

**BRITISH COLUMBIA
MINISTRY OF FORESTS AND RANGE**

Tree Farm Licence 14

Tembec Industries Inc.

Rationale for Allowable Annual Cut (AAC) Determination

Effective April 7, 2008

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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 a determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for Tree Farm Licence (TFL) 14. This document also identifies where new or better information is needed for incorporation into future determinations.

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 14.

Description of the TFL

TFL 14 is located in the Purcell Range, about 32 kilometres southwest of Golden in the East Kootenays. It encompasses the watersheds of the Spillimacheen River and Bobbie Burns and Vowell Creeks, as well as the benches directly west of the Columbia River. TFL 14 is bounded to the northwest by Glacier National Park and to the south by Bugaboo Provincial Park.

The TFL, which covers approximately 150 000 hectares, has been held by Tembec Industries Inc. (Tembec) since September 29, 2000. Tembec received Forest Stewardship Council (FSC) certification for its forest resource management practices on TFL 14 on October 29, 2004.

The community of Parson, where the licensee maintains an area office, is the local base of TFL operations. The nearest larger communities are Golden and Invermere, while south of Parson are the communities of Harrogate, Spillimacheen, Brisco, Edgewater and Radium.

The forest and range resources of the TFL are administered by the Ministry of Forests and Range (MFR) Rocky Mountain Forest District (RMFD) office, which is located in Cranbrook, within the Southern Interior Forest Region.

The diversity of topography, climate, and soils is reflected in the forest vegetation found within the TFL and is described by four biogeoclimatic zones: Interior Douglas-fir (IDF), Interior Cedar-Hemlock (ICH), Montane Spruce (MS), and Engelmann

Spruce-Subalpine Fir (ESSF). The broad variety of habitat types supports many species, including large mammals such as elk, mule deer, white-tailed deer, moose, caribou, black and grizzly bear, mountain goat, as well as numerous small mammals. According to the licensee, approximately 150 species of birds are known to use the TFL area. The main commercial timber species are lodgepole pine, Engelmann spruce, subalpine fir (balsam), and interior Douglas-fir.

Road access is provided by highway 95, which serves the east Kootenay region between Golden and Cranbrook. Forestry, mining, ranching, and tourism are the principal forms of employment and economic activity for the region.

History of the AAC

TFL 14 originally issued as Forest Management Licence 14, was awarded in 1953 to Cranbrook Sawmills Limited. At that time, the licence area was 95 903 hectares and the company was authorized to harvest 67 961 cubic metres per year. In 1961, the TFL was assigned to Crestbrook Timber Limited, whose name was changed in 1967 to Crestbrook Forest Industries Limited (Crestbrook). By 1968, the licence area had increased to 124 380 hectares, and with an updated inventory, improved utilization standards, and expanded timber harvesting land base (THLB), the AAC was increased to 111 852 cubic metres.

The chart area of Forest Licence A18978—referred to as the extension area—was added to the TFL in 1990, further expanding the land base to 161 109 hectares. At the same time, an area for the Small Business Forest Enterprise Program (SBFEP) was removed from the TFL, thereby eliminating the AAC allotment for the SBFEP on TFL 14. On July 13, 1995, a 10 930 hectare area, known as Bugaboo Provincial Park, reduced the size of the total land base of the TFL to 150 179 hectares. On September 29, 2000, Crestbrook and Tembec Industries Inc. amalgamated to form Tembec Industries Inc. (the licensee), which is a wholly-owned subsidiary of Tembec Inc. In accordance with the *Forest Act*, acquisition of Crestbrook by Tembec Industries Inc. triggered a 5 percent reduction in the Crown portion of the TFL 14 AAC available to the licensee. However, due to the licensee's approved Job Creation Plan, the reduction was later returned to the licensee's portion of the AAC.

The AAC for TFL 14 was determined on March 28, 2001, to be 160 000 cubic metres, which represented a 2.4 percent reduction from the previous AAC of 164 000 cubic metres.

New AAC determination

Effective April 7, 2008, the new AAC for TFL 14, including Schedule A private lands, will be 180 000 cubic metres. 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

Sources of data and information referenced for this AAC determination include references listed in the licensee's Timber Supply Information Package and Analysis Report and the following:

- *Sustainable Forest Management Plan for TFL 14*. Term: 2005 – 2010. Tembec Industries Inc., Forest Resource Management, BC Division. Brown, David P.C. September 22, 2005;
- *Forest Stewardship Plan for TFL 14 in the Rocky Mountain Forest District*. Tembec Industries Inc. Submitted for approval November 3, 2006;
- *Timber Supply Analysis Information Package: TFL 14*, Management Plan No. 9, Tembec Industries Inc., accepted May 8, 2007;
- *Existing Stand Yields* – MFR, Forest Analysis and Inventory Branch. Submitted February 17 and accepted May 8, 2007;
- *Managed Stand Yields/Site Index* – MFR, Forest Analysis and Inventory Branch. Submitted February 17 and accepted May 8, 2007;
- *Twenty-Year Plan for TFL 14*, Tembec Industries Inc., accepted October 3, 2007;
- Tour of TFL 14 with the Deputy Chief Forester, Tembec Industries Inc. staff and MFR staff from the Rocky Mountain Forest District, Southern Interior Forest Region, and Forest Analysis and Inventory Branch. October 30, 2007;
- Technical information provided through a meeting with the Deputy Chief Forester, Tembec Industries Inc. staff, and MFR staff from the Rocky Mountain Forest District, Southern Interior Forest Region, and Forest Analysis and Inventory Branch. October 30, 2007;
- Technical review and evaluation of current operating conditions through comprehensive discussions with MFR and Ministry of Environment (MOE) staff, including the AAC determination meeting held in Cranbrook on October 31, 2007;
- *First Nations Consultation Summary*. Rocky Mountain Forest District. November 2, 2007;
- *Timber Supply Analysis Report: TFL 14*, Management Plan No. 9, Tembec Industries Inc., accepted December 9, 2007;
- *Proposed Management Plan No. 9 for TFL 14*, Tembec Industries Inc., deadline for submission extended by the deputy chief forester to February 28, 2010;
- *Forest Practices Code of British Columbia Act*, 1995 regulations, amendments and guidebooks;
- *Kootenay-Boundary Land Use Plan Implementation Strategy*. Kootenay Inter-Agency Management Committee. 1997;
- *Kootenay-Boundary Higher Level Plan Order (Final)*. Government of British Columbia. December, 2000;

- *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;
- *Kootenay-Boundary Higher Level Plan Order Amendment*. Government of British Columbia. October 26, 2002;
- *Forest and Range Practices Act*, 2002 and amendments;
- *Forest and Range Practices Regulations*, 2004 and amendments;
- *Ministry of Forests and Range Act*, consolidated to March 30, 2006;
- Letter from the Minister of Forests to the Chief Forester, stating the economic and social objectives of the Crown. July 4, 2006; and
- *The BC Species at Risk Coordination Office's (SaRCO) Draft Mountain Caribou Recovery Strategy: Analysis of Habitat Options for Forest Industry Stakeholders*. Report prepared by Eric J. Valdal, Steven F. Wilson and Jeff Stone for the BC Species at Risk Coordination Office. March 14, 2007.

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 14, 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 judgement in 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 14.

