

**BRITISH COLUMBIA
MINISTRY OF FORESTS, LANDS AND
NATURAL RESOURCES OPERATIONS**

Lakes Timber Supply Area

**Rationale for
Allowable Annual Cut (AAC)
Determination**

Effective July 12, 2011

**Jim Snetsinger, RPF
Chief Forester**

Table of Contents

| | |
|--|----|
| Objective of this Document..... | 1 |
| Acknowledgement..... | 1 |
| Description of the Lakes Timber Supply Area..... | 1 |
| History of the AAC | 2 |
| New AAC determination..... | 2 |
| Information sources used in the AAC determination | 2 |
| Role and limitations of the technical information used..... | 4 |
| Guiding principles for AAC determinations | 4 |
| The role of the base case | 6 |
| Reference forecast for the Lakes TSA..... | 7 |
| - Scenario 1 | 7 |
| Consideration of Factors as Required by Section 8 of the <i>Forest Act</i> | 8 |
| Land base contributing to timber harvest..... | 10 |
| - general comments | 10 |
| Existing forest inventory..... | 10 |
| - current inventory..... | 10 |
| Expected rate of growth..... | 11 |
| - minimum harvestable volumes | 11 |
| - not satisfactorily restocked areas | 12 |
| - Interior log grade changes | 13 |
| Integrated resource management objectives | 13 |
| - visual quality objectives | 13 |
| - hydrological considerations | 15 |
| - secondary stand structure..... | 15 |
| - harvest performance | 16 |
| - alternative harvest rates | 17 |
| - Scenario 2 | 17 |
| - Scenario 3 | 17 |
| - mid-term timber supply | 18 |
| - summary of public input..... | 19 |
| Economic and Social Objectives | 19 |
| - First Nations consultation | 19 |
| - wood fibre processing..... | 21 |
| - Minister's letter..... | 22 |
| - non-recoverable losses..... | 22 |
| Reasons for Decision..... | 23 |
| Determination..... | 25 |
| Implementation..... | 26 |
| Appendix 1: Section 8 of the <i>Forest Act</i> | 27 |
| Appendix 2: Section 4 of the <i>Ministry of Forests and Range Act</i> | 30 |
| Appendix 3: Minister's letter of July 4, 2006..... | 31 |
| Appendix 4: Minister's letter of October 27, 2010 | 33 |

List of Tables

| | |
|---|---|
| Table 1. List of factors for which the reference forecast modelling assumptions have been accepted..... | 9 |
|---|---|

Objective of this Document

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

Acknowledgement

For preparation of the information I have considered in this determination, I thank staff of the BC Ministry of Forests, Lands and Natural Resources Operations (FLNR) in the Nadina District, Skeena and Omineca Regions and Forest Analysis and Inventory Branch (FAIB). I am also grateful to the Burns Lake Timber Supply Advisory Committee, the Regional District of Bulkley-Nechako, the Omineca Beetle Action Coalition, local residents, First Nations, forestry consultants, and licensees who have provided input.

Description of the Lakes Timber Supply Area

The Lakes timber supply area (TSA) covers about 1.1 million hectares of land in north-central British Columbia, ranging from Tweedsmuir Provincial Park in the south to the Tildely watershed in the north. The TSA contains the headwaters of important tributaries of both the Skeena and Fraser watersheds as well as numerous lakes, which include some of the largest freshwater bodies in British Columbia. Currently, 523 909 hectares or about 47 percent of the total TSA land base is considered to be suitable and available for timber harvesting, this area is referred to as the timber harvesting land base (THLB). The forest and range resources of the TSA are administered by the Nadina District office located in Burns Lake.

Pine-leading stands dominate the Lakes TSA, representing about 74 percent of stands in the THLB, while spruce, balsam and fir stands occupy the remainder of the area. The preponderance of mature pine stands was a significant factor contributing to the recent mountain pine beetle (MPB) epidemic. The infestation is believed to have begun slowly in the mid-1990s. By the year 2000, the beetle-affected pine volume was 900 000 cubic metres. By 2009, approximately 90 percent of the pine trees available for harvesting were dead. It is currently assumed that MPB-killed pine remains a potential source of wood fibre as long as the trees remain standing, which is about 15 years in the Lakes TSA. It is estimated that by 2019, almost all of the beetle-killed pine stands will have been dead for more than 15 years.

There are six First Nation communities and a First Nation's central office within the Lakes TSA. These are: Cheslatta Carrier Nation, Lake Babine Nation, Burns Lake Band, Wet'suwet'en First Nation, Skin Tyee Nation, Nee Tahi Buhn Band, and the Office of the Wet'suwet'en. An additional five First Nations maintain communities outside the TSA; however, they assert rights and title that overlap lands relevant to this TSR. These are: Stelat'en First Nation, Nadleh Whut'en Band, Tlazt'en First Nation, Ulkatcho Band, and Yekooche First Nation.

The Village of Burns Lake, with a population of 2114, is the largest community within the Lakes TSA. The remainder of the TSA's 6056 residents are located in numerous smaller communities including Decker Lake, François Lake, Grassy Plains, and Danskin.

History of the AAC

Until 2001, the AAC for the Lakes TSA was set at 1.5 million cubic metres. In August 2001, in response to the mountain pine beetle epidemic, the AAC was increased to 2 962 000 cubic metres. In October 2004, the AAC was further raised to the current level of 3 162 000 cubic metres. In the rationale for the October 2004 AAC determination, the chief forester indicated that the 2001 increase and the new (2004) increase should be targeted in pine stands, with the 2004 increase primarily aimed at mortality in moderately and severely impacted pine stands.

New AAC determination

Effective July 12, 2011, the new AAC for the Lakes TSA will be 2.0 million cubic metres, including a partition of 350 000 cubic metres attributable to non-pine species, as identified in the Harvest Billing System. This AAC will remain in effect until a new AAC is determined, which is required to take place within 10 years of this determination.

Information sources used in the AAC determination

Information considered in determining the AAC for the Lakes TSA includes the following:

- Watershed Assessment Procedures. Forest Practices Code Guidebook. Ministries of Forests and Environment. 2001;
- Lakes District Land and Resource Management Plan (LRMP). Integrated Land Management Bureau. 2000;
- Lakes South Sustainable Resource Management Plan (LSSRMP). Integrated Land Management Bureau. 2003;
- Lakes North Sustainable Resource Management Plan (LNSRMP). Integrated Land Management Bureau. 2009;
- Procedures for Factoring Visual Resources into Timber Supply Analyses. Ministry of Forests. 1998;
- Modelling visuals in TSR III. (Bulletin) Ministry of Forests. 2003;
- Are Free-Growing Stands Meeting Timber Productivity Expectations in the Lakes Timber Supply Area. Ministry of Forests and Range. 2008;
- Identification of Watershed Hazards, Sensitivities and Risks for Sixty-two Watersheds in the Lakes TSA. Lakes IFPA Sustainable Forest management Plan. Ministry of Forests and Range. 2010;
- Best Management Practices for Soil Conservation in Mountain Pine Beetle Salvage Operations. Berch, S., Dubé, S., and Hope, G. 2009. Ministry of Forests and Range. Extension Note 91. 4p. 2009;
- Nadina Road Widths Project. Burns Lake, B.C. Ministry of Forests and Range. unpubl. rep. Coombes, T. and Bernard, A. 2009;
- Forest Access Road Widths in the Lakes Timber Supply Area. B.C. Journal of Ecosystems and Management 11(1&2):84-90. Coombes, T., Bernard, A., and Nigh, G.D. 2010;
- Forest Stewardship in the Context of Large-Scale Salvage Operations: an Interpretation Paper. Ministry of Forests. Tech. Rep. 019. Eng, M. 2004;
- *Forest Act and Regulations* consolidated to June 29, 2011;
- *Forest and Range Practices Act and Regulations* consolidated to June 29, 2011;
- *Ministry of Forests and Range Act* consolidated to June 29, 2011;
- The Effect of Mountain Pine Beetle Attack and Salvage Harvesting on Streamflows. Forest Practices Board. 2007;

