

**BRITISH COLUMBIA
MINISTRY OF FORESTS AND RANGE**

Tree Farm Licence 52

**held by
West Fraser Mills Limited**

Rationale for Allowable Annual Cut (AAC) Determination

Effective April 1, 2009

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Objective of this Document

This document is intended to provide an accounting of the factors I have considered and the rationale I have employed in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for Tree Farm Licence (TFL) 52.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to consider particular factors in determining AACs for Timber Supply Areas (TSAs) and TFLs. Section 8 is reproduced in full as Appendix 1.

In accordance with Section 23 (3) of the *Interpretation Act*, the deputy chief forester is expressly authorized to carry out the functions of the chief forester, which include those required under Section 8 of the *Forest Act*.

The chief forester has expressed the importance of consistency of judgement in making AAC determinations. I also recognize the need for consistency of approach. I have observed the chief forester during a number of previous AAC determinations and am familiar with the guiding principles that the chief forester has employed in making AAC determinations. I find these principles to be reasonable and appropriate and I have employed them as described below in making my AAC determination for TFL 52.

Salvage of mountain pine beetle killed pine

TFL 52 lies within a vast area in central British Columbia that has been experiencing a severe mountain pine beetle (MPB) epidemic. Current projections indicate about 70 percent of lodgepole pine (pine) stands in the province are infested by MPB. Pine stands in the Quesnel TSA and TFL 52 were infested early in the epidemic and the rate of MPB infestation in these management units is now decreasing as the availability of suitable hosts declines. Although the infestation is decreasing, there is now a significant volume of beetle-killed timber that remains unsalvaged.

More recently, a number of other bark beetles that attack spruce and Douglas-fir have started to increase, but are mostly at endemic levels at the time.

Pine is the dominant species in 26 percent of the productive forest area in TFL 52. Stands in which 50 percent or more of the trees are pine occupy 28 000 hectares or 14 percent of the THLB. The total volume of pine on TFL 52 is about 7.5 million cubic metres of which 85 percent is either dead or dying due to attack by MPB. Due to the significance of this infestation in TFL 52, this issue has been central to many of the factors that I have considered in this determination. I have documented my considerations regarding management objectives for the salvage, and to a lesser extent the control, of the damaged timber under Section 8(8) (e) of the *Forest Act: Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area*.

Description of the TFL

TFL 52 was awarded to West Fraser Mills Ltd. on January 1, 1991. TFL 5 was consolidated with TFL 52 on May 28, 2006. For this determination, TFL 52 refers to the consolidated TFL. TFL 52 prior to consolidation is referred to as block 'A' and TFL 5 as block 'B'. Administered by the Ministry of Forests and Range (MFR) Quesnel Forest

District ('the district'), TFL 52 is bounded by the Quesnel TSA to the west, Prince George TSA to the north, Bowron Lake Provincial Park to the east and the Williams Lake TSA to the south. Block 'A' is located east of Quesnel and block 'B' 40 kilometres northwest of Quesnel, along the Fraser River. The total area of TFL 52 is 293 485 hectares of which 199 376 hectares, or about 68 percent, is currently available for timber harvesting.

The majority of the gross area of the TFL lies within the sub-boreal spruce (SBS) biogeoclimatic zone, with approximately 10 percent of the gross area in the Englemann-spruce sub-alpine fir (ESSF) biogeoclimatic zone.

History of the AAC

Block 'A', the original TFL 52, was issued to the licensee in January 1991 in exchange for its forest licence holdings in the Prince George Forest Region and a portion of its forest licence in the Quesnel TSA. The licensee still retains some AAC under a forest licence in the Quesnel TSA. The AAC for block 'A' was initially set at 518 952 cubic metres in 1991. The AAC was subsequently increased to 543 512 cubic metres in January 2001, and to the current level of 570 000 cubic metres effective March 31, 2005.

Block 'B', previously Forest Management Licence 5, was issued to Western Plywood Limited in 1950. This licence was reassigned, as TFL 5, to Weldwood of Canada Limited in 1964. Prior to consolidation, the AAC for block 'B' was 300 000 cubic metres.

Following consolidation in 2006 and AAC adjustments to account for woodlot licences, the AAC of TFL 52, was 870 000 cubic metres.

New AAC determination

Effective April 1, 2009, the new AAC for TFL 52 will be 1 000 000 cubic metres, which represents an increase of about 15 percent from the previous AAC. This new AAC includes a partition of up to 500 000 cubic metres for non-pine conifer species. This AAC will remain in effect until a new AAC is determined, which must take place within five years of the present determination.

Information sources used in the AAC determination

Information considered in determining the AAC for TFL 52 includes, but is not limited to the following:

- *First Nations Consultation Summary*. Ministry of Forests and Range, Southern Interior Forest Region, March 31, 2008, and update December 11, 2008;
- Technical information provided through a teleconference with the Deputy Chief Forester, West Fraser Mills Ltd. staff, and Ministry of Forests and Range staff from the Quesnel Forest District, Southern Interior Forest Region, and Forest Analysis and Inventory Branch. February 13, 2008;
- Technical review and evaluation of current operating conditions through comprehensive discussions with Ministry of Forests and Range staff, including the AAC determination meeting held in Kamloops on February 13, 2008;
- Twenty-Year Plan for TFL 52, West Fraser Mills Ltd. submitted to the Ministry of Forests and Range, Quesnel Forest District on February 12, 2008;

- *Timber Supply Analysis Report: Management Plan 4 – Mountain Pine Beetle Uplift – Bowron – Cottonwood Tree Farm Licence (TFL 52 Blocks A and B)*, Timberline Natural Resource Group on behalf of West Fraser Mills Ltd., version 2 accepted by Ministry of Forests and Range, Forest Analysis and Inventory Branch, February 11, 2008;
- Tour of TFL 52 with the Deputy Chief Forester, West Fraser Mills Ltd. staff and Ministry of Forests and Range staff from the Quesnel Forest District, Southern Interior Forest Region, and Forest Analysis and Inventory Branch. May, 2007;
- *Timber Supply Analysis Information Package – Management Plan 4 – Mountain Pine Beetle Uplift for TFL 52 and 5 (blocks ‘A’ and ‘B’)*. Timberline Forest Inventory Consultants Ltd. on behalf of West Fraser Mills Ltd. November, 2006;
- *Development of Volume Recovery Model for MPB-attacked Stands on TFL 52*. J.S. Thrower and Associates on behalf of West Fraser Mills Ltd. May 2, 2006;
- *Yield Table Summary Report for TFL 52*. J.S. Thrower and Associates on behalf of West Fraser Mills Ltd. May 4, 2000;
- *Yield Tables for Natural and Managed Stands: Management Plan 10 on TFL 5*. J.S. Thrower and Associates on behalf of West Fraser Mills Ltd. May 4, 2000;
- *Updating Potential Site Index Estimates for Commercial Tree Species on TFL 5*. J.S. Thrower and Associates on behalf of Weldwood of Canada Ltd. March 31, 2000;
- *Updating Potential Site Index Estimates for Commercial Tree Species on TFL 52*. J.S. Thrower and Associates on behalf of West Fraser Mills Ltd. March 31, 2000;
- *Hydrologic sensitivity of watersheds to MPB infestation in the B.C. Interior*. Summary of hydrologic consequences of the Mountain Pine Beetle infestation and salvage operations. Winkler, R., and D. Maloney, P. Teti, and J. Rex. Ministry of Forests and Range website;
- Letter responding to MPB and potential 2007 flooding from Jim Snetsinger, Chief Forester, Ministry of Forests and Range, March 16, 2007;
- *Quesnel Timber Supply Area Forest Health Strategy 2008-2009*, August 12, 2008;
- *The Quesnel Forest District Enhanced Retention Strategy for Large Scale Salvage of Mountain Pine Beetle Impacted Stands*. Quesnel Forest District Enhanced Retention Strategy Committee, 2006;
- *Provincial-level Projection of the Current Mountain Pine Beetle Outbreak: Update of the infestation projection based on the 2005 Provincial Aerial Overview of Forest Health and revisions to “the Model” (BCMPB v.3)* Ministry of Forests and Range. Eng, M., Fall, A., Hughes, J., Shore, T., Riel, B., Walton, A., and Hall, P. 2006;
- Letter on log grade changes from Bob Friesen, Assistant Deputy Ministry, Tenures and Revenue Division, Ministry of Forests and Range. 2006;
- Memorandum on log grade changes from Doug Konkin, Deputy Minister, Ministry of Forests and Range. 2006;