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 which in making AAC determinations, I consider particular uncertainties associated with the information before me, and attempt to assess and address the various potential current and future social, economic and environmental risks associated with a range of possible AACs; and
- (ii) redetermining AACs frequently, 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 14, as deputy chief forester, I have followed the same approach.

As British Columbia progresses toward completion of strategic land-use plans, in some cases the eventual timber supply impacts associated with the land-use decisions resulting from the various regional and sub-regional planning processes remain subject to some uncertainty before formal approval by government. In determining AACs, I will not speculate on timber supply impacts that may eventually result from land-use 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 analyze 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 14, clarification of land and resource use has been provided by government's Kootenay-Boundary Higher Level Plan (KBHLP) Order, which guides many aspects of current management, as addressed in my considerations throughout this document.

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

Some 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 14. It is also independent of any decisions by the Minister of Forests and Range with respect to subsequent allocation of wood supply.

Overall, in making AAC determinations, I am mindful of the Chief Forester's 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 the Chief Forester's responsibilities under the *Forest and Range Practices Act*.

Because the new regulations of the *Forest and Range Practices Act* are designed to maintain the integrity of British Columbia's forest stewardship under responsible forest practices, it is not expected that the implementation of the legislative changes will significantly affect current timber supply as compared to previous management under the Forest Practices Code.

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.

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 all 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 judgment, 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 judgment 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. Judgments 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 14 was prepared by Forsite Consultants Ltd. (Forsite) under the direction of licensee staff. Forsite used Forest Planning Studio version 6.0.2.0 (FPS), a spatially-explicit forest estate simulation model developed by Dr. John Nelson at the University of British Columbia. Spatially explicit in this case means that the model accounts for the spatial relationship between mapped cutblocks.

Based on the expertise of MFR staff in reviewing results from the FPS model for AAC determinations, I am satisfied that it is capable of providing a reasonable projection of timber supply.

For TFL 14, the licensee presented a harvest flow projection entitled the *Base Case Option* as the base case to which further analyses were compared. Assumptions in this analysis were based on the licensee's operational performance over the last 5 years, management to meet the requirements of FRPA, the KBHLP Order, and other locally relevant legislation and policy. Management requirements for non-timber resources were also included.

In the base case, an initial harvest level of 200 000 cubic metres per year was maintained for six decades before decreasing by about 7 percent to 186 560 cubic metres per year. The long-term harvest level of 172 000 cubic metres per year was reached in the ninth decade.

As discussed throughout this rationale, and in consideration of the items described above, I am satisfied that the information presented to me provides a suitable basis from which I can assess the timber supply for TFL 14 for this determination.

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 area assumed in the analysis was 161 210 hectares, including 72 378 hectares of productive forest land. This area is larger than the actual TFL, as the area within Bugaboo Provincial Park associated with landscape unit 134, which was excluded from harvesting, was included to help meet forest cover and biodiversity requirements.

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. These deductions account for economic or ecological factors that operate to reduce the forest area available for harvesting.

In reviewing these deductions, I am aware that some areas may have more than one classification. To ensure accuracy in defining the THLB, care must be taken to avoid any potential double counting associated with overlapping objectives. Hence, a specific deduction for a given factor reported in the analysis or the AAC rationale does not necessarily reflect the total area with that classification; some portion of it may have been deducted earlier under another classification.

For TFL 14, I acknowledge that the above approach was used in the licensee's timber supply analysis, resulting in a long-term THLB of 51 253 hectares, or approximately one-third of the total TFL area.

I have considered all of the assumptions associated with the derivation of the THLB. If for any reason I have concerns regarding an assumption, I have explained my considerations in this rationale. Factors for which I accept the assumptions as documented in the licensee's analysis are not reiterated in this rationale. These factors include: non-forested and non-productive areas, existing roads, trails and landings, non-commercial cover (brush), operability, unstable terrain and environmentally sensitive areas, Bugaboo Provincial Park, and permanent sample plots.

- estimates for future roads, trails, and landings

In timber supply analysis, the area of productive forest required for current and future road development is excluded from the THLB.

For this analysis, an estimated average road width for each type of road (mainline, logging, trail etc.) was applied to all mapped existing and proposed roads using a

geographic information system (GIS). The results for the most heavily-roaded development zone (Zone 4), in which the majority of the harvesting is ground based, indicated about 5 percent of the operable productive forest area was required for roads and landings. Application of this reduction to the entire operable productive forested land base resulted in the exclusion of 3083 hectares for mapped existing and future roads and landings. After accounting for 1920 hectares of existing roads and landings, the area required for future roads and landings was 1163 hectares or 1.886 percent of the operable productive forested land base. To account for future permanent road access, the future stand yield tables were reduced by 1.866 percent. It was assumed that in-block site disturbance is accounted for by the operational adjustment factor (OAF1) applied to table interpolation program for stand yields (TIPSY) yields curves.

The licensee has indicated the reduction factor (1.866 percent) results in an overestimation of the area required for future RTLs because it is based on the road requirements for the most heavily roaded development zone, where harvesting is ground based. However, about 24 percent of the TFL is harvested using cable, long-line or aerial systems, which have lower, if any permanent access requirements.

MFR staff believe that the reduction for future RTLs has been underestimated in the analysis. They indicate there are significant differences in the terrain of the other 8 development zones in the TFL that will increase access requirements.

Based on my review of the information provided, I conclude that there is uncertainty in the assumptions used for future RTLs. However, the assumptions were based on the best available information and are therefore adequate for use in this determination. For the next determination, I request that the licensee and district staff review the approach used for estimating the area associated with future RTLs, as I have noted below in *Implementation*.

- non-merchantable and low productivity stands

In TFL 14, deciduous-leading stands are not considered to be economically viable. White bark- and white pine-leading stands are excluded from harvesting for species conservation purposes. Lodgepole pine-leading stands (pine-leading) with volumes less than 100 cubic metres per hectare and site index (SI) less than or equal to 9 metres at age 50 years were excluded from the THLB. On slopes greater than 45 percent, the minimum volume and site index requirements for pine-leading stands were increased to 130 cubic metres per hectare and 10 metres at age 50 years, respectively. Based on these assumptions, a total of 1913 hectares were excluded from contributing to timber supply.

MFR staff indicate that minimum criteria for pine-leading stands on slopes greater than 45 percent of 150 cubic metres per hectare and a SI higher than 10 metres at 50 years of age are more representative of current practice. In response to these concerns, the licensee reviewed the information used in the analysis and found that a total of 20 hectares of pine-leading stands with SIs between 9 and 10 metres at age 50 years were included in the THLB derived for the base case.

I have reviewed and discussed the information regarding non-merchantable and low productivity stands with MFR staff. While the SI of low productivity pine stands and the

low volume limit for stands on steep slopes may be too low, the impact on the size of the THLB assumed in the analysis is slight. For this determination, I accept that non-merchantable and low productivity stands were adequately modelled and make no adjustments on account of this factor. In preparation for the next determination, I request that the licensee review its assumptions for low productivity pine-leading stands on steep slopes, as I have noted below, in *Implementation*.