- Biodiversity Conservation during Salvage Logging in the Central Interior of BC. Forest Practices Board. 2009;
- The Bowron River Watershed: A synoptic Assessment of Stream and Riparian Condition 20-30 Years after Salvage Logging. Ministry of Forests. Extension Note 86. 7p. Nordin, L. 2008;
- Site Index Adjustments for Old-growth Stands Based on Paired Plots. Ministry of Forests. Nussbaum, A.F. 1998;
- Procedures for Carrying out Visually Effective Green-up (VEG) Tree Height Assessment in Scenic Areas. Northern Interior Forest Region, Ministry of Forests and Range. unpubl. rep. Roberge, L. 2007;
- Hydrologic Effects of Mountain Pine Beetle Infestation and Salvage-harvesting Operations. Canadian Forest Service, Mountain Pine Beetle working paper 2009-05. Rex, J. and Dubé, S. 2009;
- Mountain Pine Beetle and Salvage Harvesting: Small Stream and Riparian Zone Response in the Sub-Boreal Spruce Zone. Extension Note 90. Rex, J., Krauskopf, P., Maloney, D., Tschaplinski. 2009;
- Guidance on Landscape- and Stand-Level Structural Retention in Large-Scale Mountain Pine Beetle Salvage Operations. Ministry of Forests. Snetsinger, J. 2005;
- Chief Forester's response to MPB and potential 2007 flooding. Snetsinger, J. Ministry of Forests and Range. 2007;
- Effects of Overstory Mortality on Snow Accumulation and Ablation. Canadian Forest Service, Mountain Pine Beetle working paper 2009-15. Teti, P. 2009;
- Mountain Pine Beetle, Forest Practices, and Watershed Management. Extension Note 88. Winkler R., Rex, J., Teti, P., Maloney, D. A., and Redding, T. 2008;
- Letter from the Minister of Forests and Range to the Chief Forester, Re: Economic and Social Objectives of the Crown, July 4, 2006;
- Letter from the Minister of Forests and Range to the Chief Forester stating the economic and social objectives of the Crown regarding mid-term timber supply in areas affected by the mountain pine beetle, October 27, 2010;
- Recommended Operational Procedures to Address Hydrological Concerns. Ministry of Forests. 2004;
- Monitoring Harvest Activity Across 29 Mountain Pine Beetle Impacted Management Units. Ministry of Forests and Natural Resource Operations. 2011;
- Lakes Timber Supply Area: Timber Supply Review Data Package (updated). Ministry of Forests, Mines and Lands. 2010;
- Lakes Timber Supply Area: Timber Supply Review Timber Supply Analysis Public Discussion Paper. Ministry of Forests, Mines and Lands. 2010;
- Lakes Timber Supply Area: Timber Supply Analysis Technical Report. Ministry of Forests, Mines and Lands. 2010; and
- Technical review and evaluation of current operating conditions on the Lakes Timber Supply Area through comprehensive discussions with BCFS and Ministry of Environment staff held in Burns Lake on November 9 and 10, 2010.

Role and limitations of the technical information used

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

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

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

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

Guiding principles for AAC determinations

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

Two important ways of dealing with uncertainty are:

- (i) minimizing risk; in respect of which, in making AAC determinations, I consider particular uncertainties associated with the information before me and attempt to assess and address the various potential current and future social, economic, and environmental risks associated with a range of possible AACs; and
- (ii) re-determining AACs frequently, in cases where projections of short-term timber supply are not stable, to ensure they incorporate current information and knowledge.

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

In many areas, the timber supply implications of some legislative provisions remain uncertain, particularly when considered in combination with other factors. In each AAC determination

I take this uncertainty into account to the extent possible in context of the best available information.

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

In some cases, even where government has made a formal land-use decision, it is not necessarily possible to fully analyse and account for the consequent timber supply impacts in a current AAC determination. Many government land-use decisions must be followed by detailed implementation decisions requiring, for instance, further detailed planning of legal designations such as those provided for under the *Land Act* and the *Forest and Range Practices Act* (FRPA). In cases where there is a clear intent by government to implement these decisions that have not yet been finalized, I will consider information that is relevant to the decision in a manner that is appropriate to the circumstance. The requirement for regular AAC reviews will ensure that future determinations address ongoing plan–implementation decisions.

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

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

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

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

Overall, in making AAC determinations, I am mindful of my obligation as a steward of the forest land of British Columbia, of the mandate of the Ministry of Forests, Lands and Natural Resource Operations (formerly the Ministry of Forests and Range) as set out in Section 4 of the *Ministry of Forests and Range Act*, and of my responsibilities under the *Forest and Range Practices Act* and *Forest Act*.

The role of the base case

In considering the factors required under Section 8 of the *Forest Act* to be addressed in AAC determinations, I am assisted by timber supply forecasts provided to me through the work of the timber supply review program for timber supply areas (TSA) and tree farm licences (TFL).

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

From a range of possible forecasts, one is chosen in which an attempt is made to avoid both excessive changes from decade to decade and significant timber shortages in the future, while ensuring the long-term productivity of forest lands. This is known as the ‘base case’ forecast and forms the basis for comparison when assessing the effects of uncertainty on timber supply. The base case is designed to reflect current management practices.

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

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case forecast are realistic and current, and the degree to which resulting predictions of timber supply must be adjusted to more properly reflect the current and foreseeable situation. These adjustments are made on the basis of informed judgment using currently available information about forest management, and that information 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, in reviewing the considerations that lead to the AAC determination, it is important to remember that the AAC determination itself is not simply a calculation. Even though the timber supply analysis I am provided is integral to those considerations, the AAC determination is a synthesis of judgement and analysis in which numerous risks and uncertainties are weighed. Depending upon the outcome of these considerations, the AAC determined may or may not coincide with the base case forecast. Judgements that in part may be based on uncertain information are essentially qualitative in nature and, as such, are subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation would be gained by attempting a computer analysis of the combined considerations.

Reference forecast for the Lakes TSA

A key issue in this AAC determination is how to manage the mature, non-pine forests following the MPB infestation until the existing, immature stands are suitable for harvesting. In previous timber supply analyses, one harvest forecast was presented which was an outcome of the best available data and current management practices. This forecast is referred to as the 'base case'.

In the Lakes TSA, however, the extent of damage caused by the MPB infestation has increased the uncertainty regarding the effect of forest management practices on timber supply. Therefore, no single timber supply forecast was presented as the base case. Instead, a common data set and set of assumptions were used to develop three timber supply scenarios. These scenarios share the following major assumptions:

- the MPB epidemic has peaked in the Lakes TSA;
- dead pine trees retain some commercial value as long as they remain standing, which was assumed to be 15 years after MPB infestation;
- unharvested pine stands that have been dead for more than 20 years regenerate to 20 year old natural stands;
- pine-leading stands are stands where pine occupies at least 50 percent of the stand. (N.B. stands with less than 50 percent pine are present on less than one percent of the THLB);
- pure pine stands are stands where at least 70 percent of the stand is pine; and
- highest volume stands were harvested first.

Scenarios 1 and 2 differ in the amount of pine-leading and non-pine leading stands harvested; whereas, Scenario 3 examines the effect of harvesting pure pine stands first and then harvesting pine-leading and regenerated pine stands.

Due to the difference in analysis assumptions, these three scenarios are not directly comparable with the base case used in the previous timber supply review and it is difficult to attribute any changes in the forecasts to any one particular factor.

Of the three scenarios, Scenario 1 was used as the 'reference scenario' as the majority of sensitivity analyses use this scenario as a benchmark. Scenario 1 is discussed below while Scenario 2 and Scenario 3 are discussed under 'alternative harvest rates'.

- Scenario 1

The objective in Scenario 1 is to maintain the current focus on pine salvage until all pine-leading stands have been salvaged or have fallen down. Then the harvest is allowed to decrease to the highest sustainable level of non-pine stands. Once the regenerating pine-leading stands are suitable for harvest, the harvest levels begin to increase to the long-term level.

In this scenario, an initial harvest level of 3.41 million cubic metres per year, of which 3.16 million cubic metres per year (the level of the current AAC) and 250 000 cubic metres per year, were attributable to pine-leading and non-pine leading stands, respectively, was maintained for one decade. The non-pine leading harvest contribution of 250 000 cubic metres per year represents the highest non-pine level that could be sustained across the entire 100-year forecast. After the first decade, pine-leading stands were assumed to have deteriorated to the extent that they were unsuitable for harvest and the harvest level of 250 000 cubic metres per year was entirely attributable to non-pine leading stands. After decade 2, the harvest level increased every 20 years as the harvest contribution of regenerating pine-leading stands gradually increased. At the beginning of decades 3, 5, and 7 the harvest level increased to 450 000 cubic metres per year,

650 000 cubic metres per year, and 950 000 cubic metres per year, respectively. The long-term harvest level of 1.15 million cubic metres per year was reached at the beginning of decade 9.

