

**BRITISH COLUMBIA
MINISTRY OF FORESTS AND RANGE**

Tree Farm Licence 56
held by
Revelstoke Community Forest Corporation

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

Effective September 8, 2010

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Objective of this document

This document provides an accounting of the factors I have considered and the rationale I have employed in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for Tree Farm Licence (TFL) 56. This document also identifies where new or better information is needed for incorporation in future determinations.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to consider a number of specified factors in determining AACs for timber supply areas (TSAs) and TFLs. Section 8 of the *Act* is reproduced in full as Appendix 1 of this document.

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

Overview of the TFL

TFL 56 is held by the Revelstoke Community Forest Corporation (RCFC) and is administered by the Ministry of Forests and Range (MFR) Columbia Forest District office located in Revelstoke. Situated 40 kilometres north of Revelstoke, the TFL occupies a total area of 119 823 hectares of which about half is productive forest land. The most recent AAC, determined in 2001, was 100 000 cubic metres.

New AAC determination

Effective September 8, 2010, the new AAC for TFL 56 is 90 000 cubic metres.

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

Information sources used in the AAC determination

Information considered in determining the AAC for TFL 56 includes:

- Existing stand yield tables for TFL 56, approved by MFR Forest Analysis and Inventory Branch, October 22, 2008;
- Managed stand yield tables for TFL 56, approved by MFR Research Branch, October 6, 2008;
- *Timber Supply Analysis Information Package – TFL 56*, prepared for Revelstoke Community Forest Corporation by Forsite Consultants Ltd., accepted by MFR Forest Analysis and Inventory Branch, January 1, 2009;
- *Timber Supply Analysis – TFL 56*, prepared for Revelstoke Community Forest Corporation by Forsite Consultants Ltd., accepted by MFR Forest Analysis and Inventory Branch, July 16, 2009;
- *Twenty-year Plan – TFL 56*, accepted by the Columbia Forest District Manager, July 13, 2009;
- *Tree Farm Licence 56 Rationale for Allowable Annual Cut Determination*; Ken Baker, Deputy Chief Forester, Effective April 18, 2001;
- *Identified Wildlife Management Strategy. Accounts and measures for managing identified wildlife: Southern Interior Forest Region. Version 2004. Province of BC*;
- *Order Establishing Provincial Non-Spatial Old Growth Objectives*, June 2004, BC Ministry of Sustainable Resource Management;
- *Mountain Caribou in British Columbia – A Situation Analysis*, May 2005, BC Mountain Caribou Science Team;

- *Mountain Caribou 2006 Survey Results, Subpopulation Trends and Extinction Risk, Draft for Technical Review*, June 2006, Ministry of Environment;
- *Mountain Caribou Recovery Implementation Plan – Update to the Mountain Caribou Progress Board*, Ministry of Environment, February 2009;
- *Order – Ungulate Winter Range # U-3-005, Mountain Caribou –Revelstoke Shuswap Planning Unit*, December 9, 2009, Ministry of Environment;
- *Forest and Range Practices Act – Regulations and amendments*, 2009;
- *Methodology for Determining the Adjustment Factor To Reconcile Historical Cut-control Practices With the New Log Grades*, February 2006, Ministry of Forests and Range;
- Technical review and evaluation of current operating conditions on TFL 56 through comprehensive discussions with Columbia Forest District staff, including the AAC determination meeting held in Victoria, BC on July 9, 2009; and
- *TFL 56 Postponement Order*, December 13, 2005, Deputy Chief Forester, Henry Benskin.

Role and limitations of the technical information used

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

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

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

In determining this AAC for TFL 56 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

The chief forester has expressed the importance of consistency of judgement in making AAC determinations. I also recognize the need for consistency of approach, and am familiar with the guiding principles that the chief forester has employed in making AAC determinations. I find these principles to be reasonable and appropriate and I have adopted them as described below in making my AAC determination for TFL 56.

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

Two important ways of dealing with uncertainty are:

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

In considering the various factors that Section 8 of the *Forest Act* requires the chief forester to take into account in determining AACs, I will 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 the chief forester takes this uncertainty into account to the extent possible in the context of the best available information. In making my determination for TFL 56, as deputy chief forester, I have followed the same approach.

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 (THLB). Although I do not consider these areas to contribute any harvestable volume to the timber supply in AAC determinations, they may contribute indirectly by providing forest cover requirements to help in meeting resource management objectives such as for biodiversity.