Existing forest inventory

- general comments

The forest cover inventory for TFL 14, completed in 1986, is based on the interpretation of aerial photography and field sampling data. In 1994, a MFR inventory audit indicated that there was a significant bias in the volumes estimated by the forest inventory. In response, Timberline Forest Inventory Consultants Ltd. (Timberline), on behalf of the licensee, gathered additional field data to improve the inventory adjustment factors for age, height and volume. In 2000, the licensee completed a Terrestrial Ecosystem Mapping (TEM) project, which was accepted by MFR Research Branch staff on July 31, 2007.

For this analysis, the forest cover inventory for existing stands has been adjusted based on the improved inventory adjustment factors. The inventory for existing and managed stands has been updated for disturbance and projected to the year 2006.

I commend the licensee and MFR staff for the considerable effort made in recent years to improve the forest inventory for TFL 14. I accept that the forest inventory used in this analysis represents the best available information and is therefore suitable for use in this determination.

I have reviewed the assumptions associated with aggregation procedures and volume estimates for existing stands and conclude they are appropriate for use in this determination.

- species profile and age-class distribution

Within the THLB, stands with lodgepole pine as the dominant species are the most common (43 percent). The next most prevalent stands are those dominated by spruce and balsam (35 percent), and Douglas-fir and larch (22 percent). Approximately 14 percent of the THLB is occupied by stands 141 years of age or older. The balance is distributed among a variety of age classes with 48 percent of the THLB containing stands 61 to 140 years of age. Mature lodgepole pine-leading stands (stands older than 60 years of age), which are highly susceptible to attack by MPB, occupy 14 385 hectares (27 percent) of the THLB.

Based on my review of the species profile and age class distribution for TFL 14, I note there is a significant proportion of lodgepole pine-leading stands that may be vulnerable to mountain pine beetle infestation. I will discuss this further under *mountain pine beetle* and I will account for this in my determination under *Reasons for decision*.

Expected rate of growth

I have reviewed the information regarding site productivity estimates, volume estimates for managed stands, and operational adjustment factors as documented in the licensee's analysis. I am satisfied that the assumptions regarding these factors are appropriate and suitable for use in this determination.

- volume estimates for partially-cut stands

TFL 14 has a thirty-year history of partial-cutting of predominantly Douglas-fir leading stands in visually sensitive areas. The amount of harvesting in these stands has varied from single-tree selection to removal of almost all of the overstory. Some of these partially-cut stands are now eligible for a second harvest. In recent years, the licensee has been using partial cutting of pine stands to control the spread of mountain pine beetle (MPB).

In order to simplify the analysis, partial cutting was represented in two ways. Existing partially-cut stands, referred to as "shelterwood stands" were assumed to undergo one further harvest entry before the stand was considered clearcut. Harvesting of partially-cut stands in the future was assumed to occur in three passes, in which one-third of the stand volume was removed during each harvest entry. Pine-leading and non-pine leading stands were assumed to undergo the same harvesting cycles.

Existing partially-cut stands were assumed to have already had an initial harvest entry that removed 50 percent of the overstory. After 20 years, the remaining stand volume was considered eligible for harvest in a final entry, except an estimated 2 percent to account for residual stand volume. Although portions of a partially-cut block will include advanced regeneration, no advanced regeneration was assumed in the analysis. The age of the stand after harvesting was assumed to be zero and regeneration was assumed to occur by planting.

Future partial harvesting practices, in which one-third of the stand volume is removed during each of three passes, are assumed to result in small patch cuts. Following regeneration by planting, the productivity of these stands was based on managed stand (TIPSY) yield curves. In the model, the age of the remaining stand is the same as the age of the overstory.

The stand is eligible for second and third harvests after 30 and 60 years, respectively. Each entry removes another one-third of the original stand volume and the harvested portion is again planted. Two years following the third entry, the stand consists of three cohorts, each at a different age (age 0, 30 and 60 years). Stand age in the analysis is assumed to now be the age of the oldest cohort (60 years) and the yield curve for each cohort is assumed to be one-third of the TIPSY yield curve for a clearcut stand of similar age. Once the oldest cohort reaches 90 years of age, the stand is eligible for another cycle of one-third volume removal. Site index assignments for partial- and patch-cut stands that had completed a full harvest cycle, were based on adjusted SIBEC estimates. MFR Research Branch staff accepted the adjusted site index biogeoclimatic classification (SIBEC) estimates in May, 2007.

MFR district staff indicate that partial cutting in pine-leading stands, which ranges from the harvest of individual trees to small patches, often results in poor regeneration due to the shading of natural regeneration and planted seedlings and damage during subsequent harvest entries. Therefore, they recommend that these stands should not be assigned to new yield curves in the analysis until the final volume is removed. Although the total area managed using partial cutting is small in proportion to the overall THLB, about 5 percent, the potential impact on the productivity of these stands is high due to the short rotations assumed in the analysis.

I have reviewed and discussed the information regarding the productivity of partially-cut stands with MFR staff, and I accept that the productivity of partially cut non-pine leading stands has been reflected appropriately in the base case of this analysis. With respect to pine-leading stands, I note that partial cutting is not the usual management practice; however, I accept that it is necessary at this time to control MPB and the assumptions used in the base case are appropriate for this determination. Continued partial cutting in pine-leading stands for an extended period of time, may result in a decrease in the productivity of these stands and an associated small decrease in the mid- to long-term timber supply. Therefore, I request the licensee and district staff monitor the use of partial cutting of pine-leading stands and provide this information at the next determination.

- minimum harvestable ages

In the TFL 14 timber supply analysis, estimates of minimum harvestable age were based on stands (except for pine-leading stands on slopes less than 45 percent) meeting three criteria: a minimum acceptable volume of 150 cubic metres per hectare and a minimum average diameter at breast height of 25 centimetres, and a minimum percentage of culmination age (the age at which a stand's volume increment is at a maximum) of 95 percent. Pine-leading stands on slopes less than 45 percent were assumed to be harvestable when a minimum volume of 120 cubic metres per hectare and a minimum average diameter at breast height of 20 centimetres was attained. Based on these criteria, which were established by the licensee, the MHA used in the analysis for natural stands ranged between 50 years to 120 years and between 50 years to 70 years for managed stands.

The licensee examined the effect on timber supply of increasing or decreasing the MHA. When the MHA was decreased by 10 years the initial harvest level could be maintained for four decades, 2 decades less than in the base case. The long-term harvest level decreased to 148 000 cubic metres per year or 14 percent lower than projected in the base case. When the MHA was increased by 10 years the initial harvest level could only be maintained for two decades; whereas, the long-term harvest level increased to 180 000 cubic metres per year or about 5 percent higher than in base case.

I have reviewed the assumptions used to estimate minimum harvestable ages for the stands on TFL 14 and I am concerned that the MHA used in the analysis for managed stands is low - 50 to 70 years. Actual stand merchantability attributes at these ages will depend on the accuracy of growth and yield assumptions and projections. The extent to which the licensee will harvest these stands in the future is also uncertain.

Notwithstanding that the minimum harvest age for managed stands may be low; I accept

that the ages are based upon the best available information and are adequate for use in this determination.

- harvest sequencing

According to the licensee, it is currently focusing its harvesting in stands infested with MPB and lodgepole pine-leading stands over the age of 60 years, considered vulnerable to MPB attack. Therefore, in the analysis harvesting was assumed to occur, in order of priority in: blocks under approved cutting permits, stands susceptible to MPB, partially-cut stands, and the oldest stands in the THLB not required to meet forest cover requirements. District staff indicate that these assumptions reasonably reflect the licensee's harvesting priorities in the TFL, although there is little demonstrated performance in second or third entries in partially-cut stands.