Comments received regarding Scenario 1 included:

- Two individuals indicated that the AAC should be maintained at its current level or increased to the Scenario 1 initial harvest level in order to maintain production capacity and to provide opportunities for non-sawlog wood fibre users;
- The Omineca Beetle Action Coalition (OBAC) and the Regional District of Bulkley-Nechako (RDBN) stated that Scenario 1 borrows from the mid-term and does not encourage licensees to continue their excellent stewardship practice of focusing on pine-killed trees; and
- OBAC and the RDBN also noted that the initial harvest level projected in Scenario 1 is more than double the average harvest for the past five years and is not based on past performance.

Input received regarding Scenarios 2 and 3 is included with the descriptions of these scenarios under '**Alternative harvest rates**' later in this document.

I have reviewed the assumptions and methodology incorporated in the three timber supply scenarios and I have considered the management of the mature, non-pine forests that remain following the MPB infestation and the implication to the mid-term timber supply. Based on my review, I am satisfied, subject to the considerations discussed in this rationale, that the information presented to me provides a suitable basis from which I can assess the timber supply for the Lakes TSA.

In addition to the three harvest scenarios, I was provided with a number of sensitivity analyses. This and other information, in the following sections, have been helpful in the considerations and reasoning leading to my determination. I will be referring to Scenario 1 as the 'reference scenario' because the sensitivity analyses carried out in the timber supply review were relative to this scenario.

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

I have reviewed the information for all of the factors that require consideration under Section 8 of the *Forest Act*. Where I have concluded that the modelling of a factor appropriately represents current management or the best available information, and uncertainties about the factor have little influence on the timber supply projected in the reference forecast, no discussion is included in this rationale. These factors are listed in the table below.

Table 1. List of factors for which the reference forecast modelling assumptions have been accepted

| Forest Act section and description | Factors accepted as modelled |
|--|---|
| 8(8)(a)(i) Land base contributing to timber harvesting | Non-forest Woodlot licences and Community Forest Agreements Parks and protected areas Old growth management areas (OGMAs) Economic and physical operability Environmentally sensitive areas Low productivity sites Problem forest types Roads, trails, and landings Riparian management Wildlife tree retention |
| 8(8)(a)(i) Composition of the forest and expected rate of growth | Age class structure and species profile Site productivity estimates Volume estimates for existing and regenerating stands |
| 8(8)(a)(ii) Expected time for the forest to be re-established following denudation | Regeneration assumptions |
| 8(8)(a)(iii) Silvicultural treatments to be applied | Silvicultural systems Incremental silviculture |
| 8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste, and breakage | Utilization standards Decay, waste, and breakage and coarse woody debris |
| 8(8)(a)(v) Constraints on the amount of timber produced by use of the area for other purposes | Adjacency/green-up Ungulate winter habitat Species at risk Landscape-level biodiversity – seral-stage distribution Landscape corridors First Nations: cultural heritage resources Range |
| 8(8)(a)(vi) Other information | |
| 8(8)(b) Short and long-term implications of alternative rates of timber harvesting from the area | |
| 8(8)(d) Economic and social objectives of the government | |
| 8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area | Forest health including mountain pine beetle |

For other factors, where more uncertainty exists, or where public or First Nations' input indicates contention regarding the information used, modelling, or some other aspect under consideration, this rationale incorporates an explanation of how I considered the essential issues raised and the reasoning leading to my conclusions.

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 harvest

- general comments

The total area of the Lakes TSA, as reported in the analysis report, is 1 121 609 hectares. Of the total TSA area, 810 575 hectares—about 72 percent—is classified as productive Crown forest land.

As part of the process used to define the timber harvesting land base (THLB), a series of deductions was made from the productive Crown 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 the Lakes TSA, I acknowledge that the above approach was used in the timber supply analysis, resulting in a long-term THLB of 512 567 hectares, which means that 238 008 hectares (37 percent) of the productive Crown forest land is unavailable for timber harvesting for a variety of reasons.

Existing forest inventory

- current inventory

The inventory data used in this analysis was from the January 2010 release of the Provincial Forest Inventory Data (PFID), also known as the Vegetation Resource Inventory (VRI). This version of the PFID was adjusted to reflect the effect of MPB on the pine inventory, including volumes for live and dead pine. For the Lakes TSA, both VRI phase I (photo interpretation) and VRI phase II (ground sampling) and destructive sampling for net volume adjustment factors have been completed. The inventory used in the analysis was updated for depletion and annual growth was projected to 2009.

District staff informed me that errors were found in the inventory data. These errors included missing polygon ages, boundary polygon discrepancies and dead pine volumes that were grossly underestimated as they were based on a pine mortality of about 20 percent. As a result, rather than using these values, pine volumes were modelled based on recent forest health information that indicated pine mortality in the Lakes TSA is about 90 percent.

I have reviewed the inventory information used in the analysis and note that although there are some discrepancies in the data, the issue regarding pine mortality was resolved. Therefore, I am satisfied that the inventory information used in the analysis represents the best available information and is adequate for use in this determination. Prior to the next determination, I recommend that FAIB staff review the inventory information to resolve data errors.

Expected rate of growth

- minimum harvestable volumes

A minimum harvestable volume is an estimate of the minimum volume at which a stand has grown to a harvestable condition. The minimum harvestable volume assumption mainly affects when second-growth stands will be available for harvest. This in turn affects how quickly existing stands may be harvested such that a stable flow of harvestable timber may be maintained.

The minimum harvestable volume assumed in Scenarios 1 and 2 was 140 cubic metres per hectare. In Scenario 3, the minimum harvestable volume criterion was decreased to 100 cubic metres per hectare for pine-leading stands containing less than 70 percent pine between decades 2 to 6 in the forecast. Consequently, in Scenario 3 regenerating pine-leading stands were available for harvest earlier and the mid-term harvest level was higher than in the other two scenarios.

District staff indicated that based on a review of cruise data for the period 2000 to 2009, the average harvestable volume has been 316 cubic metres per hectare. During this period, harvestable volumes exceeded 140 cubic metres per hectare 98 percent of the time.

Based on a review of the Lakes TSA Timber Supply Analysis: Public Discussion Paper, the Omineca Beetle Action Coalition and the Regional District of Bulkley-Nechako noted the following:

- Much of the future harvest projected in the analysis targets 50 to 60 year old managed stands and this assumption is not supported by current practice;
- Harvesting 140 cubic metre per hectare stands close to mill sites may be economically viable; however, this assumption does not account for longer transportation cycles or barge crossings; and
- Use of a minimum harvest volume of 100 cubic metres per hectare does not reflect historical practice.

The Lakes Timber Health and Salvage commented that MPB-killed stands in age classes 3 and 4 have biomass value and provide some sawlog material.

District staff agree with the input received; however, they note that although transportation variables are important considerations not all 140 cubic metre per hectare stands are the same. For example, stands with fewer trees and higher volumes per tree may be more viable than stands with larger numbers of smaller trees.

I agree with the input received regarding the lack of demonstrated performance in low volume stands and that the assumptions used in the analysis do not reflect historical information. However, in considering this factor I am mindful that the cyclical nature of forest product markets, the emergence of new markets and the diversification in wood fibre products, make it difficult to predict with any certainty what minimum stand volumes will be economically viable in the future on the basis of historical information. Therefore, I accept that the minimum harvestable volumes assumed in the reference forecasts are adequate for use in this determination.

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

- not satisfactorily restocked areas

Not satisfactorily restocked (NSR) areas are those where timber has been removed, either by harvesting or by natural causes, and a stand of suitable forest species and stocking has yet to be established. Areas where the standard regeneration delay has not yet elapsed after harvesting are considered 'current' NSR. Where a suitable stand has not been regenerated and the site was harvested prior to 1987, the classification is 'backlog' NSR.

The total area of NSR for this review is 15 333 hectares. Of the 1220 hectares classified as backlog NSR, approximately 20 to 30 percent could provide volumes suitable for logging, while another 20 to 30 percent are below current stocking standards but will still contribute to the mid-term timber supply. This leaves approximately 500 hectares that will likely remain as NSR unless treated.

The analysis did not reflect about 3000 hectares of NSR that resulted from the 2010 fire season. In addition, the district small-scale salvage program annually harvests about 160 hectares per year. The extent to which these sites regenerate naturally is unknown; however, the district will monitor these sites and determine the need for planting.

During public consultation, the Omineca Beetle Action Coalition and the Regional District of Bulkley-Nechako recommended that dead-pine stands be promptly restocked. Lakes Timber Health and Salvage (LTHS) commented that the practice of 'cat-piling' and burning young plantations killed by MPB should be discontinued and that the practice of under-planting prevents fibre utilization by the emerging biomass industries.