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

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

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

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

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

The AAC that I determine should not be construed as limiting the Crown's obligations under the Court's decisions in any way, and in this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within TFL 56. It is also independent of any decisions by the Minister of Forests and Range with respect to subsequent allocation of wood supply.

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

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

From a range of possible forecasts, 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 it represents only one in a number of theoretical forecasts, and because it incorporates information about which there may be some uncertainty, the base case forecast for a TFL 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 judgement, 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.

Timber supply analysis

The timber supply analysis for TFL 56 was prepared by Forsite Consultants Ltd. using the *Patchworks* spatial forest estate model under the direction of licensee staff. The forecasts from this timber supply model were reviewed by Ministry of Forests and Range staff, who advised me about the function of this model, and any associated implications for the harvest projections.

In the base case, an initial harvest level of 88 000 cubic metres per year, which is about 12 percent below the current AAC, was maintained for 10 decades. The forecast then increased to a long-term level of 101 000 cubic metres per year. The initial harvest level was chosen by the licensee in order to avoid the lower mid-term harvest levels that would have resulted with short-term harvest levels greater than 88 000 cubic metres per year.

In the timber supply analysis, various sensitivity analyses were conducted to assess the potential implications for timber supply arising from uncertainty in data assumptions and estimates. These analyses have also assisted me in considering the factors leading to my determination. As discussed and quantified throughout this rationale, and in consideration of the items described above, I am satisfied that the timber supply analysis presented to me provides an adequate basis from which I can assess the timber supply for TFL 56 for this determination.

Consideration of factors as required by Section 8 of the *Forest Act*

I have reviewed the information for all of the factors required under Section 8 of the *Forest Act*. Where I have concluded that the modelling of a factor in the base case appropriately represents current management or the best available information and uncertainties about the factor have little influence on the timber supply projected in the base case, no discussion is included in this rationale. These factors are listed in Table 1.

Table 1. List of factors for which modelling assumptions in the base case have been accepted

<i>Forest Act</i> section and description	Factors accepted as modelled
8(8)(a)(i) Composition of the forest and its expected rate of growth	Forest inventory Non-productive and non-forested reductions Economic and physical operability Environmentally sensitive areas Terrain stability Sites with low timber growing potential Non-merchantable forest types Deciduous-leading stands Isolated THLB Site specific inoperable areas Roads, trails and landings Site productivity estimates Volume estimates for managed stands Operational adjustment factors Minimum harvestable ages
8(8)(a)(ii) Expected time that it will take the forest to become re-established following denudation	Regeneration delay Impediments to prompt regeneration Not-satisfactorily-restocked areas
8(8)(a)(iii) Silvicultural treatments to be applied	Silvicultural systems Use of select seed Fertilization, spacing and thinning
8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste, and breakage	Utilization standards and compliance Decay, waste and breakage
8(8)(a)(v) Constraints on the amount of timber produced by use of the area for purposes other than timber production	Riparian reserves and management zones Wildlife habitat deductions/Identified wildlife Old-growth management areas Cutblock adjacency Recreation resources Visual quality management Cultural heritage resources Downie salt lick Watershed management Wildlife management – ungulate winter range Landscape-level biodiversity Disturbances in the inoperable land base
8(8)(a)(vi) Any other information	Harvest systems Helicopter harvesting Pulpwood harvest Twenty-year plan Harvest levels – partition and allocation Harvest levels – cut control/harvest performance

8(8)(d) Economic and social objectives of the government	Employment and community-related factors
8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area	Forest health issues Unsalvaged losses

For other factors, where more uncertainty exists, or where public or First Nations’ input indicates contention regarding the information used, the modelling techniques, or some other aspect under consideration, I have stated below how I considered the information or the issues raised in making my determination.

Section 8 (8)

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

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

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

Land base contributing to timber harvesting

- general comments

The total area of TFL 56, as estimated from the licensee’s inventory file, is 119 823 hectares. Of this area, 59 855 hectares, or 50 percent, is considered to be productive forest land.

As part of the process used to define the timber harvesting land base (i.e., the land base estimated to be biologically and economically available for harvesting), a series of deductions were applied to the productive forest land base. These deductions account for the factors that effectively reduce the suitability or availability of the productive forest area for harvest due to ecological or economic reasons. In the base case for TFL 56, the deductions result in an initial timber harvesting land base (THLB) of 22 575 hectares, or about 19 percent of the productive forest land.

