Expected time for the forest to be re-established following denudation | Regeneration delay<br>Impediments to prompt regeneration<br>Not sufficiently restocked (NSR) |
| 8(8)(a)(iii) Silvicultural treatments to be applied | Silvicultural systems<br>Incremental silviculture |
| 8(8)(a)(iv) Standard of timber utilizaton and allowance for decay, waste and breakage | Utilization standards |
| 8(8)(a)(v) Constraints on the amount of timber produced by use of the area for other purposes | Integrated resource management objectives<br>Cutblock adjacency, forest cover and green-up<br>Visually sensitive areas<br>Recreation values<br>Riparian management<br>Community and domestic watersheds<br>Identified wildlife<br>Grizzly Bears<br>Caribou modified harvest area<br>Ungulate winter range<br>Stand-level biodiversity<br>Landscape-level biodiversity<br>First Nations cultural heritage resources and traditional use |
| 8(8)(a)(vi) Other information | Harvest sequencing<br>Public review |
| 8(8)(b) Short and long-term implications of alternative rates of timber harvesting from the area | Alternative rates of harvest |
| 8(8)(d) Economic and social objectives of the government | Community dependence on the forest industry |
| 8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area | Forest health<br>Unsalvaged losses |

**Section 8 (8)**

**In determining an allowable annual cut under this section the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider**

**(a) the rate of timber production that may be sustained on the area, taking into account**

**(i) the composition of the forest and its expected rate of growth on the area**

Land base contributing to timber harvest

- *general comments*

As part of the process used to define the timber harvesting land base (THLB) – the area available for timber harvesting, a series of deductions are made from the Crown forested land base. These deductions account for economic or ecological factors that operate to reduce the forest area available for harvesting. In reviewing these deductions, I am aware that some areas may have more than one classification. To ensure accuracy in defining the THLB, care must be taken to avoid any potential double-counting associated with overlapping objectives. Hence, a specific deduction for a given factor reported in the analysis or the AAC rationale does not necessarily reflect the total area with that classification; some portion of it may have been deducted earlier under another classification.

For the Quesnel TSA, I acknowledge that the above approach is used in the analysis, resulting in a THLB of 965 687 hectares. The remaining 434 416 hectares (31 percent) of productive forest are unavailable for timber harvesting for a variety of reasons; however these areas may contribute to forest cover constraints.

- *unmerchantable forest types*

Forest types not currently being harvested, even though they are physically-operable and exceed minimum merchantability criteria, are excluded from the THLB as being unmerchantable. For this analysis, 21 000 hectares of cedar-, hemlock- and balsam-leading stands, as well as 91 000 hectares of lodgepole pine-deciduous mixed stands are excluded on this account.

District staff agree that the assumption for cedar-, hemlock- and balsam-leading stands is consistent with current practices in the TSA; however, they note that there has been harvest performance in pine-leading deciduous mixed stands and indicate that these stands should have been included in the THLB.

In a sensitivity analysis including 80 415 hectares of pine-leading deciduous mixed stands in the THLB increases the volume available in the short term by a total of 4.3 million cubic metres. However, as there is more dead pine volume than can be economically salvaged before the end of its shelf life, inclusion of this area does not delay the transition to the base case mid-term harvest level. The results do indicate that the base case mid- to long-term harvest levels have been underestimated by 50 000 and 210 000 cubic metres per year, respectively.

With the exception of the exclusion of pine-leading deciduous mixed stands from the THLB the unmerchantable forest type assumptions used in the analysis are based on the best available information. Given the demonstrated harvest performance in pine-leading deciduous mixed stands, I conclude that these stands should have been included in the

THLB used in the base case. However, I am mindful that much of the volume attributable to these stands in the short term may not be economically viable to harvest due to the deterioration of the dead pine component.

Therefore, I am accounting for an unquantifiable underestimation in the base case short-term timber supply and a 50 000 cubic metres per year and 210 000 cubic metres per year in the mid- and long-term timber supply, respectively, as noted in '**Reasons for Decision'.**

- *environmentally sensitive area*

Forest lands that are environmentally sensitive or significantly valuable for resources other than timber use are identified in the forest inventory as environmentally sensitive areas (ESAs). The ESA classifications previously used for the Quesnel TSA, other than those for soil and snow avalanche areas, have been replaced with more current information.

The ESA soil and snow avalanche information has been replaced for a small portion of the TSA, for which new terrain stability mapping has been completed, and the older ESA soil and avalanche information is used for the remainder of the TSA. Using this information, 11 841 hectares are excluded from the THLB to account for environmentally sensitive soil and snow avalanche areas.

While I accept this is the best and most appropriate information available, there is concern the older information may not adequately reflect forest management. For the next timber supply review, I expect district and licensee staff to complete terrain stability mapping for the entire TSA to help reduce the risk and uncertainty associated with this information, and I have included an instruction to that effect in '**Implementation**' below.

I have reviewed the information and procedures used in identifying environmentally sensitive areas, and I find that the best available information is used and accepted methodologies are followed. Therefore, I have determined that environmentally sensitive areas have been appropriately excluded from the base case harvest projection.

- *existing roads, trails and landings*

For this analysis, the THLB was reduced by three percent to account for existing roads, trails and landings. However, the area associated with the existing roads, trails and landings was inadvertently classified in the model as Crown forested land base (CFLB) rather than non-forested. As a result of this classification error, the CFLB is overestimated in the analysis by about 30 000 hectares or two percent. This classification error also means that within the analysis existing roads, trails and landings may inappropriately contribute to meeting CFLB objectives – such as mature plus old forest objectives – such that the base case harvest forecast is overestimated by an unquantifiable amount over the short-, mid- and long-term.

Therefore, I have accounted for an overestimation in the base case harvest forecast due to the overestimation of CFLB by an unquantifiable amount in the short-, mid- and long-term, as noted in '**Reasons for Decision**'.

- *future roads, trails and landings*

Based on the assumption that future access requirements would be the same as historic requirements, the existing road density and clearing widths – 25 metres for Forest Service roads and 20 metres for all other roads – were used to derive a one percent area reduction. This reduction factor was applied to all naturally established stands older than 47 years of age at the beginning of the forecast period the first time these stands were harvested in the model resulting in the exclusion of 9657 hectares from the THLB to account for future roads, trails and landings.

Licensee submissions suggest that in practice the clearing widths are less than the 25 and 20 metres assumed in the analysis. In contrast, district staff note licensees are currently clearing wider widths on existing and new roads to address current and future danger tree risks related to MPB-killed trees. As such, there is uncertainty as to how much area future roads, trails and landings will occupy.

I have reviewed the information and procedures used in estimating future roads, trails and landings, and I find that the best available information was used and accepted methodologies are followed. Therefore, I consider that the base case adequately accounts for future roads, trails and landings.