In response, I note that licensees have a legal obligation to reforest harvested areas and district staff indicate that licensees in the Lakes TSA promptly replant harvested sites. In 2005, government introduced the *Forests for Tomorrow* program to improve timber supply and address risks to other forest values through the re-establishment of young forests on stands destroyed by wildfire or MPB infestation. In the Lakes TSA, this program has included: surveys, removal of dead pine overstory to allow for the planting of healthy trees, fire hazard abatement and planting. In 2011, the *Forests for Tomorrow* programs are directed at reforesting fire-damaged stands, while the district is focusing its efforts on stand fertilization.

District staff indicate that LTHS currently has a licence to salvage 25 000 cubic metres per year and there is sufficient inventory to meet this volume allocation. With regard to burning slash piles, where the wood fibre in slash piles is economically viable, I encourage licensees to express their interest in salvaging this material. However, for slash piles that are unlikely to provide economically-viable wood fibre, re-establishing a forest and reducing fire hazard is important in order to provide for future timber supply and non-timber resource values.

Based on my review of the NSR information used in the analysis, I conclude the reference forecast did not account for the areas that may remain deforested following small-scale salvage and the 2010 fire season. This represents a small — less than one percent — overestimation of the mid- to long- term timber supply projected in the reference forecast, and I will account for this in my determination as discussed in '**Reasons for Decision**'.

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

As noted in Table 1, I accept as modelled the factors considered under this section, and I will not discuss them further.

(ii) **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:**

- Interior log grade changes

In April 2006 new log grades were implemented for the BC Interior. Previously, a log was assessed according to whether the tree it came from was alive or dead at the time of harvest. Prior to April 2006, Grade 3 endemic (the 'normal' mortality observed in a mature stand) and Grade 5 (dead tree with less than 50 percent firmwood and/or less than 50 percent of lumber produced is merchantable) were not charged to the AAC if harvested. Under the new system, grades are based on log size and quality at the time it is scaled, not simply whether it was alive or dead at harvest. To better account for all harvested volume in the AAC cut-control, logs that were previously considered Grade 3 endemic or Grade 5 are now charged to the AAC. Therefore, this volume now needs to be taken into account in the AAC determination.

Estimates of timber volume in the reference forecast did not include dead potential volume. Possible sources of data about dead potential volume include inventory audit plots, VRI phase II ground samples, permanent sample plots, and temporary sample plots. Based on data from inventory audit plots, dead potential volume is about 6.7 percent of the volume from existing natural stands over 60 years of age in the Lakes TSA.

Based on my review of the interior log grade changes, I conclude that the short-term timber supply in the reference forecast was underestimated by up to seven percent and I will account for this in my determination, as discussed in '**Reasons for Decision**'.

(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, Lands and Natural Resource Operations (formerly 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.

- visual quality objectives

In the Lakes TSA, scenic areas and visual quality objectives (VQO) have been established or confirmed under the *Forest and Range Practices Act* (FRPA). The VQOs specify the maximum percentage of a scenic area that can have tree heights below the visually effective green-up height.

In the analysis, visual polygons were aggregated by VQO and landscape unit. Recent techniques were applied in the model that included slope-dependent, plan-to-perspective ratios and visually effective green-up heights. This resulted in approximately 32 percent of the merchantable

volume coming from areas with established VQOs. These areas account for about 31 percent of the THLB.

Since completion of the data package, two Government Action Regulation (GAR) Orders have been issued with respect to scenic areas and VQOs. The first order repealed more than 200 scenic areas around unnamed and small lakes and established and amended other scenic areas. The second order established VQOs for newly established or amended scenic areas. The net result was the removal of all visual quality management constraints on about 28 000 hectares or slightly more than five percent of the THLB. In a sensitivity analysis application of constraints based on the recent GAR Orders resulted in less than a one percent increase in the harvest levels projected in the reference forecast.

The following comments were received regarding VQOs:

- Lakes Timber Health and Salvage believe that policy and operational changes should be made to allow the harvest of pine stands while maintaining VQOs;
- Burns Lake Timber Supply Advisory Committee and Hampton Affiliates requested that FLNR conduct additional timber supply analyses to determine the alternative rates of harvest created by alleviating constraints associated with VQOs;
- Hampton Affiliates requested that FLNR conduct a 'GAR process' that would downgrade VQO visual quality category throughout the TSA and that in anticipation of a 'GAR process', incremental adjustments to VQO be done through Forest Stewardship Plan amendments;
- Fraser Lake Sawmills stated that timber supply constraints associated with VQOs should be adjusted to maximize the amount of sawlog available for harvest and that a sensitivity analysis to examine the benefit of removing VQOs for all scenic areas should be done;
- Omineca Beetle Action Coalition and Regional District of Bulkley-Nechako asked for a revision of VQOs that constrain access to economic salvage; and
- One individual noted that visual quality is an important factor in current forestry practices, and another individual indicated that VQOs need to be frequently reviewed and, if necessary, modified in the Nadina District to account for the almost total destruction of pine-leading stands.

In response, a second sensitivity analysis was prepared, in which all constraints for VQOs were removed, that indicated the harvest of pine-leading stands could be increased from 3.1 million cubic metres per year to 3.6 million cubic metres per year. District staff note that both the reference forecast and sensitivity analysis initial harvest levels are significantly higher than the 1.6 million cubic metres per year average harvest level since 2004. They indicate that visual quality management does not significantly affect the reference forecast harvest levels; however, it may constrain harvesting in localized areas for a time. With regard to the input received from Lakes Timber Health and Salvage, district staff note that some pine salvage is permitted in scenic areas.

I have considered the information and input received regarding scenic areas and VQOs in the Lakes TSA. In keeping with my guiding principles, I will not speculate on the factors that could affect timber supply that are beyond current legal requirements. Therefore, with the exception of the March 2010 GAR Orders, I accept that the assumptions used in the analysis represent current legal requirements and are; therefore, appropriate for use in this determination.

Regarding the March 2010 GAR Orders that were not considered in the analysis, I am accounting for an underestimation of about one percent in the reference scenario harvest levels, as discussed in '**Reasons for Decision**'. However, in recognition of the importance of mitigating the decrease in mid-term timber supply, my staff have undertaken a mid-term timber supply analysis project outside of this determination to examine a variety of alternative forest management practices.

- hydrological considerations

In the analysis, no specific assumptions were applied to account for the potential impact of large-scale MPB mortality and salvage harvesting on watershed-level hydrology.

Regional hydrologists expressed concern about the cumulative hydrologic effects of large-scale salvage and tree mortality in MPB-impacted stands. In particular, they are concerned that non-pine species will likely play an important hydrological role in MPB-affected stands until the pine component regenerates.

Regional staff indicated that while there may be increased risk associated with salvage harvesting, negative impacts can be mitigated through the implementation of specific BC Forest Service planning guidance related to erosion and sediment control, hydrological integrity, and MPB salvage. In addition, a considerable amount of work has been completed by the Morice and Lakes Innovative Forestry Practices Agreement (IFPA) holders to determine the risk of increased peak flow and production of fine sediments. The results suggest that the key driver in determining risk is equivalent clearcut area (ECA).

Based on my review of the watershed assumptions used in the analysis, I am satisfied that the analysis adequately reflects current practice. However, given the extent of MPB mortality and large-scale salvage in the pine-dominated watersheds of the Lakes TSA, I encourage licensee and district staff to continue to consider ways of mitigating negative impacts on hydrologic integrity during operations. For the next timber supply analysis, I expect the timber supply analyst to incorporate ECA assumptions, where appropriate, as indicated under ‘**Implementation**’.

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

- secondary stand structure

Secondary stand structure refers to mature trees, saplings and seedlings that have remained alive in pine stands following MPB infestation. Research suggests that as components of the overstory (mature trees) die, existing understory seedlings and saplings accelerate their growth in response to increased availability of nutrients, moisture and light. Current information suggests that preserving stands with increased amounts of secondary structure will help to mitigate the decrease in mid-term timber supply.

Fraser Lake Sawmills noted that the results of an analysis prepared by the Morice and Lakes Innovative Forestry Practices Agreement (IFPA) holders suggest that an additional 2.5 million cubic metres of dead pine could be harvested if secondary stand structure requirements were waived and recommended that additional analyses be prepared to assess the timber supply impacts of managing for secondary stand structure.

A review of the IFPA analysis by district staff indicates that one of the assumptions in this analysis was that about 32 percent of stands in the THLB met secondary stand structure requirements. District staff informed me that reliable inventory data related to the location and abundance of pine-leading stands with secondary stand structure is not available. Due to this lack of information, secondary stand structure was not accounted for in this timber supply analysis.

