

**BRITISH COLUMBIA
MINISTRY OF FORESTS AND RANGE**

Tree Farm Licence 3

held by

Springer Creek Forest Products Limited

Rationale for Allowable Annual Cut (AAC) Determination

Effective March 30, 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) 3. This document also identifies where new or better information is required for incorporation into 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 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*.

Description of the TFL

Tree Farm Licence 3, held by Springer Creek Forest Products Limited ('SCFP' or 'the licensee') is located in the West Kootenay region of the south-central interior of BC near the village of Slocan, about 70 kilometres north of Castlegar. The TFL is a single continuous unit bordered by Valhalla Provincial Park on the north, by TFL 23 on the west and southwest, and by the Arrow TSA on the south and east. The TFL is within the Ministry of Forests and Range (MFR) Southern Interior Forest Region and is administered from the Arrow Boundary Forest District office in Castlegar.

TFL 3 covers about 79 000 hectares characterized by varied topography and climate; and includes productive forest, alpine areas, rock, and lakes. The forests of TFL 3 are distributed primarily among the Interior Cedar-Hemlock (ICH) and Engelmann Spruce Sub-alpine Fir (ESSF) biogeoclimatic zones and consist of a variety of commercial tree species including spruce, true firs (balsam), Douglas-fir, western hemlock, and western larch; as well as minor components of lodgepole pine and western redcedar.

The seven First Nations groups that have asserted their traditional territory covers all or portions of TFL 3 are: the Ktunaxa Nation Council, Lower Similkameen Indian Band, Okanagan Nation Alliance, Penticton Indian Band, Shuswap Indian Band, Shuswap Nation Tribal Council, and the Westbank First Nation. The Ktunaxa Nation (Ktunaxa Kinbasket Treaty Council) has submitted a comprehensive land claim that covers the southeast corner of the province and includes TFL 3. There are no First Nations reserves or communities within TFL 3, and there are no areas of interest currently being negotiated within the TFL.

Forestry, mining, tourism and agriculture are the principal forms of economic activity in the region.

History of the AAC

TFL 3, originally known as Forest Management Licence 3, was first awarded to Passmore Lumber Co. Ltd. in 1950. The company was authorized to harvest 50 970 cubic metres per year from a total licence area of 79 652 hectares. In 1963, TFL 3 was assigned to Pacific Logging Ltd, which constructed a new sawmill at the village of Slocan. The TFL was assigned in 1970 to Pacific Pine Company Ltd., which later changed its name to Triangle Pacific Forest Products Ltd. Between 1969 and 1971 the AAC increased from 65 129 cubic metres to 126 693 cubic metres. This increase was largely attributable to the change from intermediate utilization to close utilization standards.

In 1978, the TFL was assigned to Slocan Forest Products Ltd. By 1979, Management Plan No. 6 was approved and the company was authorized to harvest 119 618 cubic metres per year from a slightly increased licence area of 79 687 hectares. An increase in the timber harvesting land base—to 37 539 hectares by 1979—was mainly the result of improved inventory techniques resulting in the re-classification of the TFL land base. Management Plan No. 8 was approved in 1993, and an AAC of 65 000 cubic metres was determined. The significant decrease in AAC was largely attributable to forest cover considerations assumed at the time of the associated timber supply analysis. The *Nelson Region Habitat Guidelines*—later superseded by the *Forest Practices Code Act* and the *Forest and Range Practices Act (FRPA)*—were particularly constraining, and together with the spatial distribution of stands at the time of the 1993 determination, proved to be restrictive on the short-term timber supply. Under Management Plan No. 8, a volume of 5400 cubic metres was administered under the Small Business Forest Enterprise Program (SBFEP).

Effective July 1, 1998, the AAC was increased to 80 000 cubic metres and on August 26, 2002 the next AAC determination was postponed under section 8(3.1) of the *Forest Act*. On January 1, 2003 an additional 500 cubic metres of the AAC was apportioned to BC Timber Sales, reducing the licensee's portion to 74 100 cubic metres. On April 1, 2004 Slocan Forest Products was acquired by Canadian Forest Products Ltd. and on April 18, 2005 TFL 3 was acquired by Springer Creek Forest Products Ltd.

New AAC determination

Effective March 30, 2010, the new AAC for TFL 3 will be 80 000 cubic metres, unchanged from the previous AAC. This AAC includes 5900 cubic metres administered by BC Timber Sales.