In order to reduce the risk and uncertainty associated with road width assumptions, I request that district and licensee staff review recent access development and make any necessary adjustments in road width assumptions for the next timber supply review. I have included an instruction to this effect in '**Implementation'** below.

- *current forest inventory*

The Quesnel TSA was re-inventoried between the late 1980s to the mid-1990s. As part of the Vegetation Resources Inventory (VRI), the forest cover inventory was transferred into the VRI data structure to facilitate data management. The inventory information used in the timber supply analysis was updated for harvest and fire disturbance, and forest cover attributes were projected to January 1, 2009.

In 1999, an inventory audit indicated that the pine volume in the western portion of the TSA is overestimated by 12 percent. However, these results were deemed to be inconclusive and while they suggest a trend, they were not sufficient to warrant an adjustment of existing stand volumes.

I have reviewed the information and procedures used in estimating the current inventory and I find that the best available information was used and accepted methodologies were followed. Even so, the audit information, although not statistically conclusive, provides a strong indication that pine volume in the western portion of the TSA may be over estimated by 12 percent and that this has led to an overestimation of projected volumes for naturally established pine stands. Though the actual amount of the overestimation remains uncertain at this time, it is estimated that about six million cubic metres less pine is available over the short term. At a harvest rate of 4.2 million cubic metres per, this is equivalent to about 1.4 years of harvesting and suggests that the salvage of dead pine will end earlier than the 10 years indicated in the base case.

In my determination therefore, I have accounted for an overestimation in the base case from pine-leading stands in the western portion of the TSA, of six million cubic metres in the short term as noted in '**Reasons for Decision**'.

- *volume estimates for regenerated managed stands*

There have been significant levels of harvesting in the Quesnel TSA since the 1960's. Therefore, in the analysis all stands 47 years old or younger at the beginning of the forecast were considered to be managed stands. For these stands, volume estimates were based on the ministry's Table Interpolation of Predicted Stand Yields version 4 (TIPSY).

TIPSY projections are initially based on ideal conditions, assuming full site occupancy and the absence of pests, diseases and significant brush competition. Two operational adjustment factors (OAFs) are applied to the TIPSY projections to approximate natural conditions: OAF 1 accounts for factors such as small stand openings, uneven tree distribution, and endemic pests and diseases that affect yield curves across all ages; and, OAF 2 accounts for factors whose impacts increase over time such as decay, waste and breakage. The standard provincial OAF 1 of 15 percent and OAF 2 of five percent were applied for the analysis.

I note that OAF assessments and studies have been completed in other management units and that advice from ministry staff indicates there is uncertainty in the operational adjustment factors used in TIPSY for projecting the growth of managed stands. However, no study or assessment supporting a specific change from the default OAF values has been completed for the Quesnel TSA, and the applicability in this TSA of data from other management units, such as Morice and Lakes TSAs, is uncertain. Research staff advise that work is ongoing to improve our understanding of how management practices and natural conditions affect stand losses over time, and that this information is being used to improve how TIPSY reflects the growth of regenerated stands.

As harvest in the Quesnel TSA will soon be dependent on managed stands, it is imperative that we improve our understanding of how management practices and natural processes effect stand losses over time. Therefore, I request that ministry and licensee staff continue to monitor stand development in order to improve the OAF values used in subsequent timber supply reviews, as indicated in '**Implementation**' below.

Improving our understanding of the influences on managed stand growth in the TSA will provide greater certainty to the future harvest level projections.

For the present determination I conclude that the volume estimates for regenerated stands used in the analysis are based on the best available information and are, therefore adequate for use in this determination.

**(ii) the expected time that it will take the forest to become re-established on the area following denudation:**

As noted in Table 2, I accept as modelled the factors usually considered under this section, and I will not discuss them further.

**(iii) silvicultural treatments to be applied to the area:**

As noted in Table 2, I accept as modelled the factors usually considered under this section, and I will not discuss them further.

**(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area:**

Decay, waste and breakage (DWB), and endemic dead volume

I have reviewed with district staff the assumptions applied in the 2010 analysis respecting volume adjustments for decay, waste and breakage, and implications resulting from the April 1, 2006 changes to the log grades. I am satisfied that decay, waste and breakage (DWB) as reflected by the current inventory, VDYP and TIPSY is the best available information and was incorporated into the base case appropriately. I am aware the April 1, 2006 log grade changes result in some volume not previously charged to the AAC now being charged. I am also aware that species cut control adjustments averaging 2.5 percent have been applied to reconcile historical cut control practices with the new scaling methodology employed since the implementation of the log grade changes.

Most healthy forests have a very small proportion of standing dead trees which cannot be made into sawlogs due to the degraded wood quality and deep cracks. I note that the merchantable volumes in the forest inventory and in the projections of stand growth do not account for this volume. I also note the degraded volume is charged against the AAC since the April 1, 2006 implementation of the log grade changes. As such, I conclude that the base case short-, mid- and long-term timber supply is underestimated by 2.5 percent due to the underestimation of merchantable volumes resulting from the lack of accounting for degraded volumes, and I account for this in '**Reasons for Decision***'*. With this account of degraded volumes in this determination, the species cut control adjustments that have been applied since the implementation of the April 1, 2006 log grade changes are no longer to be applied within the Quesnel TSA, and I have included an instruction to that effect in the '**Implementation**' below.

**(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production:**

Kluskus Supply Block

The Kluskus supply block, which is located at the western extremity of Quesnel, is the most remote part of the Quesnel TSA. It contains small timber, has limited road access, significant non-timber values and requires logging truck cycle times in excess of seven hours. The economic viability of harvesting within the Kluskus has been questioned since the inception of the Quesnel TSA. Though the specific contribution of the Kluskus

supply block was not analyzed in the current timber supply review, previous analysis results indicate that this area represents about 13 percent of the TSA and contributes about eight percent of Quesnel TSA timber supply.

Also, a current timber supply review sensitivity analysis assessed the harvest contribution from stands greater than a six hour cycle time – which includes all of the Kluskus supply block with a cycle-time greater than seven hours plus some additional area that is between the six to seven hour cycle time. The results indicate that stands beyond a six hour cycle-time contribute about 22 million of the 58 million cubic metres projected to be harvested from the Quesnel TSA over the first 11 years of the base case. This sensitivity analysis also indicates the area beyond a six hour cycle-time contributes about 200 000 cubic metres per year of the 720 000 cubic metres per year harvested through the mid-term. Given the seven-hour cycle time and the size of the Kluskus supply block, it is reasonable to assume that most of the 22 million cubic metres of the projected harvest over the first 11 years and most of the 200 000 cubic metres of the mid-term 720 000 cubic metres per year harvest is attributable to this area.