- *Methodology for Determining the Adjustment Factor to Reconcile Historical Cut Control Practices with the New Log Grades*. Ministry of Forests and Range. 2006;
- *Guidance on Landscape and Stand Level Structural Retention in Large-Scale MPB Salvage Operations*. Jim Snetsinger, Chief Forester, Ministry of Forests and Range, December, 2005;
- *Recommended operational procedures to address hydrological concerns*. Ministry of Forests and Range. 2004;
- *Landscape Unit Planning Guide*, Forest Practice Code of British Columbia. BC Ministry of Forests and Ministry of Environment, Lands and Parks. Province of British Columbia. 2000;
- *Cariboo-Chilcotin Land Use Plan: Legal Requirements and Selected Non-legal Direction*. Cariboo-Chilcotin Inter-Agency Management Committee. 2005;
- Cariboo-Chilcotin Land Use Plan – Integration Report. B.C. Ministry of Forests. 1999;
- *Declaration of the Cariboo-Chilcotin Land-Use Plan as a Higher Level Plan: Filing and Notice*. Ministry of Forests and Range. 1996;
- *Cariboo-Chilcotin Land Use Plan – Biodiversity Conservation Strategy*. Biodiversity Conservation Strategy Committee. 1996;
- *Cariboo-Chilcotin Land Use Plan: 90-Day Implementation Plan, Final Report*, Province of British Columbia. 1995;
- *Cariboo-Chilcotin Land Use Plan*. Ministry of Forests. 1994;
- *Ministry of Forests and Range Act*, consolidated to March 30, 2006;
- *Forest and Range Practices Regulations*, 2004 and amendments;
- *Forest and Range Practices Act*, 2002 and amendments;
- *Forest Practices Code of British Columbia Act*, 1995 regulations, amendments and guidebooks; and
- Letter from the Minister of Forests and Range to the Chief Forester, stating the economic and social objectives of the Crown. July 4, 2006.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester to consider biophysical as well as social and economic information in AAC determinations. A timber supply analysis, and the inventory and growth and yield data used as inputs to the analysis, typically form the major body of technical information used in AAC determinations. Timber supply analyses and associated inventory information are concerned primarily with biophysical factors—such as the rate of timber growth and definition of the land base considered available for timber harvesting—and with management practices.

However, the analytical techniques used to assess timber supply are simplifications of the real world. There is uncertainty about many of the factors used as inputs to timber supply analysis due in part to variations in physical, biological and social conditions, although ongoing science-based improvements in the understanding of ecological dynamics will help reduce some of this uncertainty.

Furthermore, technical analytical methods such as computer models cannot incorporate all of the social, cultural and economic factors that are relevant when making forest management decisions. Therefore, technical information and analysis do not necessarily provide the complete answer or solution to forest management problems such as AAC determination. The information does, however, 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 making the AAC determination for TFL 52, I have considered known limitations of the technical information provided, and I am satisfied that the information provides a suitable basis for my determination.

Guiding Principles for AAC Determinations

The chief forester has expressed the importance of consistency in considering and accounting for various factors when making AAC determinations. I also recognize the need for consistency of approach, and am familiar with the guiding principles that the chief forester has employed in making AAC determinations. I find these principles to be reasonable and appropriate and have adopted them as described below in making my AAC determination for TFL 52.

Rapid changes in social values and in our understanding and management of complex forest ecosystems may affect our interpretation or weighing of 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 such changes and associated 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 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, to ensure they incorporate current information and knowledge—a principle that has been recognized in the legislated requirement to redetermine AACs every five years. The adoption of this principle is central to many of the following guiding principles.

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 operability and forest management factors that are a reasonable extrapolation from current practices. It is not appropriate to base my decision on unsupported speculation with respect either to factors that could work to *increase* the timber supply—such as optimistic assumptions about harvesting in unconventional areas, or using unconventional technology, that are not substantiated by demonstrated performance—or to factors that could work to *reduce* the timber supply, such as integrated resource management objectives beyond those articulated in current planning guidelines or the *Forest and Range Practices Act* (FRPA).

In many areas, the timber supply implications of some legislative provisions, such as those for landscape-level biodiversity, remain uncertain, particularly when considered in combination with other factors. In each AAC determination the chief forester takes this uncertainty into account to the extent possible in the context of the best available information. In making my determination for TFL 52, as deputy chief forester, I have followed the same approach.

As British Columbia progresses toward full implementation of strategic land-use plans, in some cases the eventual timber supply impacts associated with the decisions resulting from the various regional and sub-regional planning processes remain subject to some uncertainty. In determining AACs, I will not speculate on timber supply impacts that may eventually result from decisions not yet finalized by government.

In some cases, even where government has made a formal land-use decision, it is not necessarily possible to analyse and account for the full timber supply impact in a current AAC determination. Many government land-use decisions must be followed by detailed implementation decisions requiring, for instance, the establishment of resource management zones and resource management objectives and strategies for those zones. Until such implementation decisions are made it would be impossible to assess in full the overall impacts of land-use decisions. In such cases, the legislated requirement for frequent AAC reviews will ensure that future determinations address ongoing plan implementation decisions. Whenever specific protected areas have been designated by legislation or 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 biodiversity.

For TFL 52, clarification of land and resource use has been provided by government's Cariboo-Chilcotin Land Use Plan (CCLUP), which guides many aspects of current management, as addressed in my considerations throughout this document.

Some 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 not complete, but this will always be true where information is constantly evolving and management issues are changing. Moreover, in the past, waiting for improved data created the extensive delays that resulted in the urgency to redetermine many outdated AACs. In any case, the data and models available today are improved from those available in the past, and will undoubtedly provide for more reliable determinations.

Others have suggested that, in view of data uncertainties, I should immediately reduce 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 have made allowances for risks that arise because of uncertainty.

With respect to First Nations' issues, I am aware of the Crown's legal obligations resulting from decisions in recent years made by the Supreme Court of Canada. I am aware of the Crown's legal obligation to consult with First Nations regarding asserted rights and title in

a manner proportional to the strength of their claimed interests and the degree to which the decision may impact these interests. In this regard, I will consider any information brought forward respecting First Nations' aboriginal interests, including operational plans that describe forest practices to address First Nations' interests. As I am able, within the scope of my authority under Section 8 of the *Forest Act*, I address those interests. When aboriginal interests are raised that are outside of my jurisdiction, I will endeavour to forward these interests for consideration to other decision-makers.

The AAC that I determine should not be construed as limiting the Crown's obligations under the Court's 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 TFL 52. It is also independent of any decisions by the Minister of Forests and Range with respect to subsequent allocation of wood supply.

Subsequent to a determination, if I become aware of information respecting First Nations' interests that would substantially alter my understanding of relevant circumstances, I may revisit my determination sooner than required by the *Forest Act*.

Overall, in making AAC determinations, I am mindful of my obligation as steward of the forest land of British Columbia, of the mandate of the Ministry of Forests and Range (MFR) 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*.

The role of the base case

In considering the factors required under Section 8 of the *Forest Act* to be addressed in this AAC determination, I am assisted by timber supply forecasts provided to me by the licensee as part of the MFR Timber Supply Review program. The licensee's timber supply analysis and forecasts have been reviewed by MFR analysis section staff.

For each AAC determination 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 model, a series of timber supply forecasts is produced. These include sensitivity analyses to assess the timber supply effects of uncertainties or changes in various assumptions around a baseline option, normally referred to as the 'base case' forecast.

The base case forecast incorporates information about which there is some uncertainty. Its validity, as with all the other forecasts provided, depends on the reliability of the data and assumptions incorporated into the computer model used to generate it. Therefore, much of what follows in the considerations outlined below is an examination of the degree to which the assumptions made in generating the base case forecast are realistic and current, and the degree to which its predictions of timber supply must be adjusted, if necessary, to more properly reflect the current situation.

These adjustments are made on the basis of informed judgement, using current information available about forest management, which may well have changed since the original information package was assembled. Forest management data are particularly subject to change during periods of legislative or regulatory change, or during the implementation of new policies, procedures, guidelines or plans.

Thus it is important to remember, in reviewing the considerations which lead to the AAC determination, that while the timber supply analysis with which I am provided is integral to those considerations, the AAC determination itself is not a calculation but a synthesis of judgement and analysis in which numerous risks and uncertainties are weighed.

Depending upon the outcome of these considerations, the AAC determined may or may not coincide with the base case forecast. Judgements that may in part be based on uncertain information are essentially qualitative in nature and, as such, subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation may be gained by attempting a computer analysis of the combined considerations to confirm the exact AAC determined.

Timber supply analysis

The timber supply analysis for TFL 52 was prepared by Timberline Forest Inventory Consultants Ltd. (Timberline) under the direction of licensee staff. Timberline used Woodstock-Stanley, which is a spatial planning system developed by Remsoft Inc.

- base case

For TFL 52, the licensee presented several harvest flow projections, including one entitled *Base Case Option*, in which the initial harvest rate was equal to the pre-mountain pine beetle (MPB) uplift AAC. Assumptions in these analyses were based on the licensee's current management practices, including management to meet the requirements of FRPA, the CCLUP, and other locally relevant legislation and policy. Management requirements for non-timber resources were also included. Amongst these harvest forecasts, a projection entitled *Maximize Initial Harvest* was used as the base case to which further analyses were compared. The initial harvest level in all the sensitivity analyses provided was also the maximum attainable in that particular harvest forecast. For this reason I have chosen the *Maximize Initial Harvest* forecast as the base case for this determination and I will refer to it as such throughout the remainder of this document.