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

In addition to the sources cited in the licensee's Information Package and Timber Supply Analysis Report, the information considered in determining the AAC for TFL 3 includes, but is not limited to the following:

- *Forest Practices Code of British Columbia Act*, 1995, and amendments;
- *Forest Practices Code of British Columbia Act Regulations*, 1995, and amendments;
- *Forest Practices Code of British Columbia, Guidebooks*, BC Forest Service and Ministry of Environment, Lands and Parks;
- *Heritage Conservation Act*, 1996;

- Letter from the Deputy Ministers of Forests and Environment, Lands and Parks, dated August 25, 1997, conveying government's objectives regarding the achievement of acceptable impacts on timber supply from biodiversity management;
- Tree Farm Licence 3 Rationale for AAC Determination effective July 1, 1998, Ministry of Forests;
- *Landscape Unit Planning Guide*, BC Forest Service and Ministry of Environment, Lands and Parks, March 1999;
- *Identified Wildlife Management Strategy, Volume 1*, Ministry of Environment, Lands and Parks and Ministry of Forests, February 1999;
- *Forest and Range Practices Act (FRPA)*, 2002 and amendments;
- Order Respecting an AAC Determination for Tree Farm Licence No. 3, Ministry of Forests, 26 August 2002;
- Kootenay-Boundary Higher Level Plan Order, October 26, 2002;
- *Proposed Management Plan #10 for TFL*, Slocan Forest Products Limited, 2003;
- Forest and Range Practices Regulations, 2004 and amendments;
- Identified Wildlife Management Strategy, Procedures for Managing Identified Wildlife, Version 2004, Ministry of Water, Land, and Air Protection;
- *Demonstrating growth and yield adjustments (TIPSY OAFs) for Armillaria root disease in a timber supply analysis*, S. Stearns-Smith, G. Nienaber, M. Cruickshank, and A. Nussbaum, Report #R04-008, BC Forest Investment Account, 2004;
- TFL3 Documentation of Analysis for Vegetation Resources Inventory Statistical Adjustment and Net Volume Adjustment Factor Development – Addendum, Jahraus and Associates Consulting Inc. and Churlish Consulting Ltd., 2005;
- *2006 Forest Stewardship Plan for Tree Farm Licence #3 and FLA20192*, Springer Creek Forest Products Ltd., 2006;
- Provincial-level projection of the current mountain pine beetle outbreak: Documentation of revisions to the model resulting in BCMPB.v3, Ministry of Forests and Range, 2006;
- *Ministry of Forests and Range Act*, (consolidated to March 30, 2006);
- Letter from the Assistant Deputy Minister, Tenures and Revenue Division, MFR to all licensees concerning cut control changes resulting from new log grades, February 24, 2006;
- Letter from the Minister of Forests and Range to the Chief Forester stating the economic and social objectives of the Crown, July 4, 2006;
- Provincial-level projection of the current mountain pine beetle outbreak: Update of the infestation projection based on the 2007 provincial aerial overview of forest health and revisions to the "Model" (BCMPB.v.5), Ministry of Forests and Range, 2008;
- Letter from the Assistant Deputy Minister, Tenures and Revenue Division, MFR to all Interior licensees concerning MFR's strategy for terminating the interim species adjustment factors for timber supply areas in the Interior, May 7, 2008;

- Natural Stand Yield Tables, submitted March 2008, accepted by MFR Forest Analysis and Inventory Branch September 10, 2008;
- Managed Stand Yield Tables, submitted March 2008, accepted by MFR Forest Analysis and Inventory Branch July 16, 2008;
- *Tree Farm Licence 3 Timber Supply Analysis Report Information Package*, Springer Creek Forest Products Ltd., November 2008, accepted by MFR Forest Analysis and Inventory Branch December 2008;
- *Tree Farm Licence 3 Timber Supply Analysis, Analysis Report*, Springer Creek Forest Products Ltd., February 2009, accepted by MFR Forest Analysis and Inventory Branch March 20, 2009;
- Technical review and evaluation of current and expected operating conditions through comprehensive discussions with MFR staff, including the AAC determination meeting held in Victoria on June 4, 2009; and
- First Nations Consultation Summary review and comprehensive discussions with MFR staff, including the AAC determination meeting held in Victoria on June 4, 2009.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester to consider biophysical as well as social and economic information in AAC determinations. A timber supply analysis, and the inventory and growth and yield data used as inputs to the analysis, typically form the major body of technical information used in AAC determinations. Timber supply analyses and associated inventory information are concerned primarily with management practices and biophysical factors, such as 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 variations in physical, biological, and social conditions. Ongoing scientific studies of ecological dynamics will help reduce some of this uncertainty.

Furthermore, technical analytical methods such as computer models cannot incorporate all of the social, cultural, and economic factors that are relevant when making forest management decisions. Technical information and analysis therefore do not necessarily provide the complete answers or solutions to forest management problems 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 TFL 3, I have considered known limitations of the technical information provided. I am satisfied that the information provided forms 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 3.

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 context of the best available information. In making my determination for TFL 3, 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.

In TFL 3, much clarification of land and resource use has been provided by government's Kootenay-Boundary Higher Level Plan Order (KBHLPO) and orders under the Government Actions Regulation of the *Forest and Range Practices Act*, which guides many aspects of current management.

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 3. 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 by the licensee as part of the MFR Timber Supply Review program.

For each AAC determination, a timber supply analysis is carried out using an information package including data and information from three categories: land base inventory, timber growth and yield, and management practices. Using this set of data and a computer 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-term and long-term harvest levels. These include sensitivity analyses to assess the timber supply effects of uncertainties or changes in various assumptions.

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 2009 timber supply analysis (“the analysis”) was completed by Forest Ecosystem Solutions Limited (FES) on behalf of the licensee, using the proprietary forest estate model Forest Simulation Optimization System (FSOS).