The Omineca Beetle Action Coalition and Regional District of Bulkley-Nechako recommended protecting viable understory in dead pine stands from harvest in the short term in order to mitigate the decrease in mid-term timber supply. Regional staff noted that in addition to supporting mid-term timber supply, non-pine stands and the non-pine understory in pine stands support mid-term habitat supply and help to mitigate the negative hydrological impacts associated with widespread pine mortality and salvage.

According to district staff, as part of a regional initiative, the district and licensees adopted a strategy to mitigate the impact of MPB on mid-term timber supply. One of the key elements of this strategy is a commitment to monitor and share survey results related to secondary stand structure. Staff note that while formal secondary stand structure surveys are not being conducted, stand structure observations are made during cruise checks.

In the absence of information regarding secondary stand structure in the Lakes TSA, I accept that the assumptions used in the analysis were adequate and I will not adjust the reference scenario on this account. I am encouraged that licensee and FLNR staff have committed to collecting secondary stand structure information for the TSA from visual surveys during cruise checks and the monitoring of survey results and expect this information to be incorporated in future timber supply reviews, as discussed in ‘**Implementation**’.

- *harvest performance*

Information obtained from the provincial harvest billing system (HBS) indicates that in the last four years (2006 to 2010) an average of about 50 percent of the AAC has been harvested. According to regional tenures staff, this is due primarily to the scarcity of pine stands that are operable under current economic conditions.

One of the first steps in preparing a timber supply forecast is to update the forest inventory to account for harvesting. This means that the age, height and volume values for each harvested stand are reset to zero, therefore, the stand becomes unavailable for harvesting in the model until it has “grown” to merchantable size. Stands that would have been harvested if the full amount of the current AAC (2004) had been harvested remain in the inventory and the volumes support the short- to mid-term timber supply in the harvest scenarios that are used to determine the new AAC. Therefore, if the volume from stands attributable to the current AAC (2004) is allocated to new or existing licences in addition to the new AAC, these stands do ‘double duty’ (that is they are assumed to be available for harvest twice) resulting in a significant risk of over-harvesting the new AAC.

For this determination, I note that the harvest scenarios prepared for my consideration rely on any unallocated or unharvested volume attributable to the current AAC. In the three harvest scenarios described in this rationale, the transition to the significantly lower mid-term harvest levels occurs after one decade. Allocating volume attributable to the current AAC (2004) after the new AAC is in effect could effectively accelerate the rate of harvest, which can adversely impact the transition time, level and duration of the mid-term reduction in timber supply. In addition, harvesting above the new AAC could adversely affect non-timber values (e.g., wildlife habitat, hydrologic function).

Under Section 12 of the *Forest Act*, it is the regional executive director who has the authority to allocate unallocated or undercut volume to new or existing licences, not the chief forester. However, I strongly encourage the regional executive director to consider the significant risks to timber supply and non-timber values when considering disposition of unallocated and/or undercut volume attributable to the current AAC (2004).

In accordance with the chief forester’s recommendation in the 2004 rationale for the current AAC, licensees have been targeting pine-leading stands for harvest. Based on HBS data, for the five-year period 2006 to 2010, pine volume accounted for an average of 80 percent of the total volume billed. I would like to commend licensees for their ongoing efforts to focus harvesting in MPB-affected stands and note that their continued support will be an important part of mitigating the projected downfall in mid-term timber supply.

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

- *alternative harvest rates*

Three different timber supply scenarios were prepared to explore the implications of a range of forest management approaches. Scenario 1 and the assumptions common to all three scenarios were previously described under ‘**Reference forecast for the Lakes TSA**’. The remaining two scenarios – Scenario 2 and Scenario 3 – are described below. In all three scenarios mid-term harvest levels are significantly lower than the current AAC and the AAC prior to the harvest level increases for MPB.

- *Scenario 2*

In Scenario 2, the harvest in the first decade was restricted to pine-leading stands, the harvest of non- pine leading stands was temporarily allowed to exceed the long-term sustainable harvest level and the minimum harvest volume criterion was 140 cubic metres per hectare. Under this scenario, an initial harvest level at the current harvest level – about 1.6 million cubic metres per year – from predominately pine-leading stands was maintained for one decade. In decades 2 and 3, when the majority of the harvest originates from non-pine stands, the harvest level decreased to 500 000 cubic metres per year. Starting in decade 3, the contribution of non-pine stands gradually decreases as regenerating pine stands become available for harvest. In decade 7, the harvest level increased to 950 000 cubic metres per year until decade 10 when it increased to the long-term level of 1.15 million cubic metres per year.

The Omineca Beetle Action Coalition and the Regional District of Bulkley-Nechako believe that Scenario 2 has the advantage of continuing the focus on pine salvage and provides the TSA with the healthiest possible timber supply. They recommend adopting the principles within this scenario, specifically with regards to: protection of the mid-term timber supply, continuation of the harvest focus in pine-leading stands; elimination of the limit on the harvest of pine-leading stands; and establishment of a partition in the AAC to minimize the short-term harvest of non-pine stands.

- *Scenario 3*

In Scenario 3, the harvest in the first decade was restricted to stands in which more than 70 percent of the stand volume was pine, the non-pine component of pine-leading stands with less than 70 percent pine was limited to 230 000 cubic metres per year, and the minimum harvestable volume criterion was decreased to 100 cubic metres per hectare. Under this scenario, an initial harvest level of 2.1 million cubic metres per year could be maintained for one decade before decreasing to 750 000 cubic metres per year for 50 years at the beginning of decade 2. At the beginning of decade 7, the harvest level increases to 810 000 cubic metres per year, a level that is maintained until decade 10 when the harvest level increases to 1.15 million cubic metres per year.

Input received regarding the three timber supply scenarios included:

- The Lakes Timber Health and Salvage believes that the mid-term forecast of 750 000 cubic metres per year presented in Scenario 3 is viable and believes that if the biomass fibre available in these stands is also utilized, the AAC could realistically be increased beyond 750 000 cubic metres per year;
- Fraser Lakes Sawmill recommends a 20-year shelf life, especially where the minimum harvestable volume is reduced to 100 cubic metres per hectare as there are no assumptions made about the potential end use of the pine; and
- Other input received indicated that the analysis for the timber supply review should not be narrowly focused on current management but rather it should explore a range of forest management assumptions, including scenarios in which the requirements for non-timber values be removed.

I have considered all of the input received regarding the three scenarios provided in the public discussion paper and note that current information regarding legal requirements and current management were used as the basis for the three scenarios. However, each scenario investigated the effect on timber supply of varying one or more aspects of current management, e.g. minimum harvestable volume, harvest levels of non-pine etc. My comments regarding the recommendation that this review include scenarios in which legal objectives for non-timber values have been removed are included in the following section (mid-term timber supply).

The differences in mid-term harvest level and duration of the mid-term depression in the harvest levels projected in the three scenarios prepared for this determination are heavily dependent on the choices made regarding the initial harvest level for pine-leading stands, the rate of non-pine stand harvest and the minimum harvest volume criterion. In addition to these choices, there are other factors that could affect the mid-term harvest level. For example, if beetle-killed stands retain economic value longer than 15 years, if the THLB increases or if large areas of immature forests are fertilized, the mid-term harvest level could be higher than in the three scenarios. Conversely, if mortality in regenerating stands is higher than anticipated, if harvesting in non-pine stands is higher than modelled, if the THLB decreases or if non-recoverable losses from other damaging agents (e.g. fire, windthrow, pests), the mid-term harvest level could be lower than indicated in the three scenarios.

I have considered all of the information and comments received regarding the three harvest scenarios prepared for this determination and I will discuss them further in '**Reasons for Decision**'.

- *mid-term timber supply*

In line with the objectives described in the Minister's letter (Appendix 4), sensitivity analyses based on Scenario 2 were completed to examine the effect of varying land use requirements or management assumptions. Changes that improved mid-term timber supply, included removal of OGMA, riparian area, and wildlife tree retention (WTR) requirements and reducing merchantability requirements.

A number of comments were received regarding mid-term timber supply including: the importance of meeting secondary structure criteria, mid-term habitat supply and ways to improve mid-term timber supply.

I am mindful of this input and note that, where appropriate, these comments are discussed in the relevant sections of this rationale. However, some of the comments include requests that I consider the effect of eliminating land use objectives that have been legally established by government, such as those for visual quality and old growth retention, in determining a new AAC for the Lakes TSA. While it is appropriate to examine the potential effects of these changes on mid-term timber supply outside of the AAC determination process, as discussed in '**Guiding Principles**' it is not my practice to 'base my decision on unsupported speculation with respect to factors that could affect the timber supply that are not substantiated by demonstrated performance or are beyond current legal requirements'.