- natural stand yields

For this analysis, stands older than 28 years that were not previously planted or spaced are considered existing ‘natural stands’. These stands were grouped into analysis units using criteria that reflect natural similarities of stand type. Volumes for these stands were generated with the Batch Variable Density Yield Projection model version 6.6d (VDYP 6). Yield tables were developed for each polygon and aggregated into a table for each analysis unit. Volumes from deciduous species were excluded from the yield estimates because the licensee considers them to be mostly non-merchantable in TFL 56.

Since the information package for this analysis was approved, a new model for projecting the growth of natural stands—VDYP 7—became available. This model includes significant refinements not available in VDYP 6. One refinement significant to TFL 56 is that in VDYP 6 the site index curves used for interior-cedar stands were based on data from coastal-cedar stands, which are more productive, while the interior-cedar site index curves in VDYP 7 are now based on data from cedar-leading stands in the interior. MFR analysts estimate that if VDYP 7 were used to generate natural stand volumes for TFL 56, these volumes would be reduced by about eight percent compared to the VDYP 6 estimates.

The licensee provided a sensitivity analysis in which the natural stand yields were reduced by 10 percent. This resulted in a 13-percent decrease in the short-term harvest level. By prorating the results of the sensitivity analysis, an eight-percent reduction in yield associated with the use of VDYP 7 would reduce the short-term harvest level by about 11 percent compared to the base case.

I have reviewed the information regarding the volume estimates for natural stands. Given the likelihood of an eight-percent reduction in natural stand volumes because of improvements in VDYP 7, I conclude the base case is overestimated in the short term by up to 11 percent, and I will account for this below in ‘**Reasons for Decision**’.

- log grades

New log grades were implemented for British Columbia’s Interior on April 1, 2006. Under the previous log grade system, a log was assessed according to whether the tree it came from was alive or dead at the time of harvest. Grade three and five logs were from trees that were dead prior to harvest. These trees were not accounted for in the inventory. Under the new log grade system, grade three and five logs are charged to the AAC. In addition, grades are now based on the log’s size and quality at the time it is scaled regardless of whether the tree it came from was alive or dead at harvest.

As the dead component of stands (dead potential) is now charged to the AAC, it must be accounted for in my AAC determination. The inventory used in this analysis only accounted for volume estimates of the live components of stands, and until the inventory includes dead tree volume, other sources of information are needed to estimate and account for this volume.

One possible source for providing dead potential volume estimates for TFL 56 is the inventory audit plots. These plots indicate that dead potential volume in TFL 56 adds about 14 percent to the green volume of trees over 60 years of age on the forested land base. District staff believe this estimate is too high, noting that data from inventory audit plots from the Revelstoke TSA, where the terrain is similar, indicate a much lower dead-potential volume of 4.4 percent.

Due to the significant difference in dead potential volume estimates in TFL 56 and the Revelstoke TSA, I considered an additional source for estimating this factor, that is, the adjustment factors provided by the Tenure and Pricing Division of the Ministry of Forests and Range in the document *Methodology for Determining the Adjustment Factor To Reconcile Historical Cut-Control Practices With the New Log Grades*.

These adjustment factors represent estimates of the proportion of the scaled volume from TFL 56 of each species that comes from dead trees prior to harvest based on scaling records from 1995 to 2002. When the cut-control adjustment factors are weighted by the species composition of the short-term harvest level attained in the base case, the derived average dead potential volume is about six percent.

Based on the available information, dead potential volume estimates range from 4.4 percent to 14 percent, while actual harvest performance on TFL 56 suggests six percent.

The results of the sensitivity analysis that examined a 10-percent increase in natural stand yields resulted in a 4.5-percent increase in the short-term timber supply. Given the range of possible volumes of dead potential, timber supply could be underestimated in the short- and mid-term from two percent to 6.3 percent compared to the base case. For this determination I accept this range as the best available information and will account for it under ‘**Reasons for Decision**’.

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

As noted in Table 1, I accept these factors as modelled in the base case.

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

As noted in Table 1, I accept these factors as modelled in the base case.

- (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:**

As noted in Table 1, I accept these factors as modelled in the base case.

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

Integrated resource management objectives

The Ministry of Forests and Range is required under the *Ministry of Forests 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.

- *grizzly bear*

Under the Revelstoke Higher Level Plan Order, the licensee is required to maintain 50-metre forested buffers on one side of key avalanche chutes to contribute to the viability of grizzly bear populations. These buffers are considered to provide high-value grizzly bear habitat.