The base case harvest projection was guided by provincial policy objectives of a sustained harvest flow and the smallest possible reductions or increases to the mid-term or long-term harvest. The modelled harvest projection included use of the ‘relative oldest first’ rule for harvesting priority. The base case objectives were to: 1) maintain the current AAC of 80 000 cubic metres for as long as possible; 2) limit changes in the harvest level to less than 10 percent of the level prior to the change, and 3) achieve stability in the long-term harvest level and growing stock profile.

The resulting base case projection showed that a harvest rate of 80 000 cubic metres per year could be sustained until the eleventh decade, after which it decreased to the long-term harvest level of 72 500 cubic metres per year. In the harvest projection, the initial volume of stands growing on the THLB—the land base estimated to be economically and biologically available for timber harvesting—is about 5.4 million cubic metres, and it decreases to about 3.8 million cubic metres after the first ten decades as the oldest stands are harvested. The merchantable volume (the volume older than the minimum harvestable age) is initially approximately 4.7 million cubic metres. Merchantable volume declines to about 2.7 million cubic metres after 13 decades and stabilizes at about 3 million cubic metres after 15 decades. The most constrained timber supply occurs in decades ten through 15.

I have reviewed in detail the assumptions and methodology incorporated in the base case. Based on my review, I am satisfied, subject to the qualifications accounted for in various sections of this document, that the information presented to me provides a suitable basis from which I can assess the timber supply for TFL 3. In addition to the base case forecast, I was provided with alternative harvest flows, a number of sensitivity analyses carried out using the base case as a reference, and supplemental analysis work. This and other information noted below have been helpful in the considerations and reasoning leading to my 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 below in Table 1 and grouped according to the section of the *Forest Act* to which they apply.

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

<i>Forest Act</i> section and description	Factors accepted as modelled
8(8)(a)(i) Composition of the forest and expected rate of growth	<ul style="list-style-type: none"> • Land base exclusions made in deriving the timber harvesting land base, in respect of: <ul style="list-style-type: none"> ○ Non-forest and non-productive areas ○ Economic and physical operability ○ Hydro line corridors ○ Steep slopes ○ Unmerchantable forest types ○ Low productivity sites ○ Future roads, trails, and landings ○ Environmentally sensitive areas ○ Problem forest types • Yields from natural and managed stands • Age class distribution • Species profile • Volume estimates for existing stands • Genetic gains • Minimum merchantability standards
8(8)(a)(ii) Expected time for the forest to be re-established following denudation	<ul style="list-style-type: none"> • Regeneration assumptions • Not sufficiently restocked (NSR) areas
8(8)(a)(iii) Silvicultural treatments to be applied	<ul style="list-style-type: none"> • Silvicultural systems • Incremental silviculture
8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste, and breakage	<ul style="list-style-type: none"> • Utilization standards • Decay, waste, and breakage

Table 1. List of factors for which modelling assumptions in the base case have been accepted as incorporated in the base case (continued)

<i>Forest Act section and description</i>	<i>Factors accepted as modelled</i>
8(8)(a)(v) Constraints on the amount of timber produced by use of the area for other purposes	<ul style="list-style-type: none"> • Cutblock adjacency, forest cover, and green-up • Visually quality objectives • Riparian management • Domestic watersheds • Identified wildlife • Ungulate winter range • Grizzly Bears • Natural disturbance in the non-harvestable land base • Stand-level biodiversity • Landscape-level biodiversity • Cultural heritage resources
8(8)(a)(vi) Other information	<ul style="list-style-type: none"> • Harvest sequencing • Public review
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	<ul style="list-style-type: none"> • Employment and community dependence on the forest industry
8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area	<ul style="list-style-type: none"> • Non-recoverable losses

For factors that are subject to more uncertainty, or for which input from First Nations or the general public indicates contention—with respect to the information used, to the analytical method, or to some other aspect under consideration—I have set out in the sections below the way in which I have considered and accounted for any such information or related issue in making my determination.

Section 8 (8)

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

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

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

Land base contributing to timber harvesting

- general comments

The total area of TFL 3 as reported in the timber supply analysis is 79 111 hectares. Of the total TFL area, 58 997 hectares (74.6 percent) are classified as productive Crown forest land. The total standing timber inventory, updated for depletion and projected to January 1, 2006, is 11.04 million cubic metres, including 126 653 cubic metres of non-commercial deciduous species.

As part of the process used to define THLB, a series of deductions were made from the productive forest land base. These deductions accounted for economic or ecological factors that operate to reduce the forest area available for harvesting. In reviewing these deductions, I am

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

For TFL 3, I acknowledge that the above approach was used in the timber supply analysis, resulting in current and long-term THLB areas of 27 587 hectares and 26 214 hectares respectively. This means that 51 524 hectares of productive forest (65.1 percent) are currently unavailable for timber harvesting for a variety of reasons.

The current THLB is 5.5 percent larger than the land base assumed in the 1998 analysis. Several factors contributed incrementally to cause this increase in the area considered to be productive and operable, principal among them being the inclusion in the THLB of areas considered suitable for “alternate” harvesting methods.