The Lakes TSA mid-term timber supply mitigation analysis is underway and is receiving input from local licensees. A report describing the results of these analyses will be available later this year. In the event that the legal requirements for established land use objectives change and/or there are demonstrated changes in stand merchantability requirements that could significantly affect timber supply, I am prepared to revisit this determination earlier than the 10-year deadline provided for in the *Forest Act*.

(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;

-summary of public input

The Minister's letter of July 4, 2006 suggests that the chief forester should consider important social and economic objectives that may be derived from public input during the timber supply review, where these are consistent with government's broader objectives. To this end, two 60-day public review periods were provided, one for the data package and one for the public discussion paper. The submissions received during these reviews were either used to amend the data package on which the timber supply analysis was based and/or were presented for my consideration prior to determining a new AAC for the Lakes TSA.

Submissions were received from the Ministry of Environment, local residents, the forest industry, the Burns Lake Timber Supply Advisory Committee, the Omineca Beetle Action Coalition, the Regional District of Bulkley-Nechako and a number of individuals. These submissions included comments related to the harvest scenarios, overlap between riparian areas and wildlife tree retention, road widths, harvest of young and small volume stands, operational adjustment factors, adjacency and green-up, visual quality management, mid-term timber supply, secondary stand structure, species and geographic partitions and socio-economic considerations.

I would like to thank all of the individuals and groups who participated in this timber supply review and note that their input has helped to inform my considerations in determining an AAC for the Lakes TSA. Where I have received submissions that are outside of my authority as chief forester in determining AACs under Section 8 of the *Forest Act*, I have forwarded them to the appropriate decision makers.

Economic and Social Objectives

- First Nations consultation

The Crown has a duty to consult with, and accommodate if necessary, those First Nations for whom it has knowledge of the potential existence of aboriginal interests that may be impacted by a proposed decision, including strategic-level decisions such as AAC determinations. As chief forester, I must therefore consider information arising from the consultation process with First Nations respecting aboriginal interests and treaty rights that may be affected by my AAC determination. As well, I will consider other relevant information available to the ministry regarding aboriginal interests, including information gathered during other consultation processes.

There are six First Nation communities and a First Nation's central office within the Lakes TSA. These are: Cheslatta Carrier Nation, Lake Babine Nation, Burns Lake Band, Wet'suwet'en First Nation, Skin Tyee Nation, Nee Tahi Buhn Band, and the Office of the Wet'suwet'en. An additional five First Nations maintain communities outside the TSA; however, they assert rights and title that overlap lands relevant to this TSA. These are: Stelat'en First Nation, Nadleh Whut'en Band, Tlazt'en First Nation, Ulkatcho Band, and Yekooche First Nation.

Several of the First Nations listed above have Forestry Consultation and Revenue Sharing Agreements (FCRSA) with the Province. These agreements provide for revenue sharing and forest tenure opportunities and contain provisions for consultation on administrative decisions, such as AAC determinations; provisions which were followed by district staff during this timber supply review. Of the groups listed above, Burns Lake Band, Cheslatta Carrier Nation, Skin Tyee Nation, and Yekooche First Nation have an FCRSA. While, Ulkatcho and Tl'azt'en First Nations have Forest and Range Opportunity (FRO) agreements, which are the forestry revenue sharing agreements that were in place prior to the FCRSAs. The remaining bands, Lake Babine Nation,

Nee Tahi Buhn Band, Wet'suwet'en First Nation, Nadleh Whuten and Stellat'en First Nation previously had FROs; however, these agreements have expired and government staff are currently negotiating FCRSAs with these First Nations.

Cheslatta Carrier Nation is in Stage 3 of the BC treaty process, while Lake Babine and Wet'suwet'en First Nations are in Stage 4 of the treaty process. At the time of my determination, no final agreements have been made and in accordance with my guiding principles, I will not anticipate the impact of decisions that have yet to be made.

As part of the consultation process a preliminary assessment was completed, that includes a review of available aboriginal interest information and an analysis of the potential impacts the AAC decision might have on those interests. Sources of information reviewed include available traditional use studies, ethno-historical assessments, remote access to archaeological data (RAAD), agreements between First Nation and the Province, and information from past consultation processes. Based on this review, the district undertook consultation at the normal level of the consultation spectrum as outlined in the *Haida* decision.

Consultation on the Lakes TSA timber supply review began in October 2008 and concluded in July 2010. Consultation was initiated with a letter notifying First Nations that the timber supply review was starting and requested their input on how the AAC decision might impact their aboriginal interests, and an offer was made to meet with district staff. Following in November 2008, district staff met with Burns Lake, Skin Tyee, Tl'azt'en and Stellat'en First Nations to provide a TSR overview session and an opportunity for First Nations to raise concerns regarding the TSR process. No concerns or issues relevant to TSR were raised at these meetings. In April 2009, the Lakes TSA Data Package was sent to First Nations requesting their review and input and no comments were received. In May 2010, the Lakes TSA Public Discussion Paper was sent to First Nations for their review and comment. In July 2010, district staff met with Stellat'en First Nation to discuss the Public Discussion Paper. Stellat'en expressed their desire to be considered in the AAC disposition, and it was explained that the AAC disposition is the responsibility of the regional executive director.

I am aware that all First Nations currently hold or have been offered forest tenure within the TSA, and that the majority of these tenures are non-renewable forest licences (NRFL). A community forest was tenured to the Cheslatta Carrier Nation and a woodlot was tenured to the Nee Tahi Buhn Band. Generally, volume interests for other First Nations have been addressed through agreements with their local districts; however, the Tl'azt'en First Nation assert rights and title in the Lakes TSA, and; therefore, maintain an interest in acquiring volume within the Lakes TSA. First Nations with remaining NRFL volume continue to express interest in Section 18 of the *Forest Act* regarding transfers to the Morice TSA. A portion of the volume allocated to First Nations through *Bill 28* still remains to be issued through forest tenure opportunity agreements. It is anticipated that this volume will be issued under an area-based tenure. Approximately 50 cubic metres per year of free-use permitting has been occurring in support of traditional use activities.

Many First Nations also have an interest in pursuing bioenergy opportunities between Babine and Ootsa Lakes with a specific interest in opportunities between Babine and François Lakes. Five local First Nations have formed a group that is currently exploring a bioenergy opportunity focused in the southern half of the TSA and an offer has been made to these First Nations.

From my review of the consultation process, I conclude that district staff engaged at an appropriate level of consultation with First Nations during the timber supply review for the Lakes TSA, given the aboriginal interests information available for each First Nation and the potential impact that this AAC determination may have on them. I note that district staff continue to be available to meet and consult with First Nations on specific issues at the operational planning level.

If new information regarding First Nations' aboriginal interests becomes available that significantly varies from the information that was available for this determination, I am prepared to revisit this determination sooner than the 10 years required by legislation.

- wood fibre processing

The economy of the Lakes TSA is largely resource-based and mostly dependent on the local forest industry, which provides about 46 percent of the basic employment. There are two sawmills operating within the TSA boundaries – Babine Forest Products with an annual capacity of 900 000 cubic metres and Decker Lake Forest Products with an annual capacity of 350 000 cubic metres. Both these mills are owned by Hampton Affiliates and are currently running at full capacity.

The TSA supplies approximately 30 percent of the 400 000 cubic metre annual requirement for West Fraser Timber Company Ltd's (West Fraser) Fraser Lake Sawmills. The TSA also supplies a portion of the requirements for Pacific Inland Resources (West Fraser) and a Canadian Forest Products Ltd's (Canfor) sawmill, both located in Houston. Minor supply is provided to L&M Lumber Company Ltd. in Vanderhoof.

In addition, two new pellet plants have been established near Burns Lake — Tahtsa Pellets Ltd. and Pinnacle Renewable Energy Group.

In addition to traditional sawlog, pulp and pellet producers, there is increasing interest in access to wood fibre for bioenergy production. The *BC Bioenergy Strategy* is a provincial plan to diversify rural economies by recovering maximum value from BC's forests and creating new economic opportunities for MPB-damaged timber through conversion into bioenergy.

Currently, six local FNs are considering the establishment of an electrical generating facility with the capacity to generate 30 megawatts of power. In order to support this venture, the minister has offered the FNs group a 20-year non-replaceable forest licence (NRFL) for 300 000 cubic metres per year. The NRFL would stipulate that the first 10 years of harvest must come from south of François Lake. In addition, the community of Burns Lake has announced that they intend to build a community heating plant to heat the major buildings in Burns Lake. The fibre requirement of this plant is expected to be less than 5000 cubic metres per year.