Harvest flow objectives in all of the timber supply projections, except the *No MPB Option*, included: maximize the harvesting of dead and at-risk pine volume prior to loss of merchantability; maintain or increase the AAC as long as possible; where possible limit changes in harvest levels to less than 10 percent of the level prior to reduction; and achieve a stable long-term harvest level and growing stock profiles.

In the base case, the length of time dead pine remained merchantable (shelf life) was assumed to be 5 years and 10 years for pine stands growing on 'wet' and 'moist' sites, respectively. Estimates of shelf life were based on the categories described in the report entitled *Provincial-Level Projection of the Current Mountain Pine Beetle Outbreak* (Eng et al, 2006).

In addition to targeting MPB-infested stands for harvest in the first 10 years of the analysis, 140 000 cubic metres per year were assumed to be harvested from stands greater than 65 percent spruce during the first 5 years. These spruce stands were considered to be at high risk of spruce beetle infestation.

In the base case, the initial harvest level of 1 371 680 cubic metres per year was maintained for 10 years before declining to 719 700 cubic metres per year. The long-term harvest level of 878 930 cubic metres per year was reached after 50 years. At the end of

the first decade, about 647 370 cubic metres or about 9 percent of the dead or dying pine volume was not harvested.

I have reviewed the assumptions and methodology incorporated in the base case projection and 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 TFL 52.

Where I have concluded that an assumption for a particular factor was appropriately modelled in the base case, I will not discuss my considerations of it in this document. I will explain below my consideration of any assumption for a factor that concerns me for any reason, such as apparent divergence from current management practices and significant level of uncertainty for key factors.

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

Section 8 (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,**

Land base contributing to timber harvesting

- general comments

The total Crown land and water area of TFL 52 is 293 485 hectares, of which 270 215 hectares are considered productive forest land. As part of the process used to define the timber harvesting land base (THLB), i.e. the land base estimated to be economically and biologically available for timber harvesting, a series of deductions was made from the productive forest land base. After these deductions were applied, the long-term THLB was estimated to be 195 576 hectares.

I accept the assumptions applied in the analysis for non-productive, non-forest, existing and future roads, inoperable and unstable terrain, non-commercial brush and deciduous stands. As I am satisfied with the accounting in the analysis, I will not discuss these factors further in this document.

Existing forest inventory

I have reviewed the forest inventory; managed and unmanaged, partially-cut stand and MPB-attack stand yields; operational adjustment factors; and minimum harvestable age. As I am satisfied with the accounting in the analysis, I will not discuss these factors further in this document.

- species profile and age-class distribution

Within the THLB, stands with interior spruce as the dominant species are the most common (47 percent) and the majority of these stands are at least 100 years of age. The next most prevalent stands are those dominated by pine (26 percent), balsam (15 percent) and Douglas-fir (6 percent). Of these stands, spruce-leading stands are at significant risk due to endemic populations of spruce bark beetle (see *bark beetles*). Furthermore, about

60 to 65 percent of pine-leading stands are older than 35 years of age; the age at which pine on the TFL is usually susceptible to MPB infestation. Therefore, given the projected mortality due to MPB is 85 percent, about 16 percent of the THLB is occupied by pine stands that are either dead or dying.

The risk associated with spruce bark beetle and the large amount of MPB-infested pine has serious implications for the timber supply of this TFL, which are central to this determination, as discussed under *Reasons for decision*.

Harvest sequencing

According to the licensee, the objective of the analysis was to maximize the recovery of MPB-attacked pine within the first 10 years of the harvest forecast. In order to achieve this objective, stands with a pine content greater than 50 percent, between 30 percent and 50 percent and less than 30 percent were assigned high, medium and low priority, respectively. Following the harvest of stands in approved cutting permits, stands were assumed to be harvested in order of priority. Stands with the highest average pine content were salvaged first, thereby maximizing recovery.

MFR district staff indicated these assumptions are consistent with current conditions on the TFL. I was informed that during the period 2005 – 2006, about 86 percent of the licensee's harvest consisted of wood attacked by either MPB or spruce beetle. The remaining 11 percent and 3 percent of the harvest included undamaged stands and salvage of blow down, respectively. During this period, in response to a MFR request, the licensee focused harvest operations in the adjacent Quesnel TSA in order to maximize the salvage of dead pine in a management unit that is pre-dominantly pine. This response resulted in an under-utilization of the AAC. District staff indicated that since 2006, the licensee has redirected its harvesting operations to the TFL and it is currently harvesting the full AAC.

Based upon my review of the information provided and discussions with district staff, I conclude that the harvest sequencing used in the analysis reflects current practice and is therefore appropriate for use in this determination.

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

Expected rate of growth

I have reviewed the information regarding not-satisfactorily restocked areas, genetic gains, and silvicultural systems as documented in the licensee's analysis. I am satisfied that the assumptions regarding these factors reflect current practice and are therefore suitable for use in this determination.

- regeneration delay

In the base case, the time elapsed between harvesting and the establishment of a new stand – regeneration delay – was assumed to be 2 years for all harvested stands, except for unharvested high priority stands – stands older than 35 years with pine volumes greater than 50 percent. Following expiration of shelf life, these stands were assumed to regenerate after 15 years to natural stands with no volume remaining from the original stands. Therefore, in the analysis high priority pine stands growing on 'moist' or 'wet'

sites were assumed to be non-productive for 15 years and 20 years, respectively. Stands regenerated after harvest were assigned to managed stand yield tables in order to reflect the greater productivity of these stands.

MFR district staff reviewed the regeneration delay assumptions used in the analysis and indicated that they accurately reflect current stand regeneration in the TFL.

I have reviewed the regeneration delay information used in the analysis. Based on my discussions with district staff, I accept that the assumptions accurately reflect current conditions on the TFL and are therefore suitable for use in this determination.

- fertilization

In the analysis, managed stand yields were not adjusted to account for the use of fertilizers. According to the licensee, it has fertilized 4144 hectares of young spruce and Douglas-fir stands over the last two years. MFR district staff reviewed the licensee's fertilization program and informed me that for every one hectare fertilized there is a corresponding increase of 7 to 10 cubic metres in stand volume per application of fertilizer. Therefore, fertilization of these stands has the potential to increase the volume of spruce and Douglas-fir in the TFL by 29 000 cubic metres to 41 440 cubic metres. Furthermore, the increased rate of growth observed in these stands may reduce the age at which these stands are suitable for harvest.

Based on my review of the analysis and discussions with district staff, I conclude that not accounting for the fertilization of 4144 hectares of spruce and Douglas-fir stands represents an underestimation of managed stand volume in the range of 29 000 cubic metres to 41 000 cubic metres. This also likely represents a slight overestimation of the minimum harvestable ages associated with these stands. Therefore, I will account for a small, unquantified upward pressure in the mid- to long-term timber supply projected in the base case, as discussed in my *Reasons for decision*.

(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,

I have reviewed the information regarding utilization standards and decay, waste and breakage as documented in the licensee's analysis, with MFR staff. I am satisfied that the assumptions regarding these factors accurately reflect current conditions in TFL 52 and are therefore appropriate for use in this determination.

- log grades

New log grades were implemented for British Columbia's Interior in April, 2006. Under the previous log grade system, a log was assessed according to whether the tree it came from was alive or dead at the time of harvest. Grade 3 and grade 5 logs from trees dead at the time of harvest are now charged against the AAC; whereas, in the previous system they were not charged.

The timber supply analysis did not include volumes from trees dead at the time of harvest that could potentially be used as sawlogs ('dead potential') in the base case. For TFL 52, data from the provincial harvest billing system indicated that for the period from 1995 to 2004, when taking dead potential logs to the mills was solely at the discretion of the licensee, dead potential volume averaged 7 percent of the green volume. District staff indicated that although the trend in the 1995 to 2004 data was upward due to increased

harvesting of MPB-infested pine, use of the average figure of 7 percent was a reasonable reflection of current practice.

I recognize the need to account for dead potential volumes in my determination given the log grade changes, and in discussions with MFR staff, I am satisfied the harvest billing system data provides a reasonable estimate of these volumes for this TFL. Therefore, I accept that the base case short-term timber supply has been underestimated by 7 percent due to log grade changes and I will account for this in my determination, as discussed under *Reasons for decision*. To reduce the uncertainty in unmanaged stand yields for future determinations, I request that the licensee ensure the inventory projections used in the next timber supply review include estimates of dead potential volumes, as noted under *Implementation*.

(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,**

Integrated resource management objectives

I have reviewed the information regarding landscape-level biodiversity, mule deer habitat and forest corridors, as documented in the licensee's analysis and the information presented to me at the AAC determination meeting. I am satisfied that the assumptions regarding these factors reflect the best available information and reflect current practice and are; therefore, suitable for use in this determination.