Two sensitivity analyses examined the effect of removing harvest priority assumptions, except "oldest first". In the first analysis, an initial harvest level of 200 000 cubic metres per year and mid-term harvest level of 186 560 cubic metres per year were each maintained for an additional decade, then timber supply declined to a long-term harvest level of 177 560 cubic metres per year, a level that is 3.2 percent higher than the long-term harvest level projected in the base case. In the second analysis, an even-flow harvest level of 180 000 cubic metres per year was attained.

Based on my review of the harvest sequence used in the base case, I conclude that it appropriately reflects current practice and is therefore suitable 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, impediments to prompt regeneration, including target stand densities, and genetic gain 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 analysis, the licensee used the actual stand age from the forest cover inventory for existing managed stands. For planted sites, the licensee's analysis assumptions were based on a review of the last 10 years of harvested blocks that had been successfully regenerated. The review indicated that on average the licensee re-plants areas 2.2 years following harvest. After accounting for the use of 1 year old planting stock, the average regeneration delay was 1.2 years. In the analysis, a regeneration delay of 2 years was chosen for future managed stands to account for possible plantation failures. Increasing or decreasing regeneration delay by one year had a negligible effect on timber supply.

District staff reviewed the regeneration delay assumed in the base case and confirm that it represents current practice. However, they indicate that in partially-harvested stands regeneration delay is increased due to shading.

Based on the insensitivity of the timber supply projected in the base case to minor changes in regeneration delay, I accept the regeneration delay assumed in the base case as adequate for use in this determination. However, if partial cutting is prolonged, suppression of regeneration may impact timber supply. Therefore, I request the licensee monitor regeneration performance in partially-cut stands and provide this information at the next determination.

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

Silvicultural systems

The predominant silvicultural system currently in use on TFL 14 is clearcutting. According to the licensee, partial cutting is employed in the visually sensitive areas on the Columbia Bench and in pine-leading stands infested with mountain pine beetle.

In the analysis, even-aged management was modelled for most of the stands on the THLB (46 316 hectares), with the exception of the visually sensitive areas along the Columbia Bench (6506 hectares), where shelterwood (partial harvesting) was modelled. Existing partially-harvested stands were assumed to be harvested in two passes, 20 years apart. Future partially-harvested stands were assumed to be harvested in three passes, 33 years apart.

MFR district staff indicate that the intensity of partial harvesting in pine-leading stands is dependent on the degree of MPB infestation and ranges from patch-cutting to clearcutting with reserves.

I have discussed the silvicultural systems currently used on TFL 14 with MFR district staff, and I am aware of their concerns regarding the modelling of partial cutting in pine-leading stands. However, given the licensee plans to revert to clearcutting in these stands after the need to control MPB has passed, I accept that the information used in the base case is adequate for use in this determination. I request that licensee staff monitor and report on the silvicultural systems used in pine-leading stands and provide this information for the next determination.

(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 used in analysis are appropriate and suitable for use in this determination.

(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

The Ministry of Forests and Range is required under the *Ministry of Forests and Range Act* to manage, protect and conserve the forest and range resources of the Crown and to plan the use of these resources so that the production of timber and forage, the harvesting

of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated. Accordingly, the extent to which integrated resource management (IRM) objectives for various forest resources and values affect timber supply must be considered in AAC determinations.

I have reviewed the information regarding water resources, visual quality, current wildlife tree patches, green-up and adjacency, and ungulate winter range as documented in the licensee's analysis, with MFR staff. I am satisfied that the assumptions regarding these factors used in the timber supply analysis appropriately reflect current practice and are therefore suitable for use in this determination.

- Kootenay Boundary Higher Level Plan Order

Government announced the East Kootenay Land Use Plan in March 1995, and the detailed implementation strategy — the Kootenay-Boundary Land Use Plan— Implementation Strategy (KBLUP-IS) — in 1997. The Kootenay-Boundary Higher Level Plan (KBHLP) Order, issued January 31, 2001, contained provisions of the KBHLP-IS that were binding on all operational plans approved after May 31, 2001. An amended KBHLP Order issued October 26, 2002 cancelled the previous order and gave legal status to landscape units, biodiversity emphasis options with old and mature retention targets, connectivity corridors, caribou management areas, and scenic area corridors. Several variances to the KBHLP Order have been issued since that time.

I have considered the land and resource use guidance provided by government's KBHLP Order, as addressed in my considerations throughout this document.

- Forest Stewardship Council certification

A Forest Stewardship Council (FSC) certificate was issued for TFL 14 on October 29, 2004. In its TSAR, the licensee indicated that it had only 1 to 2 years experience implementing FSC-based management practices. Therefore, Tembec used its operational performance over the last 5 years to develop the assumptions used in the base case.

The licensee provided a harvest forecast, entitled the "FSC Option", to examine the key differences between FSC and base case management assumptions. The principle differences include: increased riparian retention areas; exclusion of stands classified as "endangered forest status" High Conservation Value Forests (HCVF) as identified in the *East Kootenay Ecosystem Representation Analysis* (R. Wells, 2004); increased reserves around avalanche tracks; and immediate implementation of full OGMA targets.

The total productive land base of the TFL assumed in the base case was 72 378 hectares. The THLB derived in the base case was 52 822 hectares; whereas the THLB derived in the FSA Option was 47 610 hectares or 9 percent lower than assumed in the base case. In the FSC Option, an initial harvest level of 200 000 cubic metres per year was maintained for one decade before decreasing to 180 000 cubic metres per year in decade 2, 164 000 cubic metres per year in decade 3 and a long-term harvest level of 154 000 cubic metres per year in decade 4. In contrast, an initial harvest level of 200 000 cubic metres per year was maintained for 6 decades before decreasing in two steps to a long-term harvest level of 172 000 cubic metres per year in the base case.

Based on my review of the information provided by the licensee and district staff, I note that implementation of FSC-based management practices on the TFL is relatively recent. Initial information suggests that the size of the timber harvesting land base derived under FSC-based management assumptions is about 9 percent lower than in the base case. I will discuss the key sources of difference in the assumptions under the appropriate factors below.

- cultural heritage resources

TFL 14 is situated within the asserted traditional territory of the Ktunaxa First Nation. The Ktunaxa – Kinbasket Treaty Council (KKTC) has submitted a comprehensive land claim, which covers an area in the southeast corner of the province, including TFL 14. Treaty negotiations are currently at the stage of developing an agreement-in-principle. TFL 14 is also within the asserted traditional territory of the Shuswap Indian Band and the Shuswap Nation Tribal Council. Neither the Shuswap Indian Band, nor the Shuswap Nation Tribal Council are currently in treaty negotiations.

Archaeological overview assessments (AOA) have been completed for the entire TFL. According to the licensee, detailed archaeological impact assessments are completed as areas are developed. To date, areas reserved from forestry activities for protection of cultural heritage resources at the site level have been limited to less than one hectare in total.

In the base case analysis, it was assumed that wildlife tree patches and riparian management areas could be located to provide some accounting for cultural heritage resources that have not yet been identified. MFR district staff are satisfied that the analysis assumptions reflect current management and are suitable for use in this determination.