According to district staff, local bioenergy producers view the economic viability of wood fibre in terms 'haul distance', that is the distance between the fibre source and the processing facility. Currently, haul distances of 100 kilometres are considered to be economically feasible in the Burns Lake area. The utilization standard for 'bioenergy' fibre is 7.5 centimetres diameter at breast height (DBH) with a 5 centimetre top. Top size is limited by breakage only. DBH is limited by the diversity of timber within the cutblock, with each species, grade and size being marketed differently.

A number of submissions were received regarding wood fibre, including:

- The Lakes Timber Supply Advisory group indicated that there is a critical need for a detailed analysis of the amount and type of fibre available for the biomass industry;
- The Omineca Beetle Action Coalition and the Regional District of Bulkley-Nechako are of the opinion that the FLNR plays a critical role in improving and maintaining information about the location and quality of biomass available for recovery;
- Burns Lake Timber Supply Advisory Committee stated that the FLNR should develop additional scenarios that focus on the type of fibre bioenergy industries require and investigate increased opportunities for salvage, particularly in stands with less than 100 cubic metres per hectare; and
- In a separate submission, a member of the public noted that the current volume requirements for local mills and those located in neighbouring communities that depend on the Lakes TSA far exceeds 1.6 million cubic metres per year under normal conditions.

In response, I note that the analysis undertaken in support of this determination differs in from previous approaches, e.g., no assumptions were made regarding the potential end use of dead pine as timber or pulp. Instead, it was assumed that dead pine would retain some form of economic utility until the wood had deteriorated to the point that the tree collapsed, which based on local information was assumed to be on average 15 years. As management practices evolve to support these new forest products, timber supply reviews will need reflect these changes (e.g. utilization standards, minimum harvest volume, or multi-log value analysis for mean annual increment).

- Minister's letter

The Minister of Forests, Lands and Natural Resource Operations (formerly the Minister of Forests and Range) has expressed the economic and social objectives of the Crown for the province in a letter to the chief forester, dated July 4, 2006 (attached as Appendix 3). The letter stresses the importance of a stable timber supply to maintain a competitive and sustainable forest industry while being mindful of other forest values. In respect of this, in the scenarios and in all of the alternative harvest flow projections with which I have been provided for reference in this determination, a primary objective in the harvest flow has been to attain a stable, long-term harvest level where the growing stock also stabilizes. In my determination, I have been mindful of the need for the allowable harvest in the short term to remain consistent with maintaining the integrity of the timber supply projection throughout the planning horizon. I have also considered with care the adequacy of the provisions made both in current practice, and assumed in the analyses, for maintaining a range of forest values.

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

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

- non-recoverable losses

The modelling of non-recoverable losses is to address merchantable volume losses that occur due to natural processes such as fire, wind, and forest health but are not considered within the volume projections used in the timber supply analysis. The damaging agents considered in this analysis included estimates of average annual unsalvaged volume loss due to caused by insects (including spruce bark beetle, balsam bark beetle, and two-year budworm), fire, and wind.

To estimate losses due to wind, information from cruise compilations, historic catastrophic event and from aerial and ground surveys was used. Based on these data, it was concluded that these losses are minimal in the Lakes TSA and; therefore, no wind loss assumptions were modelled.

Provincial forest health overview flight data from 2003 to 2007 were used to calculate non-recoverable losses (NRLs) for spruce bark beetle, balsam bark beetle, and two-year cycle budworm. I feel that the losses modelled in the analysis for spruce beetle are appropriate; however, where there are mortality losses due to two-year cycle budworm, there is a need for more accurate data that quantifies the extent and nature of the outbreak in the northern part of the TSA. Therefore, I encourage licensees and district staff to continue to monitor damage caused by insects and work collaboratively in addressing forest health concerns due to insects, as discussed in **‘Implementation’**.

Fire losses were calculated based on suppression data from the Northwest Fire Centre for the 2001 to 2007 period. All suppression data overlapping parks, private lands and points not confirmed by orthophotos or satellite imagery were excluded from the analysis. Following the compilation of information for this timber supply review, in the summer of 2010, a very large fire in the Binta Lake area affected 20 670 hectares of land within the Lakes TSA. Of that area, 9712 hectares were in the THLB. An estimated 1 301 268 cubic metres of timber were lost, and of that volume, 1 154 560 cubic metres were from pine-leading stands.

From this information, I am mindful of the uncertainty around non-recoverable losses both from the cause of mortality and from the ability to salvage such losses. For the purposes of this determination, I accept the non-recoverable losses as identified as the best available information for the short-term forecast period.

In consideration of the information presented to me I conclude that there is a small unquantified overestimation of timber supply in the short term due to the Binta Lake fire as noted in **‘Reasons for Decision’**. In addition, for the next determination, I would like to see further monitoring and analysis work to understand the implications of non-recoverable losses on the timber supply in the Lakes TSA, as outlined below in **‘Implementation’**.

Reasons for Decision

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

As discussed in *‘Reference forecast for the Lakes TSA’*, due to the uncertainty associated with forest management following the MPB-epidemic three scenarios were prepared instead of a single base case. Of these scenarios, Scenario 1 was used as the basis for the majority of the sensitivity analyses and was used as the ‘reference forecast’.

In the reference forecast (Scenario 1) an initial harvest of 3.41 million cubic metres per year, of which 3.16 million cubic metres per year and 250 000 cubic metres per year, were attributable to pine-leading and non-pine leading stands, respectively, could be maintained for one decade. The non-pine leading harvest contribution of 250 000 cubic metres per year represents the highest level that could be sustained across the entire 100-year forecast. After the first decade, pine-leading stands were assumed to have deteriorated to the extent that they were unsuitable for harvest and the harvest level of 250 000 cubic metres per year was entirely attributable to non-pine leading stands. After decade 2, the harvest level increased every 20 years as the harvest contribution of regenerating pine-leading stands gradually increased. At the beginning of decades 3, 5, and 7 the harvest levels increased to 450 000 cubic metres per year, 650 000 cubic metres per year, and 950 000 cubic metres per year, respectively. The long-term harvest level of 1.15 million cubic metres per year was reached at the beginning of decade 9.

I am satisfied that the assumptions applied in the timber supply scenarios for the majority of the factors applicable to the Lakes TSA were appropriate, as detailed in Table 1. Following is my consideration of those factors for which I consider it necessary in this determination to further take into account implications to the timber supply projected in the harvest forecasts.

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

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

- *not sufficiently restocked areas*—not accounting for areas that remain deforested following small-scale salvage and the 2010 fire season resulted in a less than one-percent overestimation of the mid- to long-term harvest levels; and
- *non-recoverable losses*—not accounting for the Binta Lake fire resulted in a small unquantified overestimation in short-term timber supply.

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

- *Interior log grade changes*—not accounting for the inclusion of logs that were previously considered Grade 3 endemic or Grade 5 resulted in up to a seven percent underestimation in the short-term timber supply; and
- *visual quality objectives*—not accounting for the March 2010 GAR Orders resulted in about a one-percent underestimation in the harvest levels throughout the entire forecast period.

I have reviewed the small quantified and unquantified upward and downward pressures on the projected harvest levels in the reference forecast and conclude that the factors that affect the mid- to long-term harvest level essentially cancel each other out. In the short term the most important factors influencing my decision is the effect of varying harvest rate and species composition on the transition to a lower mid-term harvest level. With this in mind, I note that the up to seven percent underestimation in the reference forecast short-term harvest level is common to all three harvest scenarios because they were all based on the same log grade change and visual quality objective assumptions. On this basis, I find it is reasonable to use the relative differences between these scenarios to assess the effect of different initial harvest rates and composition on current and mid-term timber supply, as discussed below.

This decision takes into account that the fact that of the 83 million cubic metres of merchantable volume in the THLB, approximately 57 million cubic metres is from pine-leading stands. Of the 57 million cubic metres, there are 12 million cubic metres in managed plantations, leaving 45 million cubic metres that must be managed on a priority basis. This decision also takes into account that there are about 25 million cubic metres of merchantable non-pine stands that must be prudently managed. Consequently, a key issue in this timber supply review is how to manage the remaining mature, non-pine forest following the MPB infestation until regenerating pine stands reach merchantable condition.

In Scenario 2, restricting the harvest exclusively to pine-leading stands for the first decade at the current harvest level, makes it possible to sustain a harvest level of about 500 000 cubic metres per year for 50 years. Under this scenario, in decades 2 and 3 the majority of the harvest is

supported by non-pine stands. Starting in decade 3, when regenerating pine stands contain merchantable volumes, the contribution of non-pine stands is gradually decreased to the long-term sustainable level.