- Cariboo-Chilcotin Land Use Plan

TFL 52 is included in the area covered by the Cariboo-Chilcotin Land-Use Plan (CCLUP) approved by Cabinet in October 1994. A Higher Level Plan (HLP) Order, making a number of components of the plan legally binding under the *Forest Practices Code of BC* and subsequently under the *Forest and Range Practices Act*, was established by Cabinet in January, 1996. An approved CCLUP Integration Report was published in April 1998 to ensure compatibility between components of the CCLUP, following which a Variation to the HLP Order was issued in June 1999. In 2005, a report entitled, *Summary of CCLUP Legal Requirements and Selected Non-Legal Direction* was approved by the Cariboo Managers' Committee for use by licensees when preparing operational plans. The draft Quesnel Sub-Regional Plan (QSRP), which is intended to provide more detailed direction to guide operational planning, is currently before the committee for approval. Forest development in the TFL is required to be consistent with the 1999 HLP Order and 2005 CCLUP direction.

I have considered the land and resource use guidance provided by government's CCLUP and associated components, as addressed in my considerations throughout this document. Any changes in management practices that occur due to implementation of the Quesnel Sub-Regional Plan can be considered at the time of the next determination.

- riparian areas

Reconnaissance-level (1: 20 000) fish and fish habitat inventories, including wetlands, swamps and lakes, were completed for both blocks of TFL 52 in 2001. In 2004, the Ministry of Environment (MOE) and Department of Fisheries and Oceans completed a critical fish habitat mapping project for block 'A'. Areas deemed as critical habitat were

either incorporated into riparian reserve zones or, more commonly, included in old growth management areas.

For the timber supply analysis, six stream classes (S1 – S6), consistent with the *Forest Planning and Practices Regulation*, were buffered. In the analysis, buffers to riparian reserve zones (RRZ) measured 50 metres, 30 metres, and 20 metres in width and were assigned to S1, S2, and S3 streams, respectively. Ten-metre wide RRZs were assigned for lake classes A – E and for wetland classes W1 and W3. Forest cover requirements for riparian management zones (RMZ) were converted into equivalent land base deductions and—with the exception of the S6 stream buffers—combined with the reserves into riparian buffers. In total to account for riparian resources about 13 600 hectares were excluded in deriving the THLB.

District staff indicated the riparian area assumptions used in the analysis appropriately reflect current practice on the TFL. They also informed me that the current management practices for riparian areas, are consistent with the requirements under *FRPA* and the *Forest Planning and Practices Regulation (FPPR)* that protect fish and wildlife habitat, water quality and stream flows.

Based on my review of the information provided and discussions with MFR district staff regarding riparian area management, I conclude that the assumptions used in the base case are reflective of current practice and are appropriate for use in this determination.

- *stand-level biodiversity*

Section 66 (1) of the *Forest Planning and Practices Regulation* specifies that a minimum of 7 percent of the total area of cutblocks must be covered with wildlife tree retention areas, commonly referred to as wildlife tree patches (WTP). Where appropriate, overlap with areas of productive forest excluded from harvesting for the management of other non-timber resources, such as OGMAs or riparian areas, can be considered.

Existing WTPs, which represent 0.7 percent and 2 percent of the productive forest land base of blocks ‘A’ and ‘B’, respectively, were spatially located and excluded from the THLB. In its analysis, the licensee assumed that all future WTPs could be located within permanent OGMAs, which account for about 7 and 6 percent of the THLB on blocks ‘A’ and ‘B’, respectively. Therefore, in the analysis no additional THLB exclusions were made to account for future WTP requirements.

District staff indicated that the stand conditions and spatial distribution of OGMAs in TFL 52 do not always meet the requirements for WTPs. They also noted that a 1 percent overlap between riparian reserves and WTPs was assumed in the adjacent Quesnel TSA timber supply analysis and indicated that a similar assumption should apply to TFL 52.

I agree with MFR district staff that WTPs must provide both the appropriate stand conditions and spatial distribution to support the needs of wildlife and agree that not all OGMAs may be appropriate in this regard. I note that in a sensitivity analysis, decreasing the size of the THLB by 5 percent resulted in a 6.7 percent and 4.4 percent decrease in the mid- and long-term timber supply, respectively.

For this determination, I accept the assumptions used in the base case for existing wildlife tree patches. However for future areas, in consideration of the potential overlap of 1 percent between future wildlife tree patches and riparian areas and an unknown amount of overlap with those OGMAs that meet the requirements for wildlife tree patches,

I conclude that the timber harvesting land base could be overestimated by up to 5 percent. Based on the results of the sensitivity analysis, a change of this magnitude would result in up to a 4 percent and 5 percent overestimation in the mid- to long-term timber supply, respectively, and I will account for this in my determination, as discussed in *Reasons for decision*.

- *Conservation Legacy Areas*

Conservation legacy areas (CLA) are a new land base category described in a report entitled *The Quesnel Forest District Enhanced Retention Strategy for Large Scale Salvage of Mountain Pine Beetle Impacted Stands* (Quesnel Forest District Enhanced Retention Strategy Committee, 2006). In its report, the committee identified the need to increase retention levels in pine-leading stands during large-scale harvest of MPB-infested stands.

Landscape units (LU) requiring enhanced retention are identified on the basis of pine inventory and availability of pine-leading stands outside of the THLB. Retention levels are expected to vary between 15 percent and 25 percent depending on stand-level opportunities for CLA deployment and the size of salvage cutblocks. Where operationally feasible, priority for CLA location is to be given to riparian areas, particularly where there is overlap with areas required for wildlife corridors, identified wildlife, archaeological sites, environmentally-sensitive areas or unstable terrain.

Based on the considerations described in the strategy, licensee and MFR district staff concluded that the Umiti and Victoria LUs required enhanced stand-level retention. Due to the temporary nature of CLAs, the requirements for additional stand-level retention were incorporated in the analysis as forest cover requirements instead of further exclusions of productive forest area from the THLB. After adjusting the 20 percent default stand-level retention target to account for suitable productive areas excluded from the THLB, 16.4 percent and 13 percent of pine-leading stands on the THLB older than 100 years or 120 years, depending on the BEC variant, were retained in the Umiti and Victoria LUs, respectively.

MOE staff were concerned that increased stand-level retention was only assumed for two of the LUs in the TFL and that large contiguous cutblocks could potentially occur in all of the LUs. MFR staff note all LUs were assessed on the basis of the selection criteria in the *Enhanced Retention Strategy for Large Scale Salvage of Mountain Pine Beetle Impacted Stands* and only the Umiti and Victoria LUs had large inventories of pine-leading stands in the THLB requiring salvage. Furthermore, they indicated that this strategy was developed for the Quesnel TSA, in which 75 percent of stands are pine-leading stands. TFL 52 has a larger proportion of mixed-conifer stands and pine-leading stands only occupy 26 percent of the THLB. Therefore, district staff do not expect large clearcuts in LUs outside of the Umiti and Victoria LUs.

MFR district staff informed me that the application of the forest cover retention requirements at a landscape level rather than at the intended stand level likely resulted in an underestimation of forest cover constraints. Analysis staff agreed with this observation; however, they noted that the Umiti and Victoria LUs are relatively small in comparison with the TFL as a whole and any underestimation would have relatively little impact on the timber supply projected in the base case.

Based on my review of the information regarding CLAs and input from staff, I note that the selection of landscape units for deployment of CLAs in the analysis was consistent

with the selection criteria outlined in the *Enhanced Retention Strategy for Large Scale Salvage of Mountain Pine Beetle Impacted Stand*. However, application of the enhanced retention targets at a landscape-level rather than a stand-level may have resulted in a slight underestimation of the impact of CLAs on timber supply. Given the relatively small size of the landscape units concerned, I conclude that any impact on harvest levels is negligible. Therefore I accept that the CLA assumptions are adequate for use in this determination. For the next determination, I recommend that the licensee review its approach to incorporating CLAs in its timber supply analysis.

- *identified wildlife*

Identified wildlife are those wildlife species and plant communities that have been approved by the provincial government as requiring special management. On February 19, 1999, the province announced its Identified Wildlife Management Strategy (IWMS) for dealing with endangered, threatened, vulnerable, and regionally significant species that have not been accounted for by existing management strategies for biodiversity, riparian management or ungulate winter range, or through the application of other forest cover constraints.

In areas covered by the CCLUP, management objectives for identified wildlife are required to be achieved without compromising the targets established in the plan for timber supply. Where possible, areas needed to manage for identified wildlife are expected to overlap with those reserved for other non-timber values, such as riparian areas, wildlife tree patches and old-growth management areas. Where this is not possible, the impact of areas designated as WHAs is to be managed within the total impact budget for non-timber values on the CCLUP targets.

In the chief forester's AAC determination for the neighbouring Quesnel TSA, he concluded that pending any new direction provided by sub-regional strategies and subsequent analysis, the CCLUP contains adequate provisions for meeting the objectives for identified wildlife species. For TFL 52, no WHAs have been established and the base case did not account for potential WHAs that may be established in the future.

MOE regional staff indicated that identified wildlife known to occur in the TFL include species such as bull trout, grizzly bear, fisher, sandhill cranes, wolverines and mountain caribou (discussed separately under *mountain caribou*) and based on review of the analysis, expressed concern that the habitat requirements for these species had not been appropriately reflected in the base case. MOE staff also noted that the increase in MPB-salvage proposed by the licensee could further limit habitat availability. This concern was also expressed by the Nazko First Nation and Lhatko Band at the February 2007 meeting.