- existing roads, trails and landings

To account for existing roads and trails, the licensee deducted 831 hectares from contributing to the THLB. To estimate the deduction, the licensee conducted a Geographic Information Systems (GIS) analysis in which it applied a buffer representing the widths of road and trail rights-of-way throughout the TFL. The road buffer, which was based on the results of a road-width survey that had been conducted on TFL 3, varied in width depending on whether the road was classified as a mainline, branch, or spur. The licensee applied the following right-of-way widths: 17 metres for mainline roads; 18 metres for branch roads; 14 metres for spur roads, and 8 metres for trails.

To account for existing landings, the licensee deducted 110 hectares from contributing to the THLB. This estimate was derived by applying a non-spatial reduction of 1.25 percent to 8837 hectares of the THLB that had a history of logging. The reduction factor was based on data gathered by the licensee on the TFL.

In the analysis, a total of 246.8 hectares of permanently deactivated roads were kept in the THLB based on the assumption that they would be rehabilitated—i.e., returned to a productive state for tree growth—and would thereafter contribute to the productive growing area included in the analysis. I am advised by district staff that, although deactivation of roads has been conducted on the TFL, road rehabilitation has not yet been carried out extensively. Therefore the 246.8 hectares of permanently deactivated roads may not reach their full growth potential as assumed in the analysis.

To address uncertainties arising from the assumptions about rehabilitation of permanently deactivated roads, FES conducted a sensitivity analysis in which these roads would never contribute to the productive growing area of the TFL; this resulted in reducing the THLB by 215 hectares (0.8 percent).

Based on the analysis and the district’s advice, I conclude the assumptions applied in the timber supply analysis for existing roads, trails and landings were reasonable with the exception of the contribution of the permanently deactivated roads in the TFL. As there has been little evidence of road rehabilitation, these areas represent a small downward pressure of less than one percent on the harvest levels across the forecast period. I have taken this into account as discussed below under ‘**Reasons for Decision**’.

I request the licensee monitor the amount of successful rehabilitation of these permanently deactivated roads so that this factor can be more accurately reflected in the next timber supply analysis.

- harvest profile by operability class

The *Forest Act* provides for portions of an AAC to be specified as attributable to different types of timber and terrain in different parts of a TFL or TSA. Partitioning an AAC in this manner ensures that harvesting is not overly concentrated in specified forest types, operability classes, or geographic areas.

In order to encourage alternative harvesting techniques and technical innovation, the chief forester in his 1998 AAC determination for TFL 3 set a partition of 4000 cubic metres (five percent) annually for areas classified as ‘alternate’ under the 1996 operability classification. These alternate areas were considered to be difficult for road development, but suitable for harvesting using a variety of appropriate (“alternate”) harvest methods. Over time, it was expected that environmentally acceptable methods of road construction would be developed that would allow access to these areas, and that they would eventually be reclassified as conventionally operable. The chief forester cautioned, however, that if operations were not adequately distributed within the partitioned area, it might become necessary to re-consider the size or conditions, or both, of the partition.

For the base case forecast, about 2101 hectares were considered to be suitable for alternate harvesting methods and were included in the THLB. The volume contribution from the alternate areas was tracked in the model and found to vary from about 2000 cubic metres per year to 20 000 cubic metres per year (about 2.5 percent to 25 percent of the total harvest volume per year).

The licensee provided two sensitivity analyses to assess the effects of 1) setting a 4000 cubic metre per year (5 percent) harvest level for the alternate areas; and 2) removing the alternate areas from the THLB. The results showed that neither scenario had a measurable impact on the harvest forecast in the short term or mid term, but that removing the alternate areas from the THLB reduced the long-term harvest forecast by four percent.

MFR district staff note that only one cutblock in the alternate areas has been harvested in the last 10 years, and there are no plans for more harvesting in the near future. Given the lack of a demonstrated performance to harvest these areas and the chief forester’s 1998 caution concerning operational performance, I consider it appropriate to account for the risk of including these alternate areas in the THLB in this determination. Based on the results of the sensitivity analysis, I conclude the base case overestimated the long-term timber supply by four percent, and I have accounted for this factor as discussed below in ‘**Reasons for Decision**’.

Although I have concluded the alternate areas are likely to be economically inoperable in the years leading up to the next determination, nothing prevents the licensee from harvesting in such areas when markets are favourable. As in the 1998 determination, I request the licensee monitor and report on the distribution of harvesting between conventional and any harvesting in alternate operability areas at the time of the next timber supply analysis. If there has been little performance in the alternative areas, then the area should not be considered to contribute to the timber supply in the next analysis.

Existing forest inventory

The current vegetation resources inventory (VRI) information is based on a re-inventory project that was completed in 2004 and subsequently adjusted statistically in April 2005. The statistical adjustments were based on 90 VRI Phase 2 ground samples established in the summer of 2001, and net volume adjustment factor (NVAF) samples of 58 trees taken in 2004. The adjustments applied only to polygons classified as Vegetated Treed (VT) that were greater than 20 years of age. Adjustments were made to age, height, and volume only. The VRI coverage was projected to 2006 to account for tree growth since 2004, and updated for harvesting to 2007.