These high-value habitat areas were not identified spatially and the 50-metre buffers were not explicitly modelled, because the total area involved was assumed by the licensee to be small and was expected to be accounted for, to some extent, through the designation of old-growth management areas (OGMAs) and maintenance of mature-plus-old seral constraints.

As the buffers for grizzly bear habitat were not explicitly modelled in the analysis and likely do not entirely overlap with other constraints applied in the analysis, the THLB has likely been overestimated to an unquantifiable, but likely small degree. This represents a small downward pressure on the timber supply over the forecast period. I have made no adjustment to the short-term timber supply on this account, but will instruct the licensee to include accounting for grizzly bear habitat in the timber supply analysis for the next determination.

- *mountain caribou*

In the base case, the licensee excluded the draft mountain caribou habitat areas that were identified at the time of the analysis from contributing to timber supply. Mountain caribou habitat is now legally protected under a *Government Action Regulation* (GAR) Order (u-3-005), which was approved on December 9, 2009. The licensee indicated the area in the analysis is the same as for the GAR Order.

The net area removed from the THLB for mountain caribou habitat was 7984 hectares. Most of this area—6668 hectares—is in ‘status quo’ reserves in which caribou habitat management extends back prior to 1999. The remaining 1316 hectares is within ‘incremental’ reserves, which are recent additions designed to enhance caribou survival.

In a sensitivity analysis, adding the 1316 hectares of incremental caribou reserves to the THLB increased the short- and mid-term harvest level by six percent, and the long-term harvest level by five percent. I accept the information used in the base case appropriately reflects the exclusion of the status quo and incremental caribou habitat for this determination.

- *stand-level biodiversity*

Stand-level biodiversity management involves retaining wildlife tree patches (WTPs) within or adjacent to cutblocks in order to provide structural diversity and wildlife habitat. The licensee committed to retaining seven percent for WTPs at the cutblock level, which is consistent with the requirements described in the *Forest Planning and Practices Regulation*.

To estimate the amount of area needed to achieve WTP objectives, the licensee used assumptions in their management plan that state WTPs should occur every 500 metres. It further assumed that forested areas and old-growth management areas within the non-THLB contribute to the seven-percent WTP retention

requirement. Using a geographic information system, the licensee surrounded these areas with a 250-metre buffer. This identified areas within the THLB that were not covered by the buffer and were assumed to still require WTPs. Seven percent of the THLB that was not covered by the buffer totalled 388 hectares, or 1.75 percent of the THLB. In the analysis to account for future WTPs, this was modelled as a 1.75 percent reduction to all yield curves.

I have considered this information and I note that already-existing WTPs were not accounted for. As WTPs were only applied to a small percentage of the land base in the base case, it is difficult to determine if the accounting was sufficient. For this determination however, I have not made any specific adjustments, and expect that operational provisions adequately provide for stand-level biodiversity. I recommend for the next timber supply analysis and determination that existing WTPs be mapped and accounted for in the analysis.

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

Other information

First Nations considerations

There are ten First Nation groups, consisting of three tribal councils and seven bands, who have asserted traditional territory overlapping TFL 56. They include Akisq'nuk First Nation, Shuswap Indian Band, Okanagan Indian Band, Spltasin First Nation, Adams Lake Indian Band, Neskonlith Indian Band, Little Shuswap Indian Band, Shuswap Nation Tribal Council, Ktunaxa Nation Council, and Okanagan Nation Alliance. Of these First Nations all but the Okanagan Nation Alliance and Shuswap Nation Tribal Council have Forest and Range Agreements with the provincial government. These agreements provide for revenue sharing and forest tenure opportunities.

Of the ten First Nation groups listed above, the Ktunaxa Nation is the only First Nation involved in the B.C. Treaty Commission process. The area currently being negotiated as part of their treaty extends into the Columbia Forest District and includes TFL 56. The selection for the Areas of Interest (AOI) has been completed and signed by government and an offer was made to the Ktunaxa Nation. As of this date, they have not provided a formal response to the offer, and I am aware that no AOIs have been offered that are located within TFL 56.

Consultation with the ten First Nations on the timber supply review for TFL 56 was initiated by the Columbia Forest District in August 2008 and concluded in September 2009. The consultation process also included information sharing by the licensee, who provided the draft information package, proposed Management Plan #4, and the timber supply analysis report to these First Nations.