I am mindful of the licensee's commitment to work with First Nations operationally to ensure cultural heritage resource values are properly managed. Should additional sites be identified, they can be accounted for in future analyses. For this determination, I am satisfied that the analysis assumptions were based on the best available information regarding cultural heritage resources, and make no adjustments on this account.

- riparian habitat

In the base case, the riparian area reduction was derived by applying an effective riparian reserve width to the riparian features as identified on *Fish and Fish Habitat Inventory of TFL 14 (1:20 000)* (J. Wright and D. Michel. 2001) using GIS. An effective riparian reserve width was calculated based on default values specified in the Forest Planning and Practices Regulation. The riparian reserve width is the sum of the width of the riparian reserve buffer, where harvesting is excluded, and the width that results from multiplying the percentage basal area retention by the riparian management zone width. Using this methodology, 1843 hectares of productive forest were excluded from the THLB.

Tembec staff inform me that streams classified in the 2001 inventory as S3 or S4 (fish-bearing streams), are often reclassified to S6 (non-fish-bearing streams) when re-sampled and that the exact number of streams requiring reclassification is unknown at

this time. They believe that overestimation of S3 and S4 streams is due to sampling of streams too close to their confluence with larger streams. As a result, Tembec staff indicated that the area of productive forest excluded from the THLB may have been overestimated by an unquantified amount.

In the licensee's FSC Option, the FSC-derived effective riparian reserve width was determined by adding the FSC default management zone width to the full FRPA reserve buffer width. The FSC-derived effective reserve width was then applied to the riparian features in the inventory (2001). Use of this methodology resulted in a decrease of about 4400 hectares or 9 percent in the size of the THLB assumed in the base case. According to the licensee, completion of a new stream inventory will improve the accuracy of the riparian assumptions and support its transition to FSC-based riparian management practices.

I note the licensee is implementing changes in its forest management practices in support of its FSC certification. However, as the necessary planning to support full implementation of FSC-based riparian management practices has not yet been completed, it would be inappropriate for me to speculate on any potential timber supply impacts. Therefore, I conclude the FRPA-based riparian management assumptions used in the base case represent demonstrated practice on the TFL and are suitable for use in this determination. I acknowledge the work the licensee is undertaking to improve the riparian inventory and expect completion of this inventory will improve stream classification. The uncertainty associated with S3 and S4 streams represents a potential underestimation in the size of the timber harvesting land base used in the base case and I will account for this in my determination, as discussed under *Reasons for decision*.

- *biodiversity*

1) *landscape-level biodiversity*

The KBHLP Order legally established five landscape units in the area of TFL 14 and assigned biodiversity emphasis options (BEO) in accordance with Map 1.1 of the order. As a result, about 70 percent of the landscape unit/biogeoclimatic zone variants (LU/BEC) were designated as low biodiversity emphasis option (BEO) and the remaining area as intermediate BEO. Landscape unit I34 overlaps portions of both the Bugaboo Park Recreation Area and TFL 14. For the purposes of this analysis the productive forest area within all of LU I34, including portions in both the park and the TFL, were assumed to contribute to seral stage requirements.

In the base case, old seral stage requirements in low BEO areas were initially set to one-third of the full targets and were subsequently increased by one-third in the second and third rotations. In intermediate BEO areas, full old seral retention requirements were implemented immediately. During the first rotation in the analysis, retention targets were spatially explicit; thereafter aspatial percentage retention targets were used. In order to meet KBHLP Order objectives, old and mature stands required to provide connectivity across the landscape were given priority when selecting stands to meet seral stage retention targets. In the analysis, stands outside of the THLB were randomly disturbed in order to simulate natural disturbance requirements and old seral stage targets.

In order to reflect the changes in management resulting from FSC certification, the licensee presented a harvest flow projection entitled 'FSC Option'. In this option, implementation of full targets in low BEO areas was assumed to occur in the first rotation, instead of over three rotations. Furthermore, forests identified as having high conservation value (HCVF), which are managed for non-timber resources, were excluded from the THLB. After accounting for HCVFs that overlap with areas previously excluded from the THLB to meet seral stage requirements or for the management of other non-timber resources, an additional 685 hectares were excluded from the THLB derived in the FSC option. District staff indicate the degree of overlap between areas classified as HCVFs and areas previously excluded from the THLB will remain uncertain until the licensee has more operational experience implementing FSC requirements.

I note the licensee is in transition to FSC-based forest management practices, therefore assumptions regarding landscape-level biodiversity, including HCVFs, are based on limited operational experience. I accept the assumptions for landscape-level biodiversity used in the base case represent demonstrated management on the TFL and therefore are appropriate for use in this determination. Any new information arising from the licensee's ongoing implementation of FSC-based landscape-level biodiversity management practices can be considered at the next determination.

2) stand-level biodiversity (wildlife tree patches)

- future wildlife tree patches

A wildlife tree patch (WTP) analysis of the TFL commissioned by the licensee indicated that, on average, 5.3 percent of the THLB was being reserved to meet the full landscape-level WTP requirements in the *Landscape Unit Planning Guide*. A review of the spatial distribution of WTPs indicated 21 percent of the TFL land base required additional retention to meet these requirements. Application of the 5.3 percent requirement to the area requiring additional retention resulted in the exclusion of an additional 581 hectares from the future THLB. The future WTP requirements were incorporated in the analysis as a 1.1 percent yield curve reduction for future, managed stands.

MFR district staff indicate the assumptions used in the base case for future WTPs may be optimistic based on the licensee's current and past performance.

Based on my review of the information provided and discussions with district staff, I conclude the future, managed stand yields assumed in the analysis to account for future WTPs may be slightly over-estimated. However, the magnitude of any impact due to this uncertainty is low and affects the mid- to long-term timber supply. Therefore, I am prepared to accept the future WTP assumptions used in the analysis as adequate for this determination. Any new information regarding future WTP requirements can be considered during subsequent determinations.

- *wildlife habitat*

1) *identified wildlife*

The provincial government announced its Identified Wildlife Management Strategy (IWMS) Volume I in February 1999. The IWMS Version 2004 contains an updated list of identified wildlife, updated species accounts, and updated procedures for implementing the IWMS. Identified wildlife refers to two categories of wildlife designated by the Minister of Environment under FRPA. These categories are: species at risk (i.e. endangered, threatened, or vulnerable species), also referred to as “red-listed species”; and regionally important species that rely on habitat that may be adversely impacted by forest or range practices on Crown land and that may not be adequately protected by other management strategies, referred to as “blue-listed species”. The establishment of these categories of species enables a number of provisions under FRPA to be used to manage habitat for identified wildlife, including wildlife habitat areas (WHAs). Government has limited the impact of management for identified wildlife to a maximum of one percent of the short-term harvest level for the province.

Identified wildlife that do occur or potentially occur in the TFL, include species such as badger, bull trout, grizzly bears, and caribou. In the analysis, no productive forest was excluded from the THLB to account for WHAs. Ministry of Environment (MOE) staff indicate inventory information for identified wildlife for the TFL is limited and no WHAs have been established. Inventory of great blue heron rookeries occurring in wetlands adjacent to the TFL, indicates heron use of upland conifer stands has increased. MOE staff believe a heron inventory in the TFL would result in the establishment of WHAs that will include upland forests currently included in the THLB. They estimate future deployment of WHAs for all identified wildlife may result in a decrease of 250 hectares (0.5 percent) in the size of the THLB.