I note the August 26, 2002 Order Respecting an AAC Determination for Tree Farm Licence No. 3 acknowledged the licensee had analyzed the VRI information and estimated the total volume on the TFL might be about eight percent lower than was modelled in the base case for the 1998 analysis. I consider the new VRI and subsequent statistical adjustment of the forest inventory has now accounted for any changes in the volume on TFL 3 since 1998, and I am satisfied that the existing forest inventory forms an acceptable basis for this determination.

Expected rate of growth

- site productivity estimates

Inventory data include estimates of site productivity for each forest stand, expressed in terms of a site index. The productivity of a site largely determines how quickly trees grow, and the site index is based on the stand's height as a function of its age. The rate of tree growth in turn affects the time seedlings will take to reach green-up conditions, the volume of timber that can be produced, and the ages at which a stand will satisfy mature forest cover requirements and reach a merchantable size.

In general, forest stands between 30 and 150 years of age provide the most accurate measurements of site productivity. Site indices determined from younger stands and older stands may not accurately reflect potential site productivity. In young stands, growth often depends as much on recent weather, stocking density, and competition from other vegetation as it does on site quality. In old stands, which have not been subject to management of stocking density, the trees used to measure site productivity may have grown under intense competition or may have been damaged, and therefore may not reflect the true growing potential of the site. This has been verified in several areas of the province where old-growth site index (OGSI) studies suggest that actual site indices may be higher than those indicated by existing data from mature forests.

In the analysis, site productivity estimates were based on the 2004 VRI. While the VRI site indices are viewed as the best information available, it was recognized that they may underestimate the actual growth potential of the stands. A Predictive Ecosystem Mapping (PEM) project had been completed for the TFL in 2001, but the project data was considered not yet suitable for use in the base case because it did not meet the minimum acceptable standards established by the MFR for that purpose.

To assess the potential impact on the harvest forecast of applying the PEM data, OGSI study results, and other adjustments to the VRI site indices, the licensee provided a series of sensitivity analyses. The results showed that applying the PEM data increased the harvest forecast by 33.3 percent in the short term and mid term and by 47.1 percent in the long term. Applying the OGSI estimates to stands older than 140 years resulted in increases of 6.9 percent in the short term and mid term and 17.9 percent in the long term.

As has been noted in rationale statements for many AAC determinations, in recent years it has been concluded consistently from studies such as the OGSI project that site productivities in British Columbia have generally been underestimated; in other words, managed forest stands tend to grow faster than projected by inventory site index estimates. In my experience the observed provincial trend is likely to be applicable in a productive unit such as TFL 3. Given the prevalence of the trend, I am prepared to accept that carrying forward the site indices from old stands into regenerated, managed stands has most probably led to underestimation of the productivity of managed stands in the TFL, and consequently in the mid-term and long-term harvest levels. The results of the sensitivity analyses for this factor lend further support to this inference. In the absence of accurate PEM data, however, the exact magnitude of the underestimation in the harvest levels projected in the base case is unknown.

For this factor, I therefore conclude the timber supply has likely been underestimated significantly in the mid- and long-term and possibly in the short term, and I have accounted for this factor as discussed below in ‘**Reasons for Decision**’. Given the potential significance of this factor to timber supply projections, I request the licensee improve the site index estimates for the next timber supply analysis.

- operational adjustment factors (OAFs)

In the analysis, the standard Table Interpolation Program for Stand Yields (TIPSY) was used to estimate the timber volumes for all future regenerated stands. Two operational adjustment factors (OAFs) are applied to yields generated using TIPSY. The OAFs account for losses of timber volume resulting from operational conditions such as a less than ideal distribution of trees; the presence of small non-productive areas; endemic pests and diseases; and age dependent factors such as decay, waste, and breakage. OAF 1 is designed to account for factors, such as small-stand openings that affect the yield curve across all ages; and OAF 2 is designed to account for factors, such as decay, waste, and breakage, whose impacts tend to increase over time and whose influence on a stand may be reduced through management practices. In the analysis, standard factors of 15 percent and 5 percent were used for OAF 1 and OAF 2 respectively, except in spruce-leading stands where the licensee increased OAF 2 to 10 percent to account for unusual losses from the spruce weevil.

Armillaria root rot is known to occur on TFL 3 and has been recorded in recent silviculture surveys, but its effect on long-term timber supply has not been quantified explicitly because its symptoms are usually hidden below ground and volumes losses are not always evident. A study by Stearns-Smith et al. (2004) in the Arrow TSA analysed the impacts of different levels of Armillaria infections on timber supply in the Douglas-fir stands in the Interior Cedar Hemlock (ICH) biogeoclimatic zone. As a result of that study, the current version of TIPSY (ver. 4.1) now incorporates three alternative levels of Armillaria root rot OAFs that can be applied to the Douglas-fir component of stands found within the ICH zone.