The Columbia Forest District sent a letter to the above-mentioned First Nations and tribal councils to initiate consultation in August 2008. Following, in October 2008, the licensee sent the draft information package to the First Nations along with a letter requesting their review and input. In March 2009 the licensee provided the analysis report to the First Nations and again asked for their review and input. Subsequently, in April 2009, the Columbia Forest District sent letters informing First Nations that a preliminary assessment of their aboriginal interests based on the information available to MFR has been completed. The District also asked First Nations to provide any information on how their aboriginal interests may be impacted by an AAC determination for TFL 56. Follow up emails were sent in June 2009 reminding First Nations of the TFL 56 timber supply review and again requesting any input they may have.

In September 2008, in response to the initial letter, an information sharing session was held with district staff and the Spltasin First Nation. Issues discussed at this meeting included the TFL 56 management plan and timber supply review process.

On June 8, 2009 the Columbia Forest District received a letter from the Splatstin First Nation. In their letter, they requested funding in order to have the necessary professionals and traditional peoples to review the information provided and to meaningfully participate in the timber supply review process. They further explained that this funding would also be used to complete their traditional use study (TUS), and if requested, this information could be made available to MFR.

The Columbia Forest District responded to the Splatstin First Nation indicating that MFR does not have funding available for their participation in the timber supply review process or to complete their TUS. The district informed them of available funding for TUS work through the Forest Investment Account (FIA). In addition, the district offered to have a timber supply analyst meet with the Splatstin to review the timber supply analysis report; however no response was received from the Splatstin.

On June 22, 2009 the district received a letter from the Neskonlith Indian Band in which they listed several actions they wish to have taken regarding the timber supply review and Management Plan #4. These actions include:

- A full and complete archaeological use assessment be undertaken during the term of the Management Plan and that FIA funding be sought;
- Compliance and audits of TFL 56 be undertaken with First Nations as partners;
- Site specific archaeological impact assessments be carried out in accordance with the forest stewardship plan;
- Ministry of Forests and Range encourage the licensee to enter into discussions regarding protocol agreements with First Nations;
- A cumulative impact study on aboriginal rights and title be undertaken;
- Request for the licensee to work with First Nations over the term of the Management Plan; and
- The next Management Plan and timber supply review must incorporate all First Nations' concerns, including cumulative impacts on their rights and title.

The Columbia Forest District responded to the Neskonlith Indian Band's concerns in a letter dated August 25, 2009. In the response, the district offered to have a timber supply analyst meet with the Neskonlith if they required further information or clarification on the timber supply analysis report. In addition, the district indicated that many of the Neskonlith's requests are not within my authority to address under *Section 8* of the *Forest Act*. Having read the district's letter, I concur with their responses and I recommend that the licensee continue to work with the Neskonlith Indian Band and other First Nations to identify archaeological sites and resources, and to conduct archaeological assessments. Furthermore, I encourage the licensee and district staff to continue working with First Nations to collect any new information regarding aboriginal interests so that it may be incorporated in the next timber supply review.

From my review of the consultation summary, I conclude that reasonable efforts were made by the Columbia Forest District and the licensee to inform First Nations about the timber supply review and engage them in consultation regarding their aboriginal interests and how these interests may be affected by this AAC determination. The preliminary assessment included a review of aboriginal interests and TUS information available to MFR, and an assessment of potential impacts my AAC decision may have on those interests. The information, however, did not identify specific areas of interests or cultural use. During the consultation process First Nations were asked for additional information.

Although the preliminary assessment was not formally shared with First Nations at the beginning of the timber supply review process, the findings from the assessment were referenced in subsequent consultation letters. Based on this, I agree with Columbia Forest District staff that the level of consultation has been adequate. The scope of the consultation reflected and was commensurate with

MFR's assessment of the aboriginal interests asserted by the relevant First Nations within TFL 56. Furthermore, opportunities were provided to all First Nations to share their concerns related to specific aboriginal interests that may be impacted by this decision.