For this determination, there is limited information available to specify the exact location or precise amount of WHAs that will be required within the timber harvesting land base to implement the IWMS. However, based on the presence of identified wildlife in the TFL it is likely WHAs will be established. Government has limited the impact of management for identified wildlife in the short term to a maximum of one percent of the harvest level for the province. Given the Province’s policy decisions and commitment to implementing the IWMS, and given the estimated impact on TFL 14 harvest levels is within the maximum limit, I find it necessary to account for WHAs. Therefore, I conclude the timber harvesting land base may be 0.5 percent lower than projected in the base case and I have considered this in *Reasons for decision*. As WHAs are established for species at risk, I expect the specific implications to be reflected in future timber supply analyses for TFL 14 and these will be taken into account in future AAC determinations.

2) *caribou*

The KBLUP Order (section 3) amended as per variance 3, specifies caribou habitat management guidelines to be applied in a number of zones within mapped caribou

habitat. A total of 206 hectares of productive forest, of which two hectares are in the THLB, are subject to these requirements.

According to MOE staff, the draft Mountain Caribou Recovery Strategy ((*SaRCO*)) (2007) is recommending more area be set aside for the Central Selkirk caribou herd. The exact amount of this area that will occur within TFL 14 is unknown; however, it is anticipated that there will be overlap with areas in the upper Spillimacheen Valley. In this area, a high proportion of stands have already been excluded from the THLB due to stability or productivity constraints. It is also the licensee's intention to manage many of these stands according to FSC standards for "endangered forests".

I note the assumptions used in the base case regarding caribou reflect the legal requirements of the KBLUP Order. For this determination, I accept the assumptions used in the base regarding caribou habitat as suitable for use in this determination. Allocation of the Central Selkirk caribou herd habitat budget and new information arising from the licensee's full transition to FSC-based forest management can be considered at the next determination.

3) grizzly bear habitat associated with avalanche tracks

The KBLUP Order (section 5), identifies important grizzly bear habitat, including avalanche tracks, den sites, etc. as high priority areas when allocating old and mature forest retention targets. Avalanche path mapping has been completed in TFL 14 and was used to prioritize the placement of OGMA's. I note the assumptions used in the base case regarding grizzly bear habitat associated with avalanche tracks are consistent with the intent of the KBLUP Order.

For this determination, I accept the assumptions used in the base case as suitable for use in this determination. In any event, preliminary information regarding the impact of FSC-based grizzly bear habitat management indicates a possible decrease of 420 hectares or less than one percent of the timber harvesting land base and the results of sensitivity analysis indicate changes in the size of the timber harvesting land base of this magnitude do not significantly affect the short-term timber supply projected in the base case. Therefore, new information the licensee acquires as it fully implements and gains operational experience with FSC-based forest management practices can be considered at the next determination, prior to any potential impacts on short-term timber supply.

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

- twenty-year plan

The licensee used the output of the base case to develop a twenty-year plan to demonstrate the operational feasibility of the proposed harvest level (proposed management option) over the next twenty-year period. The twenty-year plan was accepted by the District Manager on October 3, 2007.

Based upon my discussion with district staff and my review of the twenty-year plan analysis, I am satisfied that for this determination, the short-term timber supply projected in the base case could be attained on the landscape.

Licence AAC and actual harvest performance

According to district staff, the licensee harvested a total of 336 492 cubic metres in 2005 and 2006, of which about 70 percent was lodgepole pine. This information is consistent with the licensee's assertion that it is focusing its harvest on MPB infested or susceptible stands and is harvesting its full AAC. I have accounted for this in my *Reasons for decision*.

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

Alternative harvest flows

The base case used in this determination was based upon Tembec's current management practices, including: operational performance over the last 5 years, including current levels of MPB salvage (see *Mountain Pine Beetle Option* and *Mountain Pine Beetle* below); management to meet the requirements of the *FRPA* and regulations; the *KBLUP Order*; management for non-timber resources, such as identified wildlife, fish habitat, biodiversity etc.; and other locally relevant legislation and policy.

In addition to the base case harvest forecast, the licensee presented five alternative harvest flow projections.

One alternative projected a non-declining harvest flow of 173 000 cubic metres per year for the entire forecast period. For the first 60 years, this harvest level is 13.5 percent lower than the base case initial harvest level of 200 000 cubic metres per year. By the ninth decade, the long-term harvest level in the base case was 1000 cubic metres per year lower than long-term harvest level of 172 000 cubic metres per year projected in the base case.

In a second alternative, the base case harvest sequencing was changed from harvesting susceptible pine stands first to harvesting the relatively oldest stands first. In this alternative a non-declining harvest flow of 180 000 cubic metres per year was projected for the entire forecast period.

The third alternative, called the *Mountain Pine Beetle Option*, was designed to examine the implications of a large MPB outbreak. In this scenario, an initial harvest level of 305 000 cubic metres per year was maintained for 15 years before decreasing to the medium-term harvest level of 150 000 cubic metres per year. In decade 8, the harvest level increased to 168 000 cubic metres per year before reaching the long-term harvest level of 172 000 cubic metres per year in decade 18. This represents a 10 decade delay in reaching the same long-term harvest level as in the base case.

In the base case, susceptible pine-leading stands were prioritized for harvest, in order to reflect the licensee's current MPB control practices. In the MPB Option it was also assumed 92 percent of the pine volume in stands with greater than 40 percent pine

volume and older than 60 years would be killed (or 70 percent of the pine trees in the TFL) by 2012. These assumptions were adopted from the MFR *Mountain Pine Beetle Initiative Modeling Project* (M. Eng *et al.* 2005, 2006).

During the first 5, 10, and 15 years of the analysis, the pine mortality was assumed to be 25, 40, and 27 percent respectively. Salvage of dead pine on the THLB was prioritized, resulting in salvage volumes of up to 192 000 cubic metres per year. Unsalvaged stands were assumed to have a regeneration delay of 10 years. Salvaged stands were assumed to have a 2-year regeneration delay. All non-timber harvesting constraints were left in place and did not limit the harvest level until decade 2. For further discussion of MPB infestation in the TFL, see *Mountain Pine Beetle* below.

The remaining three alternative harvest flow projections, examined the implications to timber supply of adopting management practices associated with FSC-certification. These practices differ from those assumed in the base case, as follows: increased effective riparian reserve zones; high conservation value forests of FSC “endangered” forest” status; increased protection of grizzly bear habitat adjacent to avalanche chutes, application of full old seral targets in low BEO areas starting in the first rotation, and additional visual quality restrictions around some larger lakes in the TFL. Rare and endangered ecosystems, as defined in the *East Kootenay Ecosystem Representation Analysis*, (R. Wells, 2004) and areas adjacent to avalanche tracks that are important for grizzly bears were excluded from the THLB. As a result, the current and future THLB associated with the FSC alternative harvest flows are about 10 percent lower than in the base case. Implementation of full targets in low biodiversity emphasis objective areas occurred in the first rotation, instead of increasing target levels by one-third by the end of the third rotation. Implementation of FSC management practices have been discussed under the appropriate factors earlier in this rationale.