In Scenario 3, the harvest level projections are based on a minimum harvestable volume of 100 cubic metres per hectare (compared to 140 cubic metres per hectare in Scenarios 1 and 2) and a 230 000 cubic metre per year contribution from the non-pine component of pine-leading stands with less than 70 percent pine between decades 2 and 6. Due to the reduced merchantability criterion, regenerating pine stands become harvestable sooner and it is possible to obtain a mid-term harvest level of 750 000 cubic metres per year.

It is evident from the differences in mid-term harvest levels projected in these scenarios that harvest rate, species composition as well as other variables has a significant impact on the mid-term timber supply. As evidenced in both Scenarios 2 and 3, conserving non-pine stands during the first decade, increases the mid-term harvest level. In Scenario 2, a lower initial harvest level and a temporary increase in the non-pine harvest above the long-term sustainable level results in a higher mid-term harvest level than in Scenario 1.

A review of harvest performance over the last five years indicates that on average about 50 percent of the AAC or about 1.6 million cubic metres has been harvested. Furthermore, as the harvest of pine-leading stands continues, it will become increasingly difficult to locate pure pine-leading stands (greater than 70 percent pine). This means that if the current harvest level is maintained, a larger amount of non-pine volume will be harvested incidental to the pine harvest. Based on these considerations, it would be imprudent to maintain the current harvest level that was increased seven years ago to address the MPB-infestation and conclude that the appropriate AAC for the Lakes TSA that accounts all of the factors I must consider under Section 8 of the *Forest Act*, is 2.0 million cubic metres.

Due to the critical role that conserving non-pine volume has in mitigating mid-term timber supply, I find it necessary to establish a partition in the AAC of 350 000 non-pine volume based on information from the provincial Harvest Billing System. This AAC and partition are intended to provide the flexibility required to continue harvesting MPB-impacted pine at recent levels and to conserve healthy, non-pine stands and secondary-stand structure to support mid-term harvest levels.

Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next 10 years and that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved in the Lakes TSA by establishing an AAC of 2 000 000 cubic metres, of which a maximum of 350 000 cubic metres can be attributable to non-pine coniferous tree species volume as indicated in HBS.

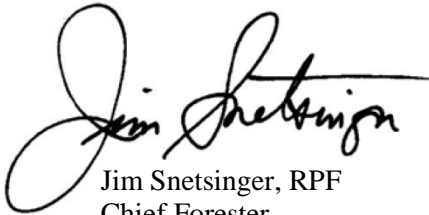
This determination is effective July 12, 2011, and will remain in effect until a new AAC is determined, which must take place within 10 years of the effective date of this determination.

In addition to conserving non-pine volume, I am also aware that as newly emerging forest products evolve, it may become economically viable to harvest stands with volumes as low as 100 cubic metres per year. If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then I am prepared to revisit this determination sooner than the 10 years required by legislation.

Implementation

In the period following this decision and leading to the subsequent determination, I encourage Ministry of Forests, Lands and Natural Resource Operations (FLNR) staff and licensees to undertake the tasks and studies noted below, the particular benefits of which are described in appropriate sections of this rationale document. I recognize that the ability of staff and licensees to undertake these projects is dependent on available resources including funding. These projects are, however, important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in the Lakes TSA.

1. FLNR and licensee staff should continue to consider ways of mitigating negative impacts on hydrologic integrity during operations. For the next timber supply analysis, I expect the timber supply analyst to incorporate ECA assumptions, where appropriate;
2. I am encouraged that licensee and FLNR staff have committed to collecting secondary stand structure information for the TSA from visual surveys during cruise checks and the monitoring of survey results and expect this information to be incorporated in future timber supply reviews;
3. I request that licensee and district staff continue to monitor damage caused by insects and work collaboratively in addressing forest health concerns due to insects; and
4. FLNR staff should monitor licensees' performance to ensure licensees are adhering to the partition. It is my expectation that they continue to operate in the pure (greater than 70 percent pine) stands for as long as possible.



Jim Snetsinger, RPF
Chief Forester

July 12, 2011



Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, as of June 29, 2011, reads as follows:

Allowable annual cut

- 8 (1) The chief forester must determine an allowable annual cut at least once every 10 years after the date of the last determination, for
- (a) the Crown land in each timber supply area, excluding tree farm licence areas, community forest agreement areas and woodlot licence areas, and
 - (b) each tree farm licence area.
- (2) If the minister
- (a) makes an order under section 7 (b) respecting a timber supply area, or
 - (b) amends or enters into a tree farm licence to accomplish a result set out under section 39 (2) or (3),
- the chief forester must make an allowable annual cut determination under subsection (1) for the timber supply area or tree farm licence area
- (c) within 10 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and
 - (d) after the determination under paragraph (c), at least once every 10 years after the date of the last determination.
- (3) If
- (a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and
 - (b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,
- the chief forester must determine an allowable annual cut at least once every 10 years from the date the allowable annual cut under subsection (1) of this section is effective under section 9 (6).
- (3.1) If, in respect of the allowable annual cut for a timber supply area or tree farm licence area, the chief forester considers that the allowable annual cut that was determined under subsection (1) is not likely to be changed significantly with a new determination, then, despite subsections (1) to (3), the chief forester
- (a) by written order may postpone the next determination under subsection (1) to a date that is up to 15 years after the date of the relevant last determination, and
 - (b) must give written reasons for the postponement.

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

- (a) by written order may rescind the order made under subsection (3.1) and set an earlier date for the next determination under subsection (1), and
- (b) must give written reasons for setting the earlier date.

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

(5) In determining an allowable annual cut under subsection (1) the chief forester may specify that portions of the allowable annual cut are attributable to one or more of the following:

- (a) different types of timber or terrain in different parts of Crown land within a timber supply area or tree farm licence area;
 - (a.1) different areas of Crown land within a timber supply area or tree farm licence area;
- (b) different types of timber or terrain in different parts of private land within a tree farm licence area.
- (c) [Repealed 1999-10-1.]

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

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

- (a) the community forest agreement, and
- (b) any directions of the chief forester.

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

- (a) the rate of timber production that may be sustained on the area, taking into account
 - (i) the composition of the forest and its expected rate of growth on the area,

- (ii) the expected time that it will take the forest to become re-established on the area following denudation,
- (iii) silviculture treatments to be applied to the area,
- (iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,
- (v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and
- (vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

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

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

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

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

(9) Subsections (1) to (4) of this section do not apply in respect of the management area, as defined in section 1 (1) of the *Haida Gwaii Reconciliation Act*.

(10) Within one year after the chief forester receives notice under section 5 (4) (a) of the *Haida Gwaii Reconciliation Act*, the chief forester must determine, in accordance with this section, the allowable annual cut for

- (a) the Crown land in each timber supply area, except the areas excluded under subsection (1) (a) of this section, and
- (b) each tree farm licence area

in the management area, as defined in section 1 (1) of the *Haida Gwaii Reconciliation Act*.

(11) The aggregate of the allowable annual cuts determined under subsections (6), (7) and (10) that apply in the management area, as defined in section 1 (1) of the *Haida Gwaii Reconciliation Act*, must not exceed the amount set out in a notice to the chief forester under section 5 (4) (a) of that Act.

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

Section 4 of the *Ministry of Forests and Range Act*, as of June 29, 2011, reads as follows:

Purposes and functions of ministry

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

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



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.

Page 1 of 2

Minister of
Forests and Range
and Minister Responsible
for Housing

Office of the
Minister

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

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



Jim Snetsinger

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

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

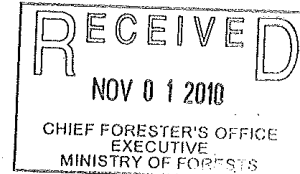
You should also consider important local social and economic objectives expressed by the public during the Timber Supply Review process, where these are consistent with the government's broader objectives as well as any relevant information received from First Nations.

Sincerely yours,

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

Rich Coleman
Minister

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



File: 280-30/MPB
Ref: 126097

OCT 27 2010

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

Dear Mr. Snetsinger:

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

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

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

Page 1 of 2

Ministry of Forests and Range and
Minister Responsible for Integrated
Land Management Bureau

Minister's Office

Mailing Address:
P.O. BOX 9049 Stn Prov Govt
Victoria, BC V8W 1X4

Tel: (250) 387-6240
Fax: (250) 387-1040
Website:
gov.bc.ca/forlmbwww.gov.bc.ca

Jim Snetsinger, Chief Forester

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

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

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

Sincerely,



Pat Bell
Minister

pc: Dana Hayden, Deputy Minister