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

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

Alternative harvest flow

The nature of the transition from harvesting old-growth forests to harvesting second-growth forests is a major consideration in determining AACs in many parts of the province. In the short term, the presence of large timber volumes in older forests often permits harvesting above long-term levels without jeopardizing future timber supply. In keeping with the objectives of good forest stewardship, AACs in British Columbia have been and continue to be determined to ensure that current and mid-term harvest levels will be compatible with a smooth transition toward usually (but not always) the lower long-term harvest level. Thus, timber supply should remain sufficiently stable so that there will be no inordinately adverse impacts on current or future generations. To achieve this, the AAC determined must not be so high as to cause later disruptive shortfalls in supply nor so low as to cause immediate social and economic impacts that are not required to maintain forest productivity and future harvest stability.

In addition to the base case, an alternative harvest flow was provided by the licensee. In this projection, which represents different trade-offs between short- and mid-term harvest levels, the current AAC of 100 000 cubic metres is maintained for five years followed by a decline to 94 900 cubic metres per year for five years. At that point the harvest level drops to the mid-term level of 85 500 cubic metres per year which is maintained for nine decades. In decade 10, the harvest level rises to the long-term harvest level of 101 000 cubic metres per year.

The alternative flow indicates that the base case level of 88 000 cubic metres per year represents a conservative approach to timber supply modelling. I note the alternative harvest flow shows that the current AAC of 100 000 cubic metres could be maintained for five years followed by a decline to 94 900 cubic metres, which averaged over a 10-year period is 97 450 cubic metres. As the new AAC is set for a 10-year period, this averaged level is compatible with a smooth transition to achieving a stable long-term harvest level. I have considered the alternative flow further below, under '**Reasons for Decision**'.

- (c) **the nature, production capabilities and timber requirements of established and proposed timber processing facilities;**

This section of the *Forest Act* has been repealed [2003-31-2 (B.C. Reg. 401/2003)].

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

The Minister of Forests and Range has expressed the economic and social objectives of the government for the province in a letter to the chief forester, dated July 4, 2006 (attached as Appendix 3). The letter stresses the importance of a stable timber supply to maintain a competitive and sustainable forest industry while being mindful of other forest values. In respect of this, in the base case projection and the alternative harvest flow projection 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 becomes stable, neither increasing nor decreasing over time. I find this to be consistent with the direction provided in the minister's letter.

I have also considered current practice as accounted for in the base case for maintaining a range of forest values. The direction provided in the Revelstoke Higher Level Plan Order was also reflected in the base case and accounts for the range of forest values in TFL 56.

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.**

As noted in Table 1, I accept as modelled the factors considered under this section.

Reasons for decision

In reaching my AAC determination for TFL 56, I have considered all of the factors required under Section 8 of the *Forest Act* and I have reasoned as follows.

In the timber supply analysis, the base case projected a stable harvest level of 88 000 cubic metres per year, which could be maintained for 100 years after which it increased to the long-term harvest level of 101 000 cubic metres per year. I am satisfied that the assumptions applied in the analysis for the majority of the factors applicable to TFL 56 were appropriate, as detailed earlier in Table 1. Following is my consideration of those factors for which I consider it necessary to further consider and account for upward or downward pressures on timber supply as projected in the base case forecast.

In determining an AAC for TFL 56, I have identified a number of factors which, considered separately, indicate that the timber supply may be either greater or less than that projected in the base case. Some of these factors can be readily quantified and their impact on the harvest level assessed with reliability. Others may influence timber supply by adding an element of risk or uncertainty to the decision, but cannot be reliably quantified at this time.

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

- *Volume estimates for natural stand yields* – At the time of this analysis, VDYP 7 was not available. Therefore, the base case did not accurately account for volume estimates of natural stands compared to the now available VDYP 7 model. I conclude the timber supply has been overestimated by up to 11 percent in the short- and mid-term.
- *Grizzly bear habitat* – Habitat requirements for grizzly bears were not fully accounted for in the base case. I conclude this factor has an unknown small downward pressure on timber supply over the forecast period.

I have identified one factor in my considerations as indicating the timber supply projected in the base case may have been underestimated:

- *Log grades* – With the new log grade system implemented for BCs Interior in 2006, trees that are dead at the time of harvest but have reasonable sawlog quality (‘dead potential’) are now charged to the AAC and should be included in the estimates of timber supply. I therefore have accounted for an underestimation of the timber supply of between two to 6.3 (average about four) percent in the short- and mid-term.

I am also mindful of one factor that introduces further uncertainty to the decision:

- *Stand-level biodiversity* – The accuracy of assumptions employed in the base case for stand-level biodiversity was difficult to assess because the analysis did not account for all existing wildlife tree patches. I conclude this factor introduces an unquantified uncertainty to the base case.