Over the past five years about 80 000 cubic metres and 196 000 cubic metres have been harvested from the extreme western portion and the eastern boundary of the Kluskus supply block, respectively. Although this harvest performance is not proportional to the timber supply contribution forecasted to come from the Kluskus supply block in the base case, it does indicate that there is recent, albeit low, harvest performance in the area, given the appropriate economic conditions.

Even so, I recognize that to a large extent the replaceable licence holders have not harvested in the Kluskus supply block and that there is significant MPB mortality in this area. Furthermore, the recent closure of the Anahim Lake mill has further reduced the economic viability of harvesting within the western portion of the Kluskus supply block. While I am aware that improvements in market conditions may result in more harvest activity in the future, if harvesting does not shift into the Kluskus supply block to the extent assumed in the base case over the next 11 years, the harvest levels will decline below the projected mid-term levels earlier than projected in the base case.

I request that district staff continue to monitor harvesting within the Kluskus supply block and incorporate this information into the next timber supply review.

**(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber;**

As noted in Table 2, I accept as modelled the factors usually considered under this section, and I will not discuss them further.

**(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area;**

<u>- mid-term timber supply</u>

As noted in 'Base case for the Quesnel TSA' section above, the analysis assumptions indicate that the mid-term timber supply could be 720 000 cubic metres per year, of which 600 000 cubic metres per year is from the non-pine leading stands – those stands

where the dominant species is not pine – and 120 000 cubic metres per year is available from pine-leading stands with sufficient volume remaining to be harvested following the MPB attack. As discussed in the 'Kluskus' section above and the 'Mortality in young pine stands' section below, the mid-term could be lower than 720 000 cubic metres per year, depending on the economic availability of timber supply and on the extent of young pine mortality. As discussed in the 'Pine / Non-pine partition section' below, the projected mid-term could also be higher or lower than projected in the base case, depending on the amount of non-pine harvested in the next five or more years.

- partitions

In order to ensure appropriate harvesting of the age and species profiles on forested landscapes, and to avoid any over-harvesting with the potential to adversely affect good stewardship or the integrity of the future timber supply, the provincial *Forest Act* provides for the chief forester, in determining AACs, to specify portions of the harvest as attributable to particular types of timber, or terrain, in different parts of a TSA or TFL. Allowable annual cuts which include such specifications are considered to be 'partitioned'.

Recently enacted legislation enables the Minister of Forests, Mines and Lands and Range to specify similar limits on volumes licenced for harvest. Importantly, the determination by the chief forester of an AAC in which particular proportions of the timber harvest are attributable only to certain species, terrains or parts of a TSA, does not necessitate the immediate imposition of corresponding, proportionate restrictions on each licence in the TSA. The application of any ensuing restriction to a particular licence will flow, under the appropriate circumstances, from considerations of stewardship or other factors, on the recommendation of the regional executive director, potentially in consultation with licensees, and not necessarily in such a way as to require all individual licences to harvest directly the proportions of the profile as specified in the AAC. However, the chief forester may deem it necessary to initiate the next timber supply review earlier than the legislated 10 years if the harvest from the TSA as a whole does not reflect the partition(s) established.

The current AAC for the Quesnel TSA includes a 20 000 cubic metres partition attributable to deciduous-leading stands and a 450 000 cubic metres partition attributable to stands defined as 'problem forest types' by the Quesnel Forest District Manager.

Deciduous partition

A deciduous partition was initiated in the Quesnel TSA in 1989 to promote the harvest of deciduous (broad-leaved species) leading stands. Though, to date, there has been little harvest of the predominantly deciduous stands in the Quesnel TSA, interest is expected to increase in the future, especially as the dead pine continues to deteriorate thereby reducing economically-viable volume.

District staff suggest the minimal historic harvest of deciduous volume is primarily because there are few economically-viable deciduous stands within the Quesnel TSA. District staff also indicate, partially due to the limited occurrence of deciduous stands in the Quesnel TSA, that the retention of deciduous stands is often desirable or necessary to meet forest cover objectives for biodiversity and in promoting non-timber values. In the

wake of the MPB infestation, the importance of retaining deciduous stands — which are not susceptible to MPB — has increased, especially where deciduous stands are interspersed in areas of severest MPB attack.

I have discussed with district staff and have considered carefully the potential role of deciduous species in forest management in the TSA, both with respect to their ability to contribute to a sustainable harvest in the TSA, and in context of biodiversity and non-timber objectives. These roles may be increasingly consequential to the timber supply with the increase in pine mortality and the accelerated harvest of pine. I note that in the analysis the deciduous component of coniferous-leading stands and the coniferous component of deciduous-leading stands is assumed not to contribute to timber supply.

In order to improve management flexibility and to potentially improve timber supply (as the utilization of deciduous fibre expands), I have decided not to continue a partition attributable to deciduous species. It is expected that the removal of this partition will promote the utilization of deciduous volumes in coniferous-leading stands, and of deciduous and coniferous volumes in deciduous-leading stands – primarily when the decline in timber supply occurs and market interest in non-coniferous species will likely increase. It is also expected that the flexibility in management will make it easier to meet biodiversity and non-timber objectives.

On this basis, I conclude that the deciduous partition is no longer necessary and I will account for this in my determination as discussed under '**Reasons for Decision**'.

problem forest type (PFT) partition

Problem forest type (PFT) stands are densely stocked small diameter mature pine with trees containing on average less than 0.2 cubic metres. Once harvested these stands are re-established to produce sawlog quality trees. A PFT partition was initiated in the Quesnel TSA in 1990 to generate interest in harvesting the PFT profile – a profile, that at the time was underutilized – and to promote the rehabilitation of PFT stands into more productive stands. Tolko, Canfor, C. & C. Wood Products and Pioneer group have since focused harvesting, under their PFT licences, to stands meeting the very dense small diameter pine PFT objectives. Improvements in milling technology since 1990 have increased the lumber recovery from the small diameter stands, further improving the economics and interest in the continued harvesting of PFT stands. As a result of the successful endeavour to promote the harvest of the PFT profile, there is now little discernible difference between the harvest restricted to and not restricted to the PFT partition.

Based on my discussions with district staff, the good harvest performance and the lack of a discernable difference in the utilization of these stands compared to the performance in other stands, I conclude that the PFT partition is no longer necessary and I will account for this in my determination as discussed under '**Reasons for Decision**'.

pine / non-pine partition

Between 2005 and 2009, the actual harvest of non-pine species averaged about 680 000 cubic metres per year of which about 145 000 cubic metres per year came from non-pine leading stands. This harvest performance is much better than modelled in the

base case, which assumes about 1.0 to 1.47 million cubic metres per year of non-pine volume is harvested during the first 10 years, of which about 600 000 cubic metres per year is from pine-leading stands.