I have reviewed and discussed the information regarding identified wildlife, including the concerns expressed by the Nazko First Nation, Lhatko Band, and MOE staff, as well as the approach taken by the chief forester in the adjacent Quesnel TSA. I note that species requiring special consideration under the IWMS have been identified and no specific WHAs have been established. Information regarding the extent of the forest cover provisions necessary for their management is not currently known. Furthermore, any WHAs established in the future must either overlap areas previously excluded from the THLB or remain with the targets specified in the CCLUP. Therefore, I conclude that the

identified wildlife assumptions used in the base case are based on the best available information and I will make no further adjustments on this account.

- *caribou*

General wildlife measures to maintain the caribou habitat values identified in the CCLUP were established in December, 2004 by Orders issued under the *Government Actions Regulation*. These orders established two caribou management zones: a 'no harvest' zone, in which up to 10 percent of the area is eligible for harvesting to allow for forest health management activities, providing caribou habitat is not compromised; and a 'modified harvest' zone, in which partial harvesting is permitted on a 240-year harvest rotation.

In the analysis, area associated with the no-harvest zone was fully excluded from the THLB because the specific location and timber types in which disturbance could occur were unknown. In keeping with the 240-year partial harvesting rotation, stands in the 'modified harvest' zone were assumed to be harvested in three passes, in which one-third of the stand was harvested every 80 years. In combination with the habitat requirements for other ungulates, a total of 19 940 hectares of land were excluded from the THLB.

District staff note that the analysis did not account for a recently issued GAR Order for Caribou in the Quesnel Highlands that took effect February 12, 2009. As a result of this Order, about 430 hectares – or 0.02 percent of the THLB – previously classified as 'modified harvest' or 'conventional harvest' were reclassified as 'no harvest'.

I am aware that about 430 hectares in the TFL previously classified as 'modified harvest' or 'conventional harvest' that were classified as 'no harvest' were not excluded from the THLB. However, I note that even if the full 430 hectares originally contributed to timber harvesting, the magnitude of the overestimation in the size of the THLB is relatively insignificant – about 0.02 percent. Therefore, I will make no adjustment to the harvest levels projected in the base case on this account. This new information can be incorporated in the next timber supply analysis.

- *hydrology*

MFR hydrologists have indicated the unprecedented scale of the MPB infestation and the widespread mortality of pine stands may adversely affect watershed and hydrological processes. Stand mortality and salvage logging impact watershed hydrology by affecting the: total amount of water flowing out of a watershed; magnitude and timing of the highest stream flows; and erosion processes and sedimentation. Loss of pine needles reduces the amount of water lost through transpiration, decreases snow interception and interferes with sublimation – the process of snow and ice changing directly into water vapour without first melting into water, which results in an increased snow pack. The reduced shade levels in dead pine stands may also accelerate snow melt.

In March 2007, the Forest Practices Board released a study of potential changes in stream flow following MPB attack and salvage harvesting in the Baker Creek watershed west of Quesnel, to the west of TFL 52. Although the study area is located outside of the TFL, the study suggests that salvage logging of beetle-infested trees can significantly increase stream flows and the frequency of floods.

MFR research ecologists and hydrologists are actively engaged in research projects involving MPB and hydrology in the Central Interior. These include studies on watershed sensitivity, snow accumulation and melt, the effects of riparian timber harvesting on fish

habitat and ecology of small streams, and assessments of forest types along S4 creeks in pine-leading stands.

I have considered the concerns expressed by MOE staff regarding the potential hydrologic implications of large-scale salvage in TFL 52. These concerns included: rising water tables, adverse impacts on riparian and fish habitat, and water quality. I note that in the timber supply analysis for TFL 52, hydrologic considerations were not explicitly modelled. However, forest cover requirements for visual quality, landscape-level biodiversity, stand-level biodiversity and wildlife were incorporated into the analysis. In addition to these provisions, the analysis incorporated conservation legacy area assumptions consistent with the recommendations of the Quesnel Forest District Enhanced Retention Strategy Committee in 2006. These recommendations were developed in part to minimize the potential impact of large-scale salvage on hydrologic function. In practice, CLAs and forest cover objectives associated with visual quality, landscape-level and stand-level biodiversity and wildlife will help to lessen hydrologic impacts by guiding harvesting operations and providing for a distribution of harvested areas and retained forest cover in a variety of age classes across the landscape.

Based on my review of the information provided by MFR and MOE staff, I conclude that the forest cover requirements used in the analysis for non-timber resources, including CLAs, help to mitigate the risk associated with large-scale MPB salvage in TFL 52. Therefore, for this determination I will make no further adjustments to the harvest levels projected in the base case. However, as noted in *Instructions*, I request that MFR staff in cooperation with the licensee and MOE specialists continue to monitor impacts to hydrologic function due to large-scale salvage on the TFL. If significant new information regarding the hydrologic impacts associated with MPB salvage is made available, then I am prepared to revisit this determination sooner than the five years required by legislation.

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

Other information

I have reviewed the information regarding the 20-year plan and I identify no issues that would impact this determination.

With regards to licence AAC and actual harvest performance, MFR district staff note that the licensee's performance has been exemplary. It has focused a high percentage of its harvesting activities in the TFL in MPB-infested stands. At the request of the MFR Regional Manager, the licensee directed much of its pre-2006 harvesting in the adjacent Quesnel TSA. In recent years the licensee has refocused on the TFL and is now utilizing its full licence AAC.

I have reviewed and discussed the information regarding the licensee's harvest performance in TFL 52 and identify no issues that would impact this determination.

First Nations Considerations

TFL 52 is situated within the asserted traditional territory of the Lhtako, Nazko, Lheidli Tenneh, Xat s'ull, William's Lake Band and the Tsilhqot'in First Nations.

Currently, Lheidli T'enneh is in negotiation to finalize a treaty and the Nazko Band is in negotiation of an agreement-in-principle (Treaty Process Stage 4).

- *First Nations consultation*

The licensee provided the following description of its First Nations information sharing process.

- January 22, 2007 the Williams Lake Indian Band informed the licensee that they have no interests overlapping TFL 52.
- March 12, 13 and 14, 2007, the licensee delivered copies of the *TFL 52: Timber Supply Review Information Package* (IP) to the Lheidli T'enneh, Williams Lake Indian Band and Lhatko offices.
- March 13, 2007 the licensee met with a representative of the Xat s'ull to review the IP. No specific concerns were expressed at that time and no subsequent comments were received.
- March 14, 2007, the licensee met with a representative of the Nazko First Nation to review the IP. No specific concerns were expressed at that time. Following this meeting, on April 2 and 17, 2007, the licensee sent a follow-up e-mail and letter to the Nazko. No concerns or comments were received.
- October 5, 2007 to October 12, 2007, provided the *TFL 52: Timber Supply Analysis Report* (TSAR) to Lheidli T'enneh, Xats'ull, Williams Lake, Nazko and Lhtako First Nations, along with a cover letter stating that the MFR would be communicating with First Nations regarding the upcoming TSR.
- April 27, 2007 the Regional Executive Director (RED) for the MFR Southern Interior Forest Region sent a letter to the Lhtako, Nazko, Lheidli Tenneh and Xat'sull notifying them of the upcoming timber supply review and the pending decision on the approval of Management Plan No. 4 for TFL 52. First Nations were invited to review the attached draft management plan, a TFL 52 area map and a TSR backgrounder and to provide any information on how their aboriginal interests might be affected by the TSR and the approval of Management Plan No. 4 by June 27, 2007.
- December 13, 2007, the RED sent a second letter to First Nations inviting them to review and provide information regarding the attached IP and TSAR by December 27, 2007. This deadline was extended to February 29, 2008.
- February 22, 2007, MFR district staff and representatives of the Nazko and Lhtako First Nations met to discuss the IP, TSAR and a report prepared by the MOE. Minutes of this meeting, were signed by the Chiefs of the Nazko and Lhtako First Nations and were provided to the deputy chief forester for consideration in determining this AAC (see *First Nations interests*).
- April 17, 2008, the deputy chief forester reviewed the February meeting minutes with MFR staff by teleconference.

Since the initial consultation of April 27, 2007, the Tsilhqot'in Nation have expanded their asserted traditional territory to include the TFL 52, which now falls in the area known as the "Charleyboy Writ". Although TFL 52 is outside the primary caretaker areas of the

Tsilhqot'in Nation, a notification letter was sent to the Tsilhqot'in National Government and copied to the Toosey Band, Tl'etinqox Government Office and the Ulkatcho Band as indicated in the *Interim Guidance regarding First Nation Consultation in response to the Tsilhqot'in Nation (Roger William) vs BC ("William") Decision*. The letter requests comments on how aboriginal interests would be affected by the AAC determination.

MFR regional staff met with the Ulkatcho referral coordinator on November 24, 2008. The referral coordinator noted that the Ulkatcho asserted territory overlaps the western portion of the writ area, which is outside of the TFL. However, she indicated the Ulkatcho Chief and Council wanted to be notified of any decisions pertaining to the entire writ area, in order to inform the Tsilhqot'in people within the Ulkatcho First Nation. The referral coordinator acknowledged receipt of the November 9, 2009 notification letter.