In the first FSC option, the base case initial harvest level of 200 000 cubic metres per year was maintained for 2 decades before decreasing to 180 000 cubic metres per year. After decade 3 the harvest flow decreased to 164 000 cubic metres per year before decreasing to a long-term level of 154 000 cubic metres per year (9.5 percent lower than the base case long-term harvest level).

In the second FSC option, an initial harvest level of 180 000 cubic metres per year was maintained for six decades before decreasing to 162 000 cubic metres per year in decade six and a long-term level of 154 000 cubic metres per year in decade eight.

A third FSC alternative projected a non-declining harvest forecast of 153 000 cubic metres per year for the entire forecast period.

I have reviewed the alternative forecasts presented by the licensee and I have concluded that the dynamics of timber supply in this unit demonstrates considerable flexibility in the short term. To the extent that uncertainty in the assumptions used in the analysis introduce risk to the base case timber supply forecast, I have been mindful of this flexibility in making my determination and have considered this in my *Reasons for decision*.

Community dependence

The licensee operates the following timber processing facilities: two sawmills, located at Canal Flats and Elko; three planer mills, located at Cranbrook, Canal Flats and Elko; and a pulp mill located at Skookumchuck.

The employment base for TFL 14, and the mills it supplies, includes people living in the communities of Golden, Canal Flats, Skookumchuk, Invermere, Cranbrook, Kimberley, Parson, and numerous other communities in the Columbia Valley. According to the licensee, a total of 8,746 work days, provided by 114 employees and 2 to 4 contractors, is attributable to the TFL.

I have reviewed the information and am mindful that the volume harvested from TFL 14 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 Province 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 14, 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. This is of particular relevance to TFL 14, and I will discuss this further in *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* below).

According to the licensee, referral letters regarding the *Timber Supply Information Package* and the *Timber Supply Analysis Report and Twenty-Year Plan* were sent to stakeholders and interested members of the public on the February 15, 2007 and July 16, 2007, respectively. Advertisements informing the general public that these documents were available for review in the licensee's Parsons office were placed in a local newspaper on February 16, 2007 and July 16, 2007, respectively. Licensee staff also met with representatives from the Golden Rod and Gun Club to review the *Timber Supply Information Package*; however, no concerns or comments were provided. To date no

comments have been received from stakeholders or interested public regarding the *TSR Information Package* or draft *Timber Supply Analysis Report* or *Twenty-Year Plan*. MFR district staff indicated that they were advised of the consultation initiatives undertaken by the licensee.

I have reviewed the public process as reported by the licensee and 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 and have no concerns for the purposes of this determination.

First Nations Considerations

According to the licensee, it met with the joint Tembec – Ktunaxa Management Committee (JMAC) on November 6, 2006 and January 31, 2007 and notified them of the upcoming timber supply review. At the JMAC meetings on May 2, 2007 and July 11, 2007, the licensee provided a status update on the timber supply review.

Referral letters and a copy of the *Information Package* were sent to the Ktunaxa Nation Council Lands and Resources, Akisq'nuk First Nation, Shuswap Indian Band, and the Shuswap Nation Tribal Council (SNTC) on February 15th 2007. Referral letters regarding the draft *Timber Supply Analysis Report* and the *Twenty-Year Plan* were also sent to these First Nations on July 16th, 2007. The licensee contacted the SNTC to ask if the *Information Package* and *Timber Supply Analysis Report* had been received and if they had any comments. The licensee has indicated that no comments have been received from these First Nations.

MFR district staff indicate that they reviewed the licensee's consultation process and provided a summary of this process and information regarding the timber supply analysis report and twenty-year plan in letter sent to the First Nations with asserted territory within TFL 14 on August 23, 2007. District staff indicate that no comments were received from these First Nations.

I have reviewed the First Nations consultation process as reported by the licensee and district staff and am satisfied that a reasonable effort was made to consult with First Nations on how aboriginal interests could be affected by this AAC determination. As noted in *Guiding Principles*, my AAC does not imply any particular pattern of activity on the ground. I understand that the licensee is accounting for information from archaeological overview assessments of the TFL and that detailed archaeological impact assessments are completed as areas are developed. 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 new information related to First Nations' interests becomes available, this can be considered in future AAC determinations.

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

Mountain pine beetle

The licensee has been managing MPB for over a decade on TFL 14, using harvesting practices that range from single-tree removal to small patch clearcuts. At the time of this analysis, 27 percent or 14 385 hectares of the THLB consisted of stands considered at high risk for MPB infestation, i.e. stands with greater than 50 percent pine older than 60 years of age. At the level of the current AAC of 160 000 cubic metres per year and assuming an average stand volume of 300 cubic metres per hectare, this represents about 27 years of harvest. According to the licensee it is utilizing the full AAC and is focusing its harvest on infested and susceptible pine stands in an effort to control MPB infestation in the TFL. This is confirmed by regional staff who inform me that the licensee harvested a total of 336 492 cubic metres in 2005 and 2006, or about 105 percent of the current AAC. Of the volume harvested, about 70 percent was pine.

District staff indicated that in spite of the licensee's active management to control MPB, the infestation continues to expand, as evidenced by the current ratio of green-attacked trees to red-attacked trees which was 1.8 to 1, i.e. there are 18 newly attacked trees for every 10 previously attacked trees. While this ratio has previously been as high as 10 green-attack trees to every 1 red-attack tree, a value of 1.8 indicates that, left unmanaged, the MPB population on the TFL would continue to increase. MFR staff indicate there is still a high risk the MPB epidemic to the northwest will move southeast and exacerbate the endemic infestation in the TFL.

In order to continue active management of MPB in the TFL, the licensee is requesting an increase of 20 000 cubic metres per year above the current AAC of 160 000 cubic metres per year to harvest affected or at-risk pine stands.

I have reviewed and discussed the information regarding MPB with district and licensee staff and I conclude that there is a significant risk of increased MPB infestation in the TFL. I commend the licensee on the active approach it has taken in managing MPB and have taken its concerns regarding MPB into account in making my determination, as discussed under *Reasons for decision*. I request that licensee staff continue to monitor the incidence of MPB on the TFL. Should the MPB infestation expand significantly, I am prepared to revisit this determination earlier than 5 years.

Non-recoverable losses

The major sources of non-recoverable losses (NRLs) on TFL 14 are projected to be insects and fire. In the base case, these NRLs were estimated to be 2947 cubic metres per year. Specific values for NRLs are not available for the TFL; therefore, TFL estimates were prorated using the values for the adjacent Invermere TSA. TFL 14 losses to MPB were assumed to be proportionally smaller than those assumed for the Invermere TSA, because the actual salvage performance on the TFL is higher than on the Invermere TSA.

MFR Forest Practices Branch forest health staff indicate that allowances for dwarf mistletoe are included in existing stand volume estimates; therefore, there is no need to

provide for additional accounting for dwarf mistletoe in the estimates for unsalvaged losses. As a consequence, NRLs incorporated into the base case analysis have been overestimated by 398 cubic metres per year or less than 0.2 percent of the current AAC.

I have reviewed the information regarding non-recoverable losses, and am satisfied that the assumptions regarding losses from insects, fire, and windthrow applied in the analysis are reasonable. With respect to the assumptions regarding disease losses, I accept the district's assessment that losses due to dwarf mistletoe are likely overestimated. However, given the magnitude of any uncertainty attributable to this factor, I accept the assumptions used in the base case as adequate for use in this determination.