Given the unquantified volume losses attributable to Armillaria in TFL 3, three sensitivity analyses were conducted to explore the potential impact on timber supply of using the three levels of OAFs (low, moderate, and high Armillaria severity) available in TIPSY for Douglas-fir root-rot in the ICH zone. Results showed the short-term and mid-term harvest forecast is not affected by Armillaria root rot, but the long-term forecast varied with the severity of Armillaria root rot, ranging from a decrease of 7.7 percent at low levels up to decrease of 16.1 percent at high levels of severity.

Based on the known occurrence of Armillaria in TFL 3, its impact on the timber supply in the nearby Arrow TSA, and the sensitivity analysis for this factor, the long-term timber supply may be overestimated by 7.7 percent or more, depending on the severity of infection by Armillaria. I have accounted for this potential overestimation below in my ‘**Reasons for Decision**’. I encourage the licensee to gather the best available information on Armillaria incidence and its severity levels in the TFL for the next determination.

(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 have considered factors related to regeneration assumptions and not-sufficiently restocked areas, and I find them to have been appropriately accounted for in the base case, with no further comment required.

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

As noted in Table 1, I accept the factors as modelled related to silviculture treatments, and I will not discuss them further.

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

-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. In the previous system, grade 3 and grade 5 logs from dead trees were not charged to the AAC. Under the new system, 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 time of harvest. To better account for all harvested volumes in AAC cut control, logs that were previously considered grade 3 and grade 5 will now be charged to the AAC. Therefore, this volume should be taken into account in the AAC determination.

Estimates of timber volume in the base case did not include dead logs that could potentially be used as sawlogs (“dead potential”). For TFL 3, inventory audit plots and VRI sample plots indicate that the dead potential volume is about 6.9 percent and 13.6 percent , respectively, of the green (live) volume for the forested land base over 60 years of age.

No sensitivity analysis was conducted to assess the impact of including the dead potential volume in the timber supply forecast.

I recognize the need to account for dead potential volumes in my determination given the log grade changes, and in discussions with MFR staff, I acknowledge the inventory audit plots and VRI sample plots provide the best available estimates of these volumes for this TFL. Therefore I have accounted for an upward pressure in the range of 6.9 percent to 13.6 percent in the short term to account for dead potential volumes as discussed below 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 MFR 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. The FRPA and other legislation provide for, or enable, the extent to which integrated resource management objectives for various forest resources and values that affect timber supply must be considered in AAC determinations.

Under this section I have considered all the necessary factors and have concluded they are adequately accounted for in the base case, as noted earlier in Table 1.

- (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;**

In addition to the base case forecast, the licensee provided two alternatives. The first alternative forecast shows a higher initial harvest level of 92 000 cubic metres per year is possible for the next 35 years without impacting the long-term harvest level of 72 500 cubic metres per year. The second alternative forecast, which has a slightly higher initial harvest level of 84 000 cubic metres per year is possible for the next 65 years without impacting the long-term harvest level of

72 500 cubic metres per year. These alternative flows represent trade-offs between short- and mid-term harvest levels.

I have considered the alternative harvest flows and note the initial base case level is stable for a number of years and could likely be maintained for many decades to come. I have taken this factor into account as discussed below in ‘**Reasons for Decision**’.

(c) repealed [2003-31-2 (B.C. Reg. 401/2003)]

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

Economic and social objectives

-First Nations consultation

The following First Nations have asserted traditional territories overlapping with TFL 3: the Ktunaxa Nation Council, Lower Similkameen Indian Band, Okanagan Nation Alliance, Penticton Indian Band, Shuswap Indian Band, Shuswap Nation Tribal Council, and the Westbank First Nations. Of these First Nations groups, all have Forest and Range Agreements (FRA) or Forest and Range Opportunity (FRO) Agreements with the MFR, except for the Okanagan Nation Alliance and the Shuswap Nation Tribal Council. These agreements provide annual economic benefits and tenure opportunities in the form of non-replaceable forest licences or woodlot licences or both, and contain provisions for consultation which were followed by MFR staff. Since, the Okanagan Nation Alliance and the Shuswap Tribal Council do not have agreements with MFR, the Haida principles for consultation were followed for these two First Nation groups.

The Ktunaxa Nation (Ktunaxa Kinbasket Treaty Council) has submitted a comprehensive land claim that covers the southeast corner of the province and includes TFL 3.

Consistent with my guiding principles, I will not anticipate the impact of decisions that have not yet been made, such as treaty settlements. When those decisions are made, they can be factored into subsequent timber supply reviews and accounted for in future AAC determinations.

I am aware the licensee conducted information sharing regarding the timber supply review process with the First Nations who have asserted traditional territory within TFL 3. On October 25, 2007, the licensee provided the First Nations with a referral letter informing them of the availability of the information package (*Tree Farm Licence 3 Timber Supply Analysis Report Information Package, November 2008*). The licensee received no comments or input from First Nations during the 60-day review period that followed the distribution of the information package. In March 2009, the licensee informed First Nations that the TFL 3 timber supply analysis report was available for their review and comment. Again, no comments or input were received from First Nations during the 60-day review period.