In order to assess the effect of non-pine harvesting on mid-term timber supply, two sensitivity analyses were prepared. Consistent with current practice, the initial harvest in both analyses was decreased to 4.3 million cubic metres per year, which is the level harvest in 2008 and the highest level achieved since salvage harvesting began.

In the first sensitivity analysis, the initial harvest level of 4.3 million cubic metres is restricted to pine-leading stands for the first decade. In addition to these changes, the harvest preference was changed to reduce the incidental harvest of non-pine volume from pine-leading stands; and the minimum harvestable volume for regenerated pine-leading stands was decreased from 120 cubic metres per hectare in the base case to 100 cubic metres per hectare.

In this sensitivity, the initial harvest of 4.3 cubic metres per year is maintained for 10 years before decreasing to a mid-term level above 1.11 million cubic metres per year for 50 years, before beginning to increase towards the long-term level. These results indicate that while the initial harvest level is both lower and is maintained for one less year than in the base case, the mid-term level is over 390 000 cubic metres per year higher (150 percent) than in the base case.

The improvement in the mid-term timber supply is higher than the volume of non-pine conserved during the first 10 years in the forecast, in part due to the increased volume available for harvest in 2028 relative to the base case. The 10 year decrease in the duration of the mid-term is due primarily to the lower minimum harvest volume criterion for regenerated managed pine stands. The harvest rule changes result in an average non-pine harvest of 615 000 cubic metres per year in the short term and although this is significantly less than the 1.0 to 1.47 million cubic metres harvested in the base case, the reduced level is more reflective of current practice.

In the second sensitivity analysis, the salvage harvest of dead pine stands stops and harvesting is focused on non-pine leading stands until 2060, when regenerating managed stands become available for harvest. The lower initial harvest level of 4.3 million cubic metres per year is maintained for five years before declining to a fluctuating mid-term level that rarely exceeds 200 000 cubic metres per year for 55 years before increasing to the long-term harvest level. Relative to the base case, the initial harvest level is lower and is maintained for six fewer years, while the mid-term is reduced in excess of 520 000 cubic metres per year which is less than 30 percent of the base case level. Though the harvest begins to increase to the long-term level at the same time as in the base case, it is many additional years – possibly decades – before a harvest level matching the base case long-term level is realized. With these harvest rule changes, an average of 3.9 million cubic metres per year of non-pine volume is harvested during the first five years, which is significantly more than the 1.0 to 1.47 million cubic metres harvested in the base case.

Licensees operating in the Quesnel TSA have commendably focused harvesting on MPB-impacted pine-leading stands. However, as the quality and accessibility of the pine available for salvage decreases there is an increasing risk that short-term harvesting could

shift to non-pine leading stands. However, the results of the sensitivity analyses prepared for this determination indicate that short-term conservation of non-pine volume has a dramatic ability to mitigate the projected decrease in mid-term timber supply.

As I have been entrusted to ensure that short-term harvesting does not unduly impact the mid-term timber supply, I want to ensure that the current focus on salvaging MPB-impacted pine continues and that non-pine volume is conserved, until such time as the salvage of MPB-impacted pine is no longer economically-viable and the regenerating pine stands have not yet reached minimum merchantability criteria. Therefore, I conclude that it is prudent for me to establish a partition attributable to non-pine volume in the AAC I determine for the Quesnel TSA and I will account for this in my determination as discussed in '**Reasons for Decision**'.

**(c) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia;**

Economic and Social Objectives

*-general comments*

The Quesnel Forest District has a large processing sector with four lumber mills, two pulp mills, a veneer/plywood plant, panel board plant, log home manufacturer and pellet mill. From 2005 to 2007, sawmills and other solid wood mills processed 4.2 million cubic metres of logs per year. In addition to lumber and veneer products these mills also supplied approximately 570 to 630 thousand bone dry units per year of chips.

Timber processing facilities in Quesnel have operated with limited curtailments in recent years, with the exception of West Fraser Mill's Northstar sawmill for which operations were suspended in December, 2008 and permanently closed as of June 29, 2010. Canfor's Quesnel sawmill, which was closed due to poor markets from January until June 2010, has recently reopened.

*- First Nations consultation*

The Alexandria (?Esdilagh), Kluskus (Lhoosk'uz Dene), Red Bluff (Lhtako Dene), and Nazko are First Nations with resident communities and asserted traditional territories within the Quesnel TSA. The Skin Tyee (Fraser Lake), Saik'uz (Vanderhoof), Ulkatcho, Williams Lake (T'exelc), Soda Creek (Xat'sull), Lheidli-T'enneh, Alexis Creek (Tsi Del Del) and Tl'etinqox-t'in Government Office (Anaham) are neighbouring First Nations with asserted traditional territories within the Quesnel TSA. The First Nations with asserted traditional territories within the Quesnel TSA represented by the Tsilhqot'in National Government are Alexandria, Alexis Creek and Anaham. In addition, the Alexandria, Nazko, Red Bluff, Kluskus, Ulkatcho, Williams Lake, and Soda Creek First Nations each hold timber tenures within the Quesnel TSA.

I am aware that district staff conducted information sharing regarding the timber supply review process with the twelve First Nations who have asserted traditional territory within the Quesnel TSA and with the Tsilhqot'in National Government. The district staff provided First Nations with the *Quesnel Timber Supply Area Timber Supply Review Data Package*, April 2009 and on June 10, 2009 and the *Quesnel TSA Timber Supply Analysis Public Discussion Paper*, March 2010 on March 23, 2010. Three First Nations responded during the

60-day consultation periods that followed distribution of the data package and public discussion paper.

The First Nations consultation process for the timber supply review in the Quesnel TSA is based upon current government direction regarding the duty to conduct preliminary assessments. District staff initiated the consultation process on June 10, 2009 in a letter to the 12 First Nations with asserted territory within the Quesnel TSA and to the Tsilhqot'in National Government. These First Nations groups were requested to provide information on how their aboriginal interests may be affected by an AAC determination for the Quesnel TSA.

Submissions received by the district from three First Nations concerning their aboriginal interests indicated:

- that these First Nations, who are limited in their technical capacity and resources, require additional funding if they are to adequately participate and engage in meaningful information sharing and consultation;
- that any AAC determination must account for and facilitate the potential tenures and access to timber volume resulting from treaty decisions;
- that First Nations be involved in the establishment and apportionment of the AAC for the Quesnel TSA;
- that the harvest of live trees be limited to ensure continued availability for wildlife habitat, maintain plants for sustenance and medicinal use, and provide economic support for First Nations communities; and
- that the AAC is set at a level that can accommodate First Nation communities culturally and allow them to economically benefit from resource extraction.

District staff consulted with all twelve First Nations by mail, email and phone, and the Tsilhqot'in National Government through their framework agreement during the consultation period with offers to meet and discuss the *Public Discussion Paper*. District staff met with two First Nations.