MFR staff note there have been no responses to the November 9, 2008 notification letter. I have reviewed the record and the aboriginal interest information available through the First Nations consultation process as reported by the licensee and district staff. I believe the licensee and staff engaged in consultation at an appropriate level in line with expectations as outlined in the Haida decision. As noted in *Guiding Principles*, my AAC does not imply any particular pattern of activity on the ground.

- cultural heritage resources

Archaeological overview assessments (AOA) have been completed for the entire TFL. According to MFR staff, detailed archaeological impact assessments are completed as areas are developed. Where archaeological sites have been identified on the TFL, they are generally located along water features, in areas already reserved from harvesting to protect sensitive riparian habitat. Traditional Use Studies (TUS) were completed by the Xats'ull and Nazko in 1998 and 1999, respectively.

Information from the AOAs and TUSs are reviewed by district staff prior to approval of forest stewardship plans. Where necessary, these plans are amended to accommodate First Nation's interests. Staff note archaeological sites identified on the TFL are generally located in areas already excluded from harvesting for riparian management. Where this is not the case, it has been possible to protect them by the establishment of wildlife tree patches.

I am mindful of the licensee's commitment to work with First Nations operationally to ensure cultural heritage resource values are properly managed. For this determination, I am satisfied that the analysis assumptions reflect current management practices and that these practices can accommodate First Nations interest in preserving their cultural heritage resources. Therefore, for this determination, I will make no adjustments to the base case on this account.

- First Nations interests

The Nazko and Lhtako have Forest and Range Use Agreements (FRA) dating from March, 2004 and October, 2005, respectively and the Lheidli T'enneh and Xat'sull have Forest and Range Use Opportunities (FRO) dating from October, 2006 and December, 2006, respectively. The Nazko have submitted a proposal under the Bioenergy Initiative, which is still under consideration.

Throughout this determination I have been mindful of the following concerns expressed by the Nazko and Lhtako:

- high amount of non-pine species to be harvested to recover dead pine;
- large volume of spruce to be harvested to pre-empt spruce beetle infestation;
- all harvesting was assumed to be clearcut with no partial harvesting of dead pine;
- impact of accelerated harvesting on: the mid-term timber supply, fish and wildlife habitat, water quality, traditional use such as medicinal plants, ecological make up of traditional territories, stream flows and water tables and sacred sites (including burial sites);
- prospect of large portions of the territory in even-aged conditions as opposed to working towards increasing species and age diversity;
- economic feasibility of increasing harvest during poor lumber market; and,
- impact on timber supply if actual shelf life is less than the 5 years assumed in the analysis.

The need to balance the salvage of dead pine while it retains economic value with the need to conserve the non-pine component of mixed species stands to minimize potential impacts on the mid-term timber supply is central to this determination, as discussed in *Reasons for decision*.

With regards to the impacts of increased harvesting on fish and wildlife habitat, water quality, medicinal plants and biodiversity, district staff informed me that in addition to meeting the standards established under provincial legislation to protect non-timber resources, conservation legacy areas are being established in the TFL in vulnerable areas to mitigate the impacts of MPB salvage (see *conservations legacy areas, wildlife tree patches, landscape level biodiversity, riparian areas, hydrology, and identified wildlife*).

MFR district staff informed me that a joint First Nations and MFR review of burial sites was planned in 2008; however, First Nations withdrew their support for the project. Therefore, at the time of this determination there is no information regarding the estimated number, general locations or areas associated with these sites. However, based on my discussions with staff, I conclude these areas are being appropriately protected by licensee and district staff at the operational level.

Any new information suggesting that specific exclusions from the THLB are necessary to protect aboriginal interests should be made available to me. On this basis, at this time I find no reason to believe that the timber supply projected in the base case is overestimated with respect to First Nations' interests. If any new information related to First Nations' interests becomes available, including any additional information from the burial site study, this can be considered in future AAC determinations.

As I have noted in my *Guiding principles with respect to First Nations*, the AAC that I determine should not in any way be construed as limiting the Crown's obligations as described in court decisions with respect to aboriginal rights and title. The AAC that I determine does not prescribe any particular plan of harvesting activity within TFL 52 by requiring any particular area to be harvested or not harvested.

As I make my AAC determination, I am mindful of the responsibility of other statutory decision-makers to administer the determined AAC in a manner consistent with other

legislation and with relevant decisions of the courts respecting the interests of First Nations.

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

Alternative harvest flows

In addition to the base case harvest forecast, two alternative harvest flows were projected using the same assumptions as were used in the base case.

In the first alternative, an initial harvest level of 1.0 million cubic metres per year – about 72 percent of the base case level was maintained for 10 years, before declining to a mid-term harvest level of 808 850 cubic metres per year – about 12 percent higher than the base case mid-term harvest level. After decade 5, the harvest level increased to 872 670 cubic metres per year, which is about the same as in the base case. This alternative forecast resulted in about 1 157 375 cubic metres of unsalvaged volumes compared to 647 375 cubic metres of unsalvaged volumes shown in the higher base case forecast. I have considered the merits of this forecast further in my *Reasons for decision*.

In the second alternative, an initial harvest level of 692 800 cubic metres per year – about 50 percent of the base case initial harvest level – was maintained for 10 years before increasing to 819 600 cubic metres per year – about 14 percent higher than the base case mid-term harvest level. After decade 5, the harvest level increased to 868 550 cubic metres per year, which is about 1 percent lower than the base case long-term harvest level. This alternative forecast resulted in about 3 million cubic metres of unsalvaged losses.

In a third alternative harvest forecast in which the MPB assumptions were removed, an even-flow harvest of 874 980 cubic metres per year could be sustained for the entire forecast period. This harvest level is similar to the current AAC of 870 000 cubic metres, 22 percent higher than the base case mid-term harvest level of 719 700 cubic metres per year, and about 1 percent higher than the base case long-term harvest level of 878 930 cubic metres per year.

I have considered the impacts of MPB and alternative harvest levels and their impacts on the mid-term timber supply. In keeping with the Minister of Forests and Range request (*see Minister's Letter*), I have considered the social and economic importance of trying to maintain the mid-term timber supply as much as possible and I will discuss this further in my *Reasons for decision*.

Community dependence

West Fraser operates seven processing facilities: Quesnel Plywood, Cariboo Pulp, Quesnel River Pulp, Westpine Medium Density Fibreboard, Northstar Sawmill, Quesnel Sawmill and Quesnel Laminators. At present, Quesnel Laminators has been shut down and the workers have been deployed to West Fraser's sawmills. The licensee has also relocated its corporate office, including its North American sales office, to Quesnel.

Including administration, these facilities provide direct employment for 1655 people in the region, of which 542 positions are directly attributable to its operations in TFL 52. These facilities also provide 325 indirect positions in logging, trucking, silviculture and consulting of which 130 are directly attributable to operations in TFL 52.

I have reviewed the information and am mindful that the volume harvested from TFL 52 provides a significant contribution to the employment in the local area.

- (d) the economic and social objectives of the Crown, as expressed by the minister, for the area, for the general region and for the Province; and**

Minister's letter

The Minister of Forests and Range has expressed the economic and social objectives of the Crown in a letter to the Chief Forester, dated July 3, 2006 (attached as an appendix to this document).

In this letter, the minister outlines a number of government goals, including the creation of more forestry jobs per capita than anywhere in Canada and leading the world in sustainable environmental management.

In keeping with these goals, the minister has asked for consideration of the importance of a stable timber supply in maintaining a competitive and sustainable forest industry, while being mindful of other forest values. I have considered the incorporation of these principles throughout my review of the timber supply projected in the base case and alternative harvest flows for TFL 52, and in my determination of this AAC.

With regard to the mountain pine beetle outbreak in the interior of British Columbia, the Minister's letter highlights the need to maintain or enhance the mid-term timber supply and to consider current economic and market conditions. This is of particular relevance to TFL 52, and I will discuss this further under *Alternative harvest forecasts* and in my *Reasons for decision*.

Finally, the minister suggests that the chief forester should consider the local social and economic objectives expressed by the public and relevant information received from First Nations (see *First Nations Considerations*).

According to the licensee, advertisements informing the general public that the *TFL 52: Timber Supply Analysis Report* and *Twenty-Year Plan* were available for review were placed in a local newspaper between October 10 and October 21, 2007.

I have reviewed the public process as reported by the licensee and MFR district staff and note that no responses were received during this process. Based upon my review, I conclude that the licensee has carried out its public involvement obligations satisfactorily

- 8(3)(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.**

Bark beetles

According to a report prepared by the MFR entitled the *Quesnel TSA Forest Health Strategy: 2008 – 2009*, bark beetle infestation in spruce, Douglas-fir and pine stands, and wind throw in spruce and Douglas-fir stands continue to pose serious threats to forest resources in the Quesnel Forest District, including TFL 52. In the strategy, risk ratings were assigned on the basis of pest distribution and incidence, host susceptibility, and known or suspected risk to forest resource values. Both spruce beetle (*Dendroctonus rufipennis*) and Douglas-fir beetle (*Dendroctonus pseudotsugae*) were classified as 'very high risk', and MPB and wind throw were classified as 'high risk'.