In consideration of the above factors, I observe there are some quantified and unquantified uncertainties affecting the TFL 56 timber supply projected in the base case. The quantified factors include volume estimates for natural stand yields and log grades, which on balance have a total impact of reducing the short- and mid-term harvest level by about seven percent. One unquantified factor, grizzly bear habitat, causes a further downward pressure on the timber supply over the forecast period. The net result of these factors suggests the harvest level has been overestimated for TFL 56. However, I note the short-term harvest level in the base case is 12 percent lower than the current AAC and the alternative harvest rate demonstrates there is flexibility in the rate of necessary decline in the short term.

As the harvest levels were projected in five-year increments and my determination is set for 10 years, I examined an important alternative forecast that demonstrates the current AAC level of 100 000 cubic metres could be maintained for five years, followed by a decline to 94 900 cubic metres per year for five years. Over a 10-year period, a level of 97 450 cubic metres per year is possible in the short term. I have therefore considered 97 450 cubic metres per year as the base level to account for any risk and uncertainty arising from factors discussed above.

After taking into account the quantified downward pressure of about 11 percent resulting from an overestimation of natural stand yields and the upward pressure of about four percent from log grades, the resulting downward pressure is about seven percent. Applying a seven-percent reduction factor to the averaged harvest level of 97 450 cubic metres per year results in a level of 90 628 cubic metres, which I have rounded to 90 000 cubic metres per year. As the timber supply is highly sensitive to changes in the volume estimates for natural stand yields, I believe it is appropriate at this time to account for this factor. When better information is available for log grades which may indicate higher levels of upward adjustment are possible, then for the next determination there is sufficient flexibility in timber supply to allow for these adjustments.

After reviewing all the factors and taking into account the upward and downward pressures, sensitivity analyses, uncertainties and risks, I conclude that it is appropriate to determine an AAC for TFL 56 of 90 000 cubic metres.

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 TFL by establishing an AAC of 90 000 cubic metres per year.

This determination is effective September 8, 2010, and will remain in effect until a new AAC is determined, which must take place within 10 years after the effective date of this determination.

If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then I am prepared to revisit this determination sooner than the 10 years required by legislation. I will also revisit this decision sooner if any new issues arise concerning First Nations that may impact timber supply.

Implementation

In the period following this decision and leading to the subsequent determination, I encourage the licensee staff to undertake the tasks noted below, and as discussed earlier in this rationale document. I recognize that the licensee's ability to undertake these projects is dependent on available staff time and funding. However, these projects are important to help reduce the level of risk and uncertainty associated with key factors affecting timber supply on TFL 56. I recommend that the licensee:

- Map and model grizzly bear habitat in the next timber supply analysis;
- Map existing wildlife tree patches and account for them in the next timber supply analysis;
- Collaborate with Neskonlith Indian Band and other First Nations who have overlapping asserted traditional territory within TFL 56 to identify archaeological sites and to conduct archaeological assessments.



Melanie Boyce, RPF
Deputy Chief Forester

September 8, 2010



Appendix 1: Section 8 of the *Forest Act*

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

Allowable annual cut

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

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

(b) each tree farm licence area.

(2) If the minister

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

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

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

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

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

(3) If

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

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

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

(3.1) If, in respect of the allowable annual cut for a timber supply area or tree farm licence area, the chief forester considers that the allowable annual cut that was determined under subsection (1) is not likely to be changed significantly with a new determination, then, despite subsections (1) to (3), the chief forester

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

(b) must give written reasons for the postponement.

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

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

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

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

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

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

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

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

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

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

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

(a) the community forest agreement, and

(b) any directions of the chief forester.

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

- (a) the rate of timber production that may be sustained on the area, taking into account
 - (i) the composition of the forest and its expected rate of growth on the area,
 - (ii) the expected time that it will take the forest to become re-established on the area following denudation,
 - (iii) silviculture treatments to be applied to the area,
 - (iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,
 - (v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and
 - (vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,
- (b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area,
- (c) [Repealed 2003-31-2.]
- (d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia, and
- (e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

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

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

Purposes and functions of ministry

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

Document attached:

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



JUL 04 2006

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

Dear Jim:

Re: Economic and Social Objectives of the Crown

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

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

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

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Minister of
Forests and Range
and Minister Responsible
for Housing

Office of the
Minister

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Jim Snetsinger

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

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

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

Sincerely yours,

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

Rich Coleman
Minister