I note that MFML district staff continue to be available to meet and consult with First Nations on specific issues at the operational planning level.

Based on the results of the consultation process and the protection afforded First Nations cultural heritage resources by current operational practices and the *Heritage Conservation Act*, I am satisfied that First Nations' interests were adequately represented in the analysis. In accordance with my guiding principles, I will not anticipate the impact of decisions that have yet to been made, such as treaty settlements. If such decisions are made, they can be considered during subsequent determinations. If new information regarding First Nations' aboriginal interests becomes available that significantly varies from the information that was available for this determination, I am prepared to revisit this determination sooner than the 10 years required by legislation.

- *Minister's letter*

The Minister of Forests and Range (now the Minister of Forests, Mines and Lands) has expressed the economic and social objectives of the Crown for the province in a letter to the chief forester, dated July 4, 2006 (attached as Appendix 3). The letter stresses the importance of a stable timber supply to maintain a competitive and sustainable forest

industry while being mindful of other forest values. In respect of this, in the base case projection and in all of the alternative harvest flow projections with which I have been provided for reference in this determination, a primary objective in the harvest flow has been to attain a stable, long-term harvest level where the growing stock also stabilizes. In my determination, I have been mindful of the need for the allowable harvest in the short term to remain consistent with maintaining the integrity of the timber supply projection throughout the planning horizon. I have also considered with care the adequacy of the provisions made both in current practice, and assumed in the analyses, for maintaining a range of forest values.

I am therefore satisfied that this determination accords with the objectives of government as expressed by the Minister.

**(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.**

<u>'Shelf life' of MPB-attacked pine</u>

The analysis assumes dead and deteriorating MPB-impacted pine trees can be made into some form of product for up to 20 years following death. This is an extension from the 10 year shelf life assumed in the 2004 timber supply analysis. An extension, which is in part a reflection that the shelf life assumption is no longer specific to sawlogs. The extension is also in part a result of demonstrated harvest performance, recent improvements in the milling processes and advances in the development of new products such as bioenergy that can utilize lower quality wood, all of which have effectively extended the economic shelf life beyond that previously believed.

Rather than attempting to define a specific market condition or to make a distinction as to the products that might be produced from the volume, the analysis shows the harvest forecast contribution grouped by years since death: two years or less, three to five years, six to ten years, 11 to 15 years and 15-plus years. This approach improves the usefulness of the analysis results, as interpretations can be made into the future even if the deterioration of the wood differs from our current understanding, as market conditions change and by entrepreneurs developing new products.

Though uncertainty surrounding the utilization of the dead wood remains, I accept the approach used to provide insight as to the quantities of various qualities of wood that are available to harvest, and I will discuss this further under '**Reasons for Decision**'.

<u>Mortality in young pine stands</u>

Since the MPB infestation peaked in the Quesnel TSA in 2004, the beetle has begun attacking stands of pine trees less than 60 years old with diameters as small as 10 centimetres at breast height (DBH). Significant levels of mortality of young pine had not been observed until well into this current infestation and had never been observed during previous infestations. This shift to imparting significant mortality in young pine is potentially a result of the extremely high population densities of MPB occurring in the central interior during this infestation. Having only recently observed such mortality and having no previous experience to rely upon, we have yet to fully establish the impact on existing and projected young pine mortality.

Anecdotal information and preliminary 2007 field data from other forest districts in the Southern Interior Forest Region suggest that pine trees as young as 25 years are being killed and that mortality in 21- to 40-year old pine stands is currently averaging about 39 percent. Though it seems inevitable this young stand mortality will have an impact on the mid-term timber supply, these early results cannot be translated into quantifiable reductions in mid-term timber supply without projecting the growth of these stands – knowing the density, spatial distribution and stand structure of the remaining live stems and of the advance regeneration and ingress within these stands.

Clearly, young stand mortality is a concern as these stands support the future mid-term timber supply. Even so, as we do not have enough understanding as to the existing and future levels of young pine mortality nor of the implications of the mortality on the volume growth from these stands, the mortality in stands younger than 60 years is not reflected in the 2010 base case. Therefore, I have instructed, as noted in the '**Implementation**' section, that over the next five years district and licensee staff obtain better estimations of the level of mortality occurring in 25- to 60-year old pine stands and how this mortality affects the projected volume growth of these stands. While carrying out this request, special attention is to be given to obtaining improved information for stands that are currently 41- to 60-years old as they are the stands that will be relied upon earliest into the mid-term. When incorporated, this improved information will provide greater certainty as to future harvest levels.

The analysis indicates the base case mid-term harvest level of 720 000 cubic metres per year is supported on average by 200 000 cubic metres per year from 21- to 40-year old stands, and another 87 000 cubic metres per year from 41- to 60-year old stands. With information from recent Forests for Tomorrow rehabilitation surveys suggesting mortality of 30 percent in 21- to 40- year old stands and 70 percent in 41- to 60- year old stands, the mid-term may potentially be reduced by 120 000 cubic metres per year.

Though there is uncertainty as to the current and projected young pine mortality, and even greater uncertainty regarding the effects this mortality will have on projected volumes, it is inevitable this mortality will reduce the mid-term harvest level. I conclude young pine mortality could potentially reduce the mid-term by 120 000 cubic metres per year and have accounted for this overestimation, as noted in '**Reasons for Decision**'.

Summer of 2010 fires

The fires that occurred in 2010 burned 54 575 hectares, of which 36 702 hectares is timber harvesting land base. The impacts of these fires are not reflected in the base case as the inventory information used in the analysis was updated to January 1, 2009. A subsequent sensitivity analysis reflecting the effect of these fires indicates the initial harvest level of 5.28 million cubic metres per year can be maintained for nine years, which is a reduction of one year relative to the base case. The sensitivity analysis indicates the mid-term harvest level is unchanged relative to the base case, as much of the area burned had already been killed by the mountain pine beetle and was not going to contribute to the mid-term. Even so, as much of the burned area is within the six hour cycle-time, these fires necessitate increasing the harvest from the Kluskus supply block earlier than indicated in the base case, and heighten the importance of my earlier request

for district staff to monitor the extent harvesting occurs within the Kluskus supply block so it can be appropriately incorporated into the next timber supply review.

I accept the means of modelling and assumptions made regarding these recent fires and conclude the 2010 fires have reduced the volume available for harvest over the next 10 years by about three million cubic metres and have accounted for this overestimation, as noted in '**Reasons for Decision'**.

## Reasons for Decision

In reaching my AAC determination for the Quesnel TSA I have considered all of the factors required under Section 8 of the *Forest Act* and I have reasoned as follows.