The First Nations consultation process for the timber supply review in TFL 3 was based on the consultation provisions within First Nations’ FRA and FRO agreements, and the preliminary assessments results. Preliminary assessments were completed for each First Nation and included a review of aboriginal interests and available information from traditional-use studies and ethno-historical reports; and an assessment of potential impacts my AAC decision may have on those aboriginal interests. Consultation with these First Nations was initiated by the Arrow Boundary Forest District staff in August 2007 and concluded in April 2009. The following is an outline of the consultation process that took place:

- On August 17, 2007, the district sent an initial planning consultation letter including map and background information on the timber supply review to the First Nations listed above.
- On January 29 2008, the district made follow up calls to the First Nations listed above regarding the initial notification letter.
- On March 9, 2009, the district sent a consultation letter on the draft analysis report to the First Nations listed above.
- On March 13, 2009, the district made follow up calls and sent emails regarding consultation on the draft analysis report.
- On April 3, 2009, the Okanagan Nation Alliance (ONA) emailed the district regarding consultation on the draft analysis report. The ONA advised of the need to work together to implement the ONA Decision Making Framework.
- On April 23, 2009, the district notified the ONA that the district was unable to commit to participating in the ONA Decision Making Framework at this time, and the issue had been raised to higher levels within the MFR for a decision.

No formal submissions were received by MFR from First Nations concerning their aboriginal interests. The review and comment period ended on May 15, 2009.

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

Based on the results of the consultation process and the protection afforded to First Nations cultural heritage resources by current operational practices and the *Heritage Conservation Act*, I am satisfied that First Nations' interests were adequately represented in the analysis. I also conclude that reasonable efforts were made by the Arrow Boundary 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 my AAC determination.

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

- Minister's letter

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

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

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

- mountain pine beetle infestation

Mountain pine beetles are part of natural processes in ecosystems, however over the last decade their population has increased exponentially with warmer winters and substantially more mature lodgepole pine. The current provincial outbreak has now reached an unprecedented level in BC's recorded history of such events. Based on the annual overview surveys conducted in the fall of 2009, almost 9 million hectares have been mapped as red-attack, including about 2.3 million hectares in the Southern Interior Forest Region. The total cumulative area in the province is now over 14 million hectares. The infestation appears to be declining in central BC as the amount of available lodgepole pine has already been killed by the infestation. The mortality levels in lodgepole pine stands can impact the available timber supply and wildlife habitat, as well as many associated economic and environmental values.

On TFL 3 the volume of pine trees susceptible to attack by the mountain pine beetles comprise about 10 percent of the total volume of stands on the THLB. The current and potential volumes lost to the beetle were not accounted for in the base case forecast, however the licensee provided two sensitivity analyses using MFR's beetle projection data and 'shelf life' assumptions. Results showed the mountain pine beetle infestation had no impact on the harvest forecast, but led to a six percent reduction in growing stock volume over the long term.

Another sensitivity analysis examined the effect of targeting pine-leading stands susceptible to beetle attack for early harvesting. Prioritizing the pine-leading stands in this way would minimize losses in volume and product quality that are expected as beetle-attacked trees die and their quality degrade. This sensitivity analysis also resulted in no observable change in the harvest forecast across the modelling horizon; however it reduced the volume of growing stock over the mid- to long-term by three percent.

The susceptible volume of pine in pine-leading stands, as well as in Douglas-fir and larch-leading stands, comprises most of the susceptible pine volume on TFL 3. Minor components of pine also occur in stands where other species lead. Having considered this information and discussed it with MFR district staff, I conclude there is unquantified risk to the timber supply projected in the base case forecast. Therefore depending on the harvest priority placed on beetle-impacted stands, the base case may have overestimated the contribution of pine in the mid term, and this may reduce the stability of the timber supply during that period. I have considered this risk as discussed below in '**Reasons for Decision**'.

Due to the potential loss of pine volume and quality if susceptible stands are not prioritized for early harvesting, I request that the licensee set a high priority for harvest of susceptible stands in its harvesting operations.

Reasons for decision

In reaching my AAC determination for TFL 3, I have made all of the considerations as documented above, all of which are integral to the reasons for my decision, and from which I have concluded as follows.

As stated in the *Timber supply analysis* section earlier, I accept the licensee's base case forecast as representing a suitable basis from which to assess timber supply for the purposes of this AAC determination. I have considered the information regarding the assumptions applied in the base case forecast, and I am satisfied the majority of the assumptions were appropriate, as detailed earlier in Table 1. Following is my consideration of those factors for which I consider it

appropriate to further consider and take into account an impact on the timber supply projected in the base case forecast.

In determining an AAC for TFL 3, I have identified a number of factors which, considered separately, indicate the timber supply may be either greater or less than projected in the base case forecast. Some of these factors can be quantified and their impacts assessed with some reliability. Others may influence timber supply by adding an element of risk or uncertainty to the decision but cannot reliably be quantified at this time.