In letters, dated March 5, 2008, the provincial bark beetle coordinator re-designated emergency bark beetle management units (EBBMU) under Section 109 (1) of the

FPPR for spruce beetle, Douglas-fir beetle and MPB in the Quesnel Forest District. The spruce beetle and Douglas-fir beetle EBBMUs were designated as 'aggressive' and assigned a 'suppression' classification; whereas, the EBBMU for MPB was classified as 'salvage'. Suppression strategies for spruce and Douglas-fir beetle are intended to reduce beetle populations to endemic levels by eliminating 80 percent of new broods.

Licensee and MFR district staff indicated that spruce beetle is a concern in TFL 52, where stands dominated by interior spruce occupy 47 percent of the THLB. Douglas-fir beetle is a lesser concern in the TFL than in the Quesnel TSA, as stands dominated by Douglas-fir only occupy about 6 percent of the THLB.

The base case initial harvest level of 1 371 680 cubic metres per year included 140 000 cubic metres per year of stands in which spruce represents 65 percent or more of the forest cover on the THLB. The licensee indicated that its spruce harvest assumptions were based on its need to continue spruce beetle suppression activities, including the salvage of wind-thrown spruce that may provide brooding habitat.

MOE staff expressed concern regarding the level of spruce harvest assumed in the analysis and the potential impacts on non-timber resources, such as riparian areas, water quality, and fish and wildlife habitat. In response, MFR district staff noted that with the incidence of spruce beetle infestation and the associated impacts on non-timber resources, the assumptions used in the base case represent prudent practice. They also noted that the licensee has been actively participating in beetle suppression, using the full range of beetle control measures, in both the adjacent TSA and in the TFL and expect this to continue.

As I mentioned above, in a meeting held February 22, 2008, MFR district staff met with representatives of the Nazko First Nation and Lhtako Indian Band to discuss the timber supply analysis. The Nazko and Lhtako representatives expressed concern regarding the inclusion of spruce harvested in the analysis to pre-empt a spruce beetle epidemic. They questioned whether the licensee was making use of trap trees and post-harvest treatments to reduce the risk of spruce beetle infestation and to conserve non-pine stands on the THLB in order to support the mid-term timber supply.

MFR district staff informed me that the licensee is using trap trees, post-harvest treatments and other risk abatement interventions. They indicated that the licensee is actively participating in forest health management initiatives on the TFL and adjoining TSA. Furthermore, staff indicated that the licensee is focusing on high priority MPB-attacked pine stands, where possible.

I have reviewed the bark beetle and wind throw assumptions used in the analysis. Based on the direction provided by the provincial bark beetle coordinator and my conversations with MFR and MOE staff, I conclude that ongoing efforts to suppress spruce beetle and to salvage wind throw to remove potential breeding sites are necessary to reduce the risk of a spruce beetle epidemic. Therefore, I accept that the assumptions used in the analysis for spruce beetle and wind throw represent current forest health management, and are suitable for use in this determination.

Nonetheless, as noted below in *Instructions*, I request that the licensee and MFR staff continue to monitor the harvest level to ensure the maximum level of pine harvesting and the minimum level of non-pine harvesting is followed. This will help to reduce the volume of unsalvaged pine that will exceed shelf life, while at the same time minimizing the harvest of green and non-pine stands needed for the mid-term. At this time,

I understand the levels of spruce and to a lesser extent Douglas-fir beetles in the TFL have not reached epidemic levels; however, if this situation changes I request to be advised immediately of any significant changes. If significant new information regarding bark beetle activity is made known to me, I am prepared to re-visit this determination prior to the five years required by legislation.

- non-recoverable losses

The total conifer volume in stands with a pine component on the THLB of TFL 52 is about 16 million cubic metres. About 7.4 million cubic metres of this volume is pine that meets current merchantability criteria. The vast majority of the pine trees that make up this volume are either dead or dying due to the MPB infestation.

According to the licensee, its key objective in the base case was to maximize the recovery of MPB-attacked pine prior to the end of its shelf life, i.e. the length of time MPB-killed pine remains merchantable. In the base case, a harvest level of 1 371 000 cubic metres for the first 10 years of the forecast period resulted in non-recoverable losses of 647 370 cubic metres or about 9 percent of the total volume attributed to pine on the THLB.

Decreasing the initial harvest level by 17 percent to 1.0 million cubic metres per year for the first 10 years of the forecast period increased non-recoverable losses to 1 157 375 cubic metres, which represents about 16 percent of the total volume of pine on the THLB. Decreasing the initial harvest level even further, to 692 800 cubic metres, resulted in NRLs of 2 952 250 cubic metres or about 40 percent of the total volume of pine on the THLB.

MFR district staff have reviewed the information regarding non-recoverable losses and indicated they reflect current conditions in the TFL. Therefore, I accept the assumptions regarding non-recoverable losses are suitable for use in this determination. However, I am mindful of the need to balance the recovery of dead pine in the short term, with the need to maintain mid-term timber supply as much as possible by protecting other species that may comprise a significant component of a forest stand, while minimizing potential impacts to non-timber resources and will discuss this further in my *Reasons for decision*.

- shelf life

Based on the licensee's experience, reflected in the base case and two alternative harvest forecasts, it was assumed that the volume attributable to dead pine stands 36 years of age and older on 'moist' sites remained merchantable for up to 10 years after attack by MPB; whereas, dead pine stands on 'wet' sites remained merchantable for 5 years. No pine stands were assumed to be on 'dry' sites.

MFR and MOE district staff stated the water table in areas with dead pine stands appears to be increasing and that stands previously classified as 'dry' and 'moist' are now considered 'moist' or 'wet', respectively. They indicated there are no longer 'dry' stands in the THLB and note the licensee is encountering stands with shorter than previously estimated shelf life.

During the meeting with MFR district staff, representatives of the Nazko and Lhtako First Nations reported observations similar to those of MFR and MOE staff. They were concerned the increased ground water levels in dead stands could result in a shorter shelf life than assumed in the base case.

MFR analysis staff noted that reducing the shelf life from the 10 years assumed in the base case to 5 years would increase the proportion of unsalvaged high priority pine stands – those stands in which pine represents 50 percent or more of the stand volume. The regeneration delay of unsalvaged high priority pine stands is 13 years longer than salvaged high priority stands. Furthermore, unsalvaged high priority stands were assumed to regenerate as natural stands, which have lower growth rates than managed stands. The effect of increased regeneration delay and reduced productivity could result in a small reduction in the long-term timber supply compared to the base case.

I have reviewed the information regarding the shelf life of dead pine and agree that the increasing moisture conditions in the TFL could result in a shorter shelf life for some stands. This could result in a higher proportion of unsalvaged MPB-killed pine stands and impact timber supply forecasts due to the appurtenant increase in regeneration delay and full regeneration to natural stands for a proportion of MPB-killed stands. If these stands are not harvested or rehabilitated, the lower mid-term level could be longer than projected in the base case and I will discuss this in my determination, as discussed in *Reasons for decision*.

- *secondary stand structure*

The results of timber supply analysis indicate it will not be possible to harvest all the MPB-killed pine-leading stands before the dead pine component deteriorates beyond the point it can be economically harvested. Based on a review of pine-leading stands killed by MPB in the 1990's, researchers recommended that in stands with adequate stocking densities of suitable secondary structure – surviving saplings, pole-sized and merchantable trees should be left unharvested, so that the secondary structure could develop into a merchantable forest and support mid-term timber supply. They also noted that if MPB-killed pine stands without secondary stand structure were not harvested, it could take many more years than assumed in before new stands naturally regenerated.

Following these recommendations, on June 26, 2008, Cabinet amended the Forest Practices and Planning Regulation (*FPPR*) to conserve secondary stand structure in forest management units affected by the MPB epidemic. The intent of the amendment is to mitigate the mid-term impacts of large-scale MPB salvage on both timber and non-timber forest resources. Section 1 (1) of the *FPPR* provides a list of the TSAs and TFLs, including TFL 52, that 'may contain targeted pine-leading stands' subject to secondary structure retention regulations. Section 43.2 of the *FPPR* enables the chief forester to add or delete TSAs and TFLs from those listed under Section 1 (1), and specifies that any orders issued under this section be contained in the AAC determination for the management unit.

In reaching my AAC determination for TFL 52, I am mindful of the secondary stand structure provisions of the *FPPR*, and based on my review of the information provided to me for this determination, I conclude that it is still appropriate for TFL 52 to be identified in the regulation as a management unit that 'may contain targeted pine-leading stands' subject to the provisions of the *FPPR*.

Reasons for Decision

In reaching my AAC decision for TFL 52, I have considered all of the factors required under the *Forest Act* Section 8 and have reasoned as follows:

For the reasons stated in this document, I accept the licensee's base case as an adequate basis from which to assess timber supply for the purpose of this AAC determination.