In the base case (Scenario 1), presented in the public discussion paper prepared for this timber supply review, an initial harvest of 5.28 million cubic metres per year, which is the level of the current AAC, was maintained for 10 years before declining over four years to a mid-term harvest level of 720 000 cubic metres per year. In decade 6, the harvest level increases to a long-term level of 2.52 million cubic metres per year. I am satisfied that the assumptions applied in the base case forecast for the majority of the factors applicable to the Quesnel TSA are appropriate. Following is my consideration of those factors for which I find it necessary in this determination to further take into account implications to the timber supply as projected in the base case forecast.

In determining an AAC for the Quesnel TSA, I have identified a number of factors which, considered separately, indicate that the timber supply may be either greater or less than that projected in the base case. Some of these factors can be readily quantified and their impact on the harvest level assessed with reliability. Others may influence timber supply by adding an element of risk or uncertainty to the decision, but cannot be reliably quantified at this time.

I have identified the following factors in my considerations as indicating that the timber supply projected in the base case may have been overestimated:

- *Existing roads, trails and landings*: The area of Crown forested land base (CFLB) has been overestimated by about 30 000 hectares, or two percent of the total CFLB area, as a result of existing roads, trails and landings being incorrectly classified as forested area for the analysis. This error imparts an unquantified overestimate of the short-, mid- and long-term harvest levels;
- *Current forest inventory (pine volume in the western portion of the TSA)*: Though not statistically conclusive, the inventory audit completed in June 1999 suggests pine volumes in the western portion of the Quesnel TSA are overestimated by 12 percent or about six million cubic metres. I conclude this results in six million cubic metres less volume available to harvest over the short term;
- *Mortality in young pine*: Substantial mortality of pine younger than 60 years old has been observed. Though the current and projected extent of this mortality and its effect on the projected growth of these stands is not known, it is inevitable this mortality will result in less volume available to harvest in the mid-term. Using the

available information I conclude the base case projection for the mid-term is overestimated by 120 000 cubic metres per year due to the young pine mortality; and

- *Summer of 2010 fires:* As a result of the fires from this past summer, I conclude the volume available to harvest over the next 10 years is overestimated by three million cubic metres, which results in a one-year decrease in the length of time the base case initial harvest level can be maintained before declining to the mid-term.

I have identified the following factors in my considerations as indicating that the timber supply projected in the base case may have been underestimated:

- *Unmerchantable forest types*: Contrary to actual harvest performance, pine-leading deciduous mixed-wood forest types are excluded as not contributing to the timber harvesting land base for the base case. I conclude that this results in an underestimation of the projected timber supply in the short term by an unquantifiable amount, by 50 000 cubic metres per year throughout the mid-term and by 210 000 cubic metres per year in the long term; and
- *Interior log grade changes as of April 1, 2006*: Due to changes to the interior log grades as of April 1, 2006, dead, but potentially useful, volume that exists in a stand is now charged to the AAC. As these degraded dead volume grades are not accounted for in the forest inventory nor in the model used to estimate stand volume, the projected base case harvest levels are underestimated. I conclude for this determination that the timber supply is underestimated by 2.5 percent in relation to the log grade changes. Now that I have accounted for this underestimation, the administrative species adjustment which accounted for degraded dead potential volume is no longer to be applied.

The above list of factors identifies six areas of over- and underestimation in the base case projection that must be considered in this determination. My AAC decision regulates the level of timber harvesting in the short term however it needs to consider timber supply implications throughout the full forecast horizon to avoid or minimize both excessive changes from decade to decade and significant timber shortages in the future.

In reviewing the potential for over- or underestimating timber supply in the short term, I note that the main factor leading to an underestimation of the base case timber supply is related to an underestimation of the timber harvesting land base due to the inadvertent exclusion of lodgepole pine-deciduous mixed stands. Although an additional 4.3 million cubic metres are available to be harvested over the short term, the actual contribution to the timber supply is inconsequential as much of this additional volume may not be economically viable by the time it is to be harvested. Another factor that results in an underestimation of the short-term timber supply is due to the 2006 log grade changes, for which I concluded that the base case timber supply has been underestimated by 2.5 percent.

In the short term, the main sources of potential overestimation of timber supply are attributable to a likely six million cubic metre overestimation of pine volume in the inventory and the burning of about three million cubic metres by recent fires. In addition, there are unquantified overestimations due to the inadvertent classification of existing roads, trails and landings as CFLB. In my view, the likely overestimation of volumes in

existing pine stands in combination with the volume burned by recent fires is greater than the likely underestimations, resulting in an overall overestimation in the short-term timber supply projected in the base case.

Factors that indicate the base case mid-term timber supply may be overestimated include the inadvertent misclassification of existing roads, trails and landings as forested, and a reduction of 120 000 cubic metres per year from mortality of young pine. Conversely, the mid-term timber supply may be underestimated by 2.5 percent on account of the new log grades, and due to the exclusion of pine-deciduous mixed stands that contribute about 50 000 cubic metres per year. As the significant underestimations of the mid-term may not completely offset the cumulative overestimations due to mortality in young pine stands and the overestimation of the CFLB, the net result is that the mid-term timber supply is likely lower than projected in the base case.

In the long term, the main downward pressure on timber supply relative to the base case is the slight unquantified overestimation resulting from the overestimated CFLB. While the main upward pressures on timber supply are an additional 210 000 cubic metres per year from the inclusion of pine-leading deciduous mixed-wood stands and an increase of 2.5 percent of degraded volume as a result of changes in the log grades. The underestimations in the base case of the long-term harvest level far exceed the small unquantified overestimation.

The results of the sensitivity analyses indicate that the mid-term timber supply is very sensitive to changes in short-term harvesting assumptions and that short-term conservation of non-pine can significantly mitigate both the magnitude and duration of the decline in mid-term timber supply. These results, in combination with the uncertainty surrounding shelf life and harvesting within the Kluskus supply block, indicate that although the net result of my considerations suggests that there may be an opportunity to maintain the harvest in the Quesnel TSA at the current AAC of 5.28 million cubic metres per year, I believe it would be imprudent to do so.

Therefore, after carefully examining each of the relevant factors under Section 8 of the *Forest Act* for the Quesnel TSA, the assumptions made in deriving the base case harvest projection in the timber supply analysis, and factors that may have over- or underestimated timber supply in the short-, mid- and long-term, it is my determination that the appropriate AAC for the Quesnel TSA at this time is four million cubic metres, of which up to a maximum of 650 000 cubic metres per year is attributable to non-pine species.

My AAC determination is predicated on contributions from the entire timber harvesting land base, which includes the Kluskus supply block where operating performance can be a challenge given concerns regarding the economic viability of harvesting within this area. Avoidance of the Kluskus supply block could result in over-harvesting of the remaining land base and result in an earlier decline to the mid-term harvest level. I do not consider it necessary at this time to establish a partition attributable to the Kluskus supply block. Primarily because I believe that it will be necessary to harvest within the Kluskus supply block to meet the non-partitioned portion of the AAC.