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

- *Existing roads, trails, and landings:* Although I find the accounting for future roads, trails and landings to be reasonable, I also concluded that the contribution from permanently deactivated roads in the base case is overestimated. District staff state that road rehabilitation has not been carried out extensively in TFL 3. Based on sensitivity analysis, this factor represents a small downward pressure of less than one percent on the harvest flow across the forecast period.
- *Harvest profile by operability class:* Areas considered to be suitable for 'alternate' harvesting methods were included in the THLB and contributed to timber supply over the entire forecast period. However, over the past decade there has been little demonstrated performance in these areas. I consider these areas to represent a downward pressure of about four percent on the longer term timber supply.
- *Operational adjustment factors (OAFs) – Armillaria:* Based on the known occurrence of Armillaria root rot in TFL 3, its impact on the timber supply in the nearby Arrow TSA, and the sensitivity analysis for this factor, the standard operational adjustment factors (OAFs) that were applied in the base case do not fully account for the impacts of Armillaria root rot. This factor represents a risk that the timber supply could be overestimated over the longer term by at least 7.7 percent even at low levels of severity.
- *Mountain pine beetles:* About 10 percent of the timber volume on the THLB is comprised of pine trees that are highly susceptible to attack by mountain pine beetles. The potential impact and proposed management approach to address the beetle infestation was not modelled in the base case. Sensitivity analysis shows that if these areas are not promptly harvested, there is a risk the analysis has overestimated the growing stock by about six percent over the mid- to long-term. However, even with the reduced growing stock, the base case forecast is unaffected.

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

- *Site productivity:* Consistent with provincial trends, site indices derived from old stands and applied to regenerating managed stands likely underestimate the site productivity of managed stands in TFL 3. Sensitivity analysis show the timber supply may be underestimated in the range of from 6.9 percent to 33.3 percent in the short term and from 17.9 percent to 47.1 percent in the long term; and
- *Log grades:* Based on new log grades that were implemented for BC's Interior on April 1, 2006, logs previously considered grade 3 and grade 5 are charged to the AAC, and this volume is to be taken into account in AAC determinations. Based on inventory audit plots and VRI sample plots, staff estimate the short-term timber supply is likely underestimated in the range of between 6.9 percent to 13.6 percent.

In consideration of the above mentioned influences, I observe there are several quantified and unquantified uncertainties that affect the timber supply as modelled in the base case forecast. Only one quantified factor—existing rehabilitated roads—represents a downward pressure on the short-term harvest level, and only of less than one percent compared to the base case level of 80 000 cubic metres per year. The mountain pine beetle infestation represents a risk to the stability of the mid-term timber supply in that less growing stock may be available during that period if affected pine trees are not salvaged before they lose merchantability. Two factors—harvest profile by operability class and operational adjustment factors represent downward pressures over the longer term totalling about 21.7 percent compared to the base case level of 72 500 cubic metres per year.

Two factors represent upward pressures on the base case. Log grade adjustments are a quantifiable upward pressure of at least 6.9 percent in the short term and this offsets the quantifiable downward pressure in the short term. Site productivity estimates also introduce a potentially significant upward pressure on the timber supply across the forecast period.

In addition to the base case forecast, the licensee provided two alternatives, which both show a higher initial harvest level of 92 000 cubic metres per year is possible for the next several decades without impacting the long-term harvest level of 72 500 cubic metres per year. Although there are three downward factors —operability; operational adjustment factors; and to some degree mountain pine beetles —that may impact the longer term timber supply, on balance with the potential underestimation of site productivity, I do not believe the short-term harvest level is at risk. Nonetheless, I believe it is important the licensee gathers new information as outlined below under ‘**Implementation**’, to improve confidence in the mid to longer term projections for the next determination.

When I take into account the upward and downward pressures, sensitivity analyses, uncertainties, and risks, I conclude that it is appropriate to maintain the AAC for TFL 3 at 80 000 cubic metres per year.

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 ten years and that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved in TFL 3 by continuing an AAC of 80 000 cubic metres. This AAC includes 5900 cubic metres administered by BC Timber Sales.

This determination is effective March 30, 2010 and will remain in effect until a new AAC is determined, which must take place within 10 years of this determination.

Implementation

In the period following this determination and leading to the subsequent determination I encourage the licensee to undertake the tasks and studies noted below, which I have also mentioned in the appropriate sections of this rationale document. I recognize the ability of the licensee to carry out these tasks will be dependent on available resources including funding. Nonetheless, for future timber supply analyses, these projects are important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in TFL 3:

- Monitor the amount of rehabilitation carried out on permanently deactivated roads so this factor can be more accurately accounted for;

- As noted in the 1998 determination, the licensee should monitor and report on the distribution of harvesting in conventional and any alternate harvesting areas and report out at the next timber supply review to ensure the appropriate assumptions are applied for any future inclusion of alternate areas;
- Complete site productivity studies to improve the site index estimates;
- Collect the best available information regarding the incidence and severity of Armillaria root rot in the TFL and account for this in the next analysis, and
- Minimize the potential volume and value losses in stands most susceptible to attack by the mountain pine beetle by prioritizing them for early harvesting over the next 10 years.



Melanie Boyce, RPF
Deputy Chief Forester

March 30, 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.

**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