Reasons for decision

In reaching my decision on an AAC for TFL 14, I have considered all of the factors required under the *Forest Act* section 8 and have reasoned as follows:

For the reasons stated in the analysis and from reviewing the considerations as recorded above, 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 projects an initial harvest level of 200 000 cubic metres per year for six decades before declining by 7 percent to 186 560 cubic metres per year. The long-term harvest level of 172 000 cubic metres per year was reached in the ninth decade. Using the same assumptions, it was also possible to achieve a non-declining harvest of 173 000 cubic metres per year. Changing harvest sequencing assumptions to "oldest first" resulted in a non-declining harvest of 180 000 cubic metres per year.

Throughout my review of the information provided for this determination, including my conversations with district and licensee staff, and my first hand observations of the TFL, I have been aware of the responsible and progressive nature of the licensee's forest management practices. The licensee has maintained a comprehensive mountain pine beetle program for over a decade and continues to focus its harvesting on susceptible pine stands. I also recognize the substantial effort that the licensee has invested in attaining certification of its forestry operations on TFL 14 by FSC and look forward to learning more about their management practices as implementation continues and operational experience increases.

District and licensee staff indicate that forest management on TFL 14 is either in transition to meet FSC-based standards, (e.g. allocation of FSC riparian reserves requires completion of stream re-classification), or has only recently been implemented. Therefore, while I carefully considered the information regarding FSC-based forest management practices on the TFL, I did not adjust the base case on this account. I expect that before the next determination the licensee will have fully implemented its new management practices and will have a greater depth of operational experience to inform the next analysis.

For this determination, I am accounting for one factor that indicates the timber supply in the base case has likely been overestimated by a significant amount, as follows:

- *identified wildlife*: To account for the impact of implementing the Identified Wildlife Management Strategy, I accept that the mid- to long-term timber supply has probably been overestimated by 0.5 percent.

For this determination, I am accounting for one factor that indicates the timber supply in the base case has likely been overestimated by a significant amount, as follows:

- *riparian management*: To account for the impact of misclassification of S3 and S4 streams, I accept that the mid- to long-term timber supply has likely been underestimated by an unquantified amount.

In reaching my determination, I have evaluated the two factors above and note that their net effect on the mid- to long-term timber supply is likely small in magnitude. In any event, their effect is overshadowed by the need to address the risk of mountain pine beetle in the TFL.

In my review of the species profile and age class distribution, I noted 27 percent or 14 385 hectares of the current timber harvesting land base consists of mature lodgepole pine-leading stands that are highly susceptible to attack by mountain pine beetle. MFR staff also informed me that the “green attack to red attack” ratio on the TFL is 1.8. I note that a ratio greater than 1 indicates that more trees have been infested with mountain pine beetle in the current year than in the previous year; therefore, it is likely that without management intervention, the population will continue to increase.

During my discussions with district and licensee staff regarding the licensee’s recent harvesting performance, I was informed that the licensee is harvesting 105 percent of the current AAC, and of this volume 70 percent is pine. For this determination, the licensee has indicated that an increase in the AAC of 20 000 cubic metres per year would provide the necessary flexibility to continue its ongoing program of mountain pine beetle salvage and risk reduction in susceptible stands.

Based on the results of the MPB Option, I conclude that a large increase (305 000 cubic metres per year) in the short-term harvest level in response to a mountain pine beetle epidemic in the TFL would result in a significant decrease in the mid-term harvest level to 150 000 cubic metres per year. This reduction would be required for 65 years before increasing in two steps to the same long-term harvest level of 172 000 cubic metres per year as projected in the base case. I note that an accelerated rate of harvest of this magnitude may significantly increase the risk to non-timber resources. Furthermore, there would likely be a significant economic risk to the local communities due to the prolonged decrease in the mid-term timber supply.

In my review of the harvest forecasts provided, I am also aware that a non-declining harvest flow of 180 000 cubic metres per year is attainable based on the assumptions used in the base case and by changing the harvest sequence to “oldest first”. In the event that constraints on the timber harvesting land base increase in a similar manner as assumed in the FSC Options, an initial harvest level of 180 000 cubic metres per year could be maintained for 60 years before decreasing to a similar level as the non-declining harvest flow based on the same assumptions.

Therefore, in making my determination for TFL 14 I have reasoned as follows:

- Any impact on timber supply related to the concerns noted above are relatively small in magnitude;
- The most immediate and significant risk to the timber supply on the TFL is due to mountain pine beetle infestation;
- The licensee's assessment of the mountain pine beetle activity and the necessary measures to control the infestations on the TFL is based on its long history of mountain pine beetle control;
- The results of the base case harvest forecast incorporating an "oldest first" harvest sequence indicate that a non-declining harvest flow of 180 000 cubic metres per year is attainable;
- The results of the FSC Options analysis, which represent the most conservative of the analyses presented, indicates an initial harvest level of 180 000 cubic metres per year can be maintained for 60 years before decreasing to a long-term harvest level similar to the non-declining harvest flow based on the same assumptions; and
- To the extent possible, increases in the short-term harvest level should not exceed non-declining harvest flow levels.

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 14 at this time by establishing an AAC of 180 000 cubic metres.

This determination is effective April 7, 2008, 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, including changes in the level of MPB infestation, and major changes in management assumptions becomes available.

Implementation

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

- monitor the incidence of mountain pine beetle on the TFL and, if there is an urgent need to revisit this determination, notify me immediately;
- monitor the silvicultural systems used in pine-leading stands and provide a summary of this information for the next determination;

- review the approach used for estimating the productivity reductions associated with future roads, landings and in-block disturbance;
- monitor the extent to which low productivity pine stands on steep slopes are utilized and provide a summary of this information for the next determination;
- complete the stream inventory project;
- monitor regeneration in partially cut pine-leading stands and provide an assessment of growth and yield implications for the next determination; and
- monitor harvest performance by harvest system in relation to the total chance profile on the TFL and provide a summary of this information for the next determination.



Craig Sutherland, R.P.F.
Deputy Chief Forester

March 31, 2008



Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157 Consolidated to October 21, 2004, reads as follows:

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 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 the 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, and
 - (b) different types of timber and terrain in different parts of private land within a tree farm licence area,
 - (c) [Repealed 1999-10-1.]
- (6) The regional manager or district manager must determine an allowable annual cut for each woodlot licence area, according to the licence.
- (7) The regional manager or the regional manager's designate must determine a an allowable annual cut for each community forest agreement area, in accordance with
- (a) the community forest agreement, and
 - (b) any directions of the chief forester.
- (8) In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider
- (a) the rate of timber production that may be sustained on the area, taking into account
 - (i) the composition of the forest and its expected rate of growth on the area,
 - (ii) the expected time that it will take the forest to become re-established on the area following denudation,
 - (iii) silviculture treatments to be applied to the area,
 - (iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,
 - (v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and
 - (vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,
 - (b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area,

- (c) Repealed [2003-31-02]
- (d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia, and
- (e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

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

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

Purposes and functions of ministry

4. The purposes and functions of the ministry are, under the direction of the minister, to
 - (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 (i) timber processing industry, and (ii) ranching sector 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.

**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