Though the AAC of four million cubic metres per year represents a 24-percent reduction from the previous AAC, I believe it provides sufficient opportunity to continue salvaging timber killed by the current MPB epidemic. I also believe that the non-pine partition provides certainty that the current practice of minimizing the harvest of non-pine volume will continue, which ensures the non-pine profile will be available to support the mid-term timber supply in the Quesnel TSA.

I am discontinuing the partitions in the AAC of 450 000 cubic metres attributable to problem forest types (PFT) and 20 000 cubic metres attributable to deciduous-leading stands. The PFT and deciduous partitions were established for previous AAC determinations to maintain good forest stewardship and to ensure appropriate performance in the respective components of the harvest profile. As noted earlier in this document, the previous reasons for establishing the partitions either no longer exist or have been superseded by more pressing concerns. I conclude the PFT partition is no longer necessary due to the good harvest performance, reduced area of problem forest types and the lack of discernable difference of these stands with other stands being harvested. I also conclude removing the deciduous partition improves all licensee's ability to meet forest cover biodiversity and other non-timber objectives, and should improve the timber supply through the mid-term.

## Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next 10 years and that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved in the TSA by establishing an AAC of 4 000 000 cubic metres, of which a maximum of 650 000 cubic metres can be attributable to non-pine coniferous tree species volume.

This determination is effective January 11, 2011, and will remain in effect until a new AAC is determined, which must take place within 10 years of the effective date of this determination.

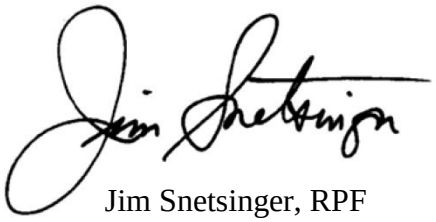
If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then I am prepared to revisit this determination sooner than the 10 years required by legislation.

## Implementation

In the period following this decision and leading to the subsequent determination, I encourage district staff and licensees to undertake the tasks and studies noted below that I have also mentioned in the appropriate sections of this document. I recognize that the ability of staff and licensees to undertake these projects is dependent on available resources and funding. These projects are, however, important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in the TSA:

- *Environmentally sensitive areas*: I encourage ministry staff and the licensees to prepare more detailed and current terrain analysis to better account for areas with sensitive soil and areas prone to snow avalanche.
- *Future roads, trails and landings*: I encourage ministry staff and licensees to monitor and evaluate road widths and to refine the methodology for approximating future area expected to be developed into roads, trails and landings.
- *Volume estimates for regenerated managed stands*: Ministry staff and licensees are encouraged to continue monitoring stand development and to use these monitoring results to improve our understanding of the interaction between current management and the estimated losses to natural operational conditions as reflected by OAFs in generating managed stand yield projections for the next timber supply review.
- *Species cut control adjustments*: The species cut control adjustments, that have been applied to reconcile historical cut control practices with the new scaling methodology as of the April 1, 2006 log grade changes, are no longer to be applied within the Quesnel TSA.
- *Kluskus supply block (economic operability)*: I encourage licensees and ministry staff to monitor the extent volume is harvested from the Kluskus supply block and to review the expected economic operability of timber within this supply block.
- *Young pine mortality*: I encourage ministry staff and licensees to ascertain the current and projected levels of mortality occurring in pine younger than 60 years of age, and to determine the implications of this mortality on the projected growth of these stands. These results, especially the projected growth of these stands, are to be incorporated in the next timber supply analysis to bring greater certainty with respect to the mid-term harvest levels.

This information should reduce existing uncertainties in short- and mid-term timber supply that can be reflected in subsequent AAC determinations.



Jim Snetsinger, RPF
Chief Forester

January 11, 2011

## Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, Consolidated to December 30, 2009, reads as follows:

### Allowable annual cut

**8** (1) The chief forester must determine an allowable annual cut at least once every 10 years after the date of the last determination, for

(a) the Crown land in each timber supply area, excluding tree farm licence areas, community forest agreement areas and woodlot licence areas, and

(b) each tree farm licence area.

(2) If the minister

(a) makes an order under section 7 (b) respecting a timber supply area, or

(b) amends or enters into a tree farm licence to accomplish a result set out under section 39 (2) or (3),

the chief forester must make an allowable annual cut determination under subsection (1) for the timber supply area or tree farm licence area

(c) within 10 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and

(d) after the determination under paragraph (c), at least once every 10 years after the date of the last determination.

(3) If

(a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and

(b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,

the chief forester must determine an allowable annual cut at least once every 10 years from the date the allowable annual cut under subsection (1) of this section is effective under section 9 (6).

(3.1) If, in respect of the allowable annual cut for a timber supply area or tree farm licence area, the chief forester considers that the allowable annual cut that was

determined under subsection (1) is not likely to be changed significantly with a new determination, then, despite subsections (1) to (3), the chief forester

(a) by written order may postpone the next determination under subsection (1) to a date that is up to 15 years after the date of the relevant last determination, and

(b) must give written reasons for the postponement.

(3.2) If the chief forester, having made an order under subsection (3.1), considers that because of changed circumstances the allowable annual cut that was determined under subsection (1) for a timber supply area or tree farm licence area is likely to be changed significantly with a new determination, he or she

(a) by written order may rescind the order made under subsection (3.1) and set an earlier date for the next determination under subsection (1), and

(b) must give written reasons for setting the earlier date.

(4) If the allowable annual cut for the tree farm licence area is reduced under section 9 (3), the chief forester is not required to make the determination under subsection (1) of this section at the times set out in subsection (1) or (2) (c) or (d), but must make that determination within one year after the chief forester determines that the holder is in compliance with section 9 (2).

(5) In determining an allowable annual cut under subsection (1) the chief forester may specify portions of the allowable annual cut attributable to

(a) different types of timber and terrain in different parts of Crown land within a timber supply area or tree farm licence area,

(a.1) different areas of Crown land within a timber supply area or tree farm licence area, and

(b) different types of timber and terrain in different parts of private land within a tree farm licence area.

(c) [Repealed 1999-10-1.]

(6) The regional manager or district manager must determine an allowable annual cut for each woodlot licence area, according to the licence.

(7) The regional manager or the regional manager's designate must determine an allowable annual cut for each community forest agreement area, in accordance with

(a) the community forest agreement, and

(b) any directions of the chief forester.

(8) In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

(a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area,

(ii) the expected time that it will take the forest to become re-established on the area following denudation,

(iii) silviculture treatments to be applied to the area,

(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,

(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and

(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area,

(c) [Repealed 2003-31-2.]