The base case forecast I have chosen as the reference point for this determination projects an initial harvest level of 1 371 680 cubic metres per year for one decade before declining by 52 percent to 719 700 cubic metres per year. The long-term harvest level of 878 930 cubic metres per year was reached after the fifth decade. I note this forecast assumes all harvesting is focused on pine stands, with the exception of about 140 000 cubic metres per year on high priority spruce-beetle affected stands.

For this determination, I am accounting for two factors that indicate the timber supply in the base case has likely been overestimated, as follows:

- *wildlife tree patches*: To account for the appropriate distribution and area for wildlife tree patches that do not overlap with riparian reserves and that do not overlap with old-growth management areas, I accept that the short- to mid-term timber supply has been overestimated by up to 5 percent.
- *shelf life*: To account for the risk of a shorter shelf life on the proportion of MPB-killed stands that are experiencing increasing ground water levels, I accept that the lower mid-term level could be longer than projected in the base case.

For this determination, I am accounting for two factors that indicate the timber supply in the base case has likely been underestimated, as follows:

- *fertilization*: To account for the impact on managed stand yields of omitting the fertilization of 4144 hectares of spruce and Douglas-fir stands, I accept that the volume of timber available in the mid-term of the forecast period has been underestimated by up to 41 000 cubic metres or about 5 percent.
- *Interior log grades*: To account for the change in log grades on the volume estimates for existing natural stands used in the base case, I accept that the short-term timber supply has been underestimated by 7 percent.

In reaching my determination, I have evaluated the factors above and note that their net effect on the short- to mid-term timber supply is likely small in magnitude. In any event, their effect over the next 5 years is overshadowed by the risk of significant unsalvaged volumes due to the mountain pine beetle infestation in the TFL.

In addition to considering the upward and downward factors noted above, I have reasoned as follows. Pine-leading stands occupy about 52 000 hectares or 26 percent of the timber harvesting land base and contribute significantly to the harvestable volumes on the TFL. In assessing the effect of the initial harvest level on non-recoverable pine losses, I note that the base case initial harvest level of 1 371 680 cubic metres per year resulted in non-recoverable pine losses of 647 370 cubic metres or about 9 percent of the dead or dying pine volume on the TFL. Over the initial 10-year period, the forecast recovered the highest volume of pine as it assumed all harvesting would focus on pine stands, with the exception of about 140 000 cubic metres per year on high priority spruce-beetle affected stands.

In recent years, local spruce beetle reproduction has increased and the licensee, as confirmed by district staff, has found it necessary to harvest about 140 000 cubic metres per year of spruce in order to hold spruce beetle populations at endemic levels. Nonetheless, the species composition of the TFL is fairly diverse, pine occupies 26 percent of the timber harvesting land base. The remaining area is mostly comprised of spruce and a mix of balsam and Douglas-fir. Therefore, achieving a high degree of pine harvest will likely require some incidental non-pine harvest. As has been stated in many other AAC determination rationales, it is neither likely nor desirable to expect full salvage of all dead pine. Given there will be unsalvageable losses, these losses should be more effectively managed by leaving the smaller composition of dead pine in mixed-species stands, thereby leaving the other species to more fully occupy the area for future harvesting.

I understand prior to 2006, the licensee had been requested to redirect their MPB harvesting operations into pine stands in the adjacent Quesnel TSA. As a result, over the last few years the amount of dead pine in the TFL has started to accumulate. The licensee has requested an increase in AAC and after careful consideration, I conclude that such a request is reasonable at this time.

In an alternative harvest forecast, an initial harvest level of 1.0 million cubic metres per year resulted in projected unsalvageable pine losses of 1 157 375 cubic metres per year. Increasing the initial harvest to the level in the base case, i.e. 1 371 680 cubic metres per year, decreased the projected pine losses to 647 375 cubic metres per year. Whereas, decreasing the initial harvest level to 692 800 cubic metres per year indicated that losses could be as high as 2 952 250 cubic metres or about 40 percent of the total volume of pine on the timber harvesting land base.

In reviewing the volume loss projections, I have thoroughly considered the estimated shelf life, which given the local stand conditions is not expected to be any longer than the 10 years assumed in the analysis. In addition to minimizing salvage losses and reducing the regeneration delay, it is also important to maintain the highest possible mid-term timber supply in order to sustain the local economy and provide for non-timber resources while pine stands regenerate. Based on my review of the alternative harvest forecasts, I noted that an initial harvest level of 1.0 million cubic metres per year and 692 800 cubic metres per resulted in 12 percent and 14 percent increases in the mid-term timber supply, respectively. In comparison the 1 371 680 cubic metre initial harvest level projected in the base case resulted in the most significant reduction to mid-term levels.

With specific regard to the mountain pine beetle outbreak in the interior of British Columbia, I have considered those impacts which are consistent with the Minister's letter, which highlights the need to maintain or enhance the mid-term timber supply. In his letter, the Minister also requests that current economic and market conditions be considered when making AAC determinations. I understand from staff that while economic conditions are low at this time, the licensee has indicated it fully intends to utilize the AAC to the fullest extent possible. In combination, my review of the information underscores the importance of determining an allowable annual cut that balances the salvage of dead pine with the need to maintain the mid-term timber supply and control spruce beetle populations.

I have also reviewed the Minister's letter which asks that I consider the importance of a stable timber supply in maintaining a competitive and sustainable forest industry, while being mindful of other forest values. I have reviewed these factors and on balance considered the incorporation of these principles throughout my review of the timber supply projected in the base case.

Setting the AAC for the next 5 years at 1.0 million cubic metres per year takes into account the need to maintain stable timber supplies, managing for beetle impacts and being mindful of other values. I have included a partition to ensure the non-pine species are not harvested at higher rates than would otherwise occur as the intent of the uplift is not to further impact the mid-term timber supply beyond what is necessary in the course of salvaging the more severely impacted beetle-killed pine stands.

The licensee intends to continue with efforts to direct about 140 000 cubic metres per year to high priority spruce-beetle affected stands, however other than these volumes all other harvesting should continue to, the full extent possible, be directed to harvesting leading-pine stands.

The 1.0 million cubic metre per year forecast indicates that if all harvesting was directed towards salvaging pine, it is possible to harvest about 612 562 cubic metres per year of pine from stands with more than 50 percent pine volume. Therefore, I conclude that a harvest level of 1.0 million cubic metres per year be implemented as follows: at least 85 percent of the harvest volume should be directed to stands with more than 50 percent pine volume; and up to 15 percent of the remaining harvest should be directed to spruce stands at high risk of beetle infestations and/to wind-blown stands.

Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties in the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next five years and that reflects current management practices as well as the socio-economic objectives of the Crown can be best achieved on TFL 52 at this time by establishing an AAC of 1 000 000 cubic metres, which includes a partition of up to 500 000 cubic metres for non-pine species.

This determination is effective April 1, 2009, and will remain in effect until a new AAC is determined, which must take place within five years of the effective date of this determination. I am prepared to revisit this determination sooner than the five years required by legislation if additional, significant new information becomes available.

Implementation

In the period following this determination and leading to the subsequent determination, I request that:

- harvesting activities are restricted to those stands in which pine represents 50 percent or more of the stand volume, unless the harvesting activity is required to continue spruce beetle management and/or salvage wind-blown timber;

- MFR and Forest Analysis and Inventory Branch will monitor the species composition of harvested stands and inform me if there is significant harvesting in stands that do not meet these criteria described above;
- MFR staff, in collaboration with Ministry of the Environment and licensee staff continue to monitor impacts to the hydrologic function associated with mountain pine beetle salvage on the TFL;
- the licensee ensure the inventory projections used in the next timber supply review include estimates of dead potential volumes; and
- the licensee review its approach to incorporating Conservation Legacy Areas in its timber supply analysis for the next determination.



Melanie Boyce, R.P.F.
Deputy Chief Forester



March 31, 2009

Appendix 1: Section 8 of the *Forest Act*

Section 8 of the Forest Act, Revised Statutes of British Columbia 1996, reads as follows:

8. Allowable annual cut

8. (1) The chief forester must determine an allowable annual cut at least once every 5 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 5 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 5 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 5 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 10 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,
 - (b) different types of timber and terrain in different parts of private land within a tree farm licence area, and
 - (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 stand 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 (B.C.Reg 401/2003)]
 - (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 Act*

Section 4 of the *Ministry of Forests Act* (consolidated 1988) reads as follows:

Purposes and functions of ministry

4. The purposes and functions of the ministry are, under the direction of the minister, to
 - (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 co-ordinated and integrated, in consultation and co-operation with other ministries and agencies of the government and with the private sector;
 - (d) encourage a vigorous, efficient and world competitive timber processing industry in British Columbia; and
 - (e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

Document attached:

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



JUL 04 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.

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Minister of
Forests and Range
and Minister Responsible
for Housing

Office of the
Minister

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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,

A handwritten signature in black ink, appearing to be 'Rich Coleman', with a long horizontal stroke extending to the right.

Rich Coleman
Minister