(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia, and

(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

# Appendix 2: Section 4 of the *Ministry of Forests and Range Act*

Section 4 of the *Ministry of Forests and Range Act* (consolidated to March 30, 2006) reads as follows:

## Purposes and functions of ministry

**4** The purposes and functions of the ministry are, under the direction of the minister, to do the following:

(a) encourage maximum productivity of the forest and range resources in British Columbia;
(b) manage, protect and conserve the forest and range resources of the government, having regard to the immediate and long term economic and social benefits they may confer on British Columbia;
(c) plan the use of the forest and range resources of the government, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated, in consultation and cooperation with other ministries and agencies of the government and with the private sector;
(d) encourage a vigorous, efficient and world competitive
    i. timber processing industry, and
    ii. ranching sector
in British Columbia;
(e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

# Appendix 3: Minister's letter of July 4, 2006

BRITISH COLUMBIA

JUL 0 4 2006

Jim Snetsinger
Chief Forester
Ministry of Forests and Range
3rd Floor, 1520 Blanshard Street
Victoria, British Columbia
V8W 3C8

Dear Jim:

**Re: Economic and Social Objectives of the Crown**

The *Forest Act* gives you the responsibility for determining Allowable Annual Cuts-decisions with significant implications for the province's economy, communities and environment. This letter outlines the economic and social objectives of the Crown you should consider in determining Allowable Annual Cuts, as required by Section 8 of the *Forest Act*. This letter replaces the July 28, 1994 letter expressing the economic and social objectives of the Crown, and the February 26, 1996 letter expressing the Crown's economic and social objectives for visual resources. The government's objective for visual quality is now stated in the Forest Practices and Planning Regulation of the *Forest and Range Practices Act*.

Two of this government's goals are to create more jobs per capita than anywhere in Canada and to lead the world in sustainable environmental management. The Ministry of Forests and Range supports these objectives through its own goals of sustainable forest and range resources and benefits. In making Allowable Annual Cut determinations, I ask that you consider the importance of a stable timber supply in maintaining a competitive and sustainable forest industry, while being mindful of other forest values.

The interior of British Columbia is in the midst of an unprecedented mountain pine beetle outbreak. Government's objectives for management of the infestation are contained in British Columbia's Mountain Pine Beetle Action Plan. Of particular relevance to Allowable Annual Cut determinations are the objectives of encouraging long-term economic sustainability for communities affected by the epidemic; recovering the greatest value from dead timber before it burns or decays, while respecting other forest values; and conserving the long-term forest values identified in land use plans.



**Minister of Forests and Range and Minister Responsible for Housing**

Office of the Minister

Mailing Address:
PO Box 9049 Stn Prov Govt
Victoria BC V8W 9E2
Telephone: 250 387-6240
Facsimile: 250 387-1040

Location:
Parliament Buildings
Victoria BC V8V 1X4
e-mail: FOR.Minister@gov.bc.ca

Jim Snetsinger

To assist the province and affected communities in planning their responses to the beetle infestation, it would be best to have realistic assessments of timber volumes that can be utilized economically. Therefore, in determining the best rate of harvest to capture the economic value from beetle-killed timber, I ask that you examine factors that affect the demand for such timber and products manufactured from it, the time period over which it can be utilized, and consider ways to maintain or enhance the mid-term timber supply.

The coast of British Columbia is experiencing a period of significant change and transition. In making Allowable Annual Cut determinations I urge you to consider the nature of timber supply that can contribute to a sustainable coast forest industry, while reflecting decisions made in land and resource management plans.

You should also consider important local social and economic objectives expressed by the public during the Timber Supply Review process, where these are consistent with the government's broader objectives as well as any relevant information received from First Nations.

Sincerely yours,

Rich Coleman
Minister

# Appendix 4: Minister's letter of October 27, 2010

BRITISH COLUMBIA
The Best Place on Earth

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NOV 0 1 2010
CHIEF FORESTER'S OFFICE
EXECUTIVE
MINISTRY OF FORESTS

File: 280-30/MPB
Ref: 126097

OCT 2 7 2010

Jim Snetsinger, Chief Forester
ADM Forest Resource Stewardship Division
Ministry of Forests and Range
3rd Floor, 1520 Blanshard Street
Victoria, British Columbia
V8W 3C8

Dear Mr. Snetsinger:

**Re: Economic and Social Objectives of the Crown Regarding Mid-Term Timber Supply in Areas Affected by the Mountain Pine Beetle**

On July 4, 2006, Rich Coleman, former Minister of Forests and Range, wrote to you outlining the social and economic objectives of the Crown for AAC determination (in accordance with Section 8 of the *Forest Act*) with respect to issues associated with the Mountain Pine Beetle (MPB) epidemic. The aforementioned letter articulated the Crown's objectives of ensuring long-term economic sustainability for communities affected by the epidemic; recovering the greatest value from dead timber before it burns or decays, while respecting other forest values; and conserving the long-term forest values identified in land use plans. I am writing to you regarding the Crown's objectives with respect to mid-term timber supply in areas affected by the mountain pine beetle.

The MPB infestation has had a profound impact on the timber supply outlook for the interior of the province. In particular, forecasts of timber supply in the mid-term—the period between the ending of the economic shelf life of killed pine and the time when the forest has re-grown and again become merchantable—are now significantly lower than prior to the infestation. These shortages threaten the wellbeing of forest-dependent cities and towns. The



Ministry of Forests and Range and Minister Responsible for Integrated Land Management Bureau
Minister's Office
Mailing Address:
P.O. BOX 9049 Stn Prov Govt
Victoria, BC V8W 1X4
Tel: (250) 387-6240
Fax: (250) 387-1040
Website:
gov.bc.ca/forilmbwww.gov.bc.ca

Jim Snetsinger, Chief Forester

Government of British Columbia is working closely with beetle action committees, municipalities, and the private sector to diversify economies. However, for many forestry-dependent towns mid-term timber supply shortages could still have significant socio-economic impacts.

During this challenging time it will be necessary to reassess management objectives and administrative approaches that were developed when forest conditions in the province's interior were very different than now exist. In this reassessment it will be important to enhance the understanding of how best to balance objectives for non-timber forest values with objectives for timber supply to achieve a range of socio-economic benefits. It will also be important to assess how innovative practices and incremental silviculture could mitigate mid-term timber supply shortfalls in MPB affected areas, and if flexibilities can be found in timber supply administration.

During the Timber Supply Review process, in addition to the considerations included in the July 2006 letter, I would like you to undertake analysis that can provide information on how changes to current management practices and administration could increase mid-term timber availability in MPB-affected areas. This information should be shared with Ministry of Forest and Range Executive and used to inform discussions among interested parties, and considered by appropriate land use and management decision makers. If formal changes are made to management objectives and administration, you will be in a position to incorporate those changes in Timber Supply Reviews and AAC determinations.

Sincerely,

Pat Bell
Minister

pc: Dana Hayden, Deputy Minister