

**British Columbia
Ministry of Forests and Range**

Merritt Innovative Forestry Practices Agreements

Issued to
Tolko Industries Ltd.
Aspen Planers Ltd.
Ardeu Wood Products Ltd.
Weyerhaeuser Canada Ltd.
Riverside Forest Products Ltd.
Stuwix Resources Ltd.

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

**Effective
July 13, 2005**

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Executive Summary

Section 59.1 of the *Forest Act* enables the Ministry of Forests (MOF) regional manager to increase the current allowable annual cut (AAC) associated with the licence of an innovative forestry practices agreement (IFPA) holder. An increase in AAC must be justified based on the IFPA-holder documenting their innovative forestry practices or activities in a forestry plan approved by the regional manager and demonstrating the impacts of the practices on timber supply by methodology approved by the chief forester.

In the Merritt timber supply area (TSA) there are six forest licensees with IFPAs. These licensees work collaboratively through the Nicola-Similkameen Innovative Forestry Society (NSIFS) in developing and implementing a consistent forestry plan and AAC increase application.

In the spring of 2003, NSIFS successfully submitted an application to the regional manager for an allowable cut increase. The regional manager awarded a 330 700 cubic metres per year increase based on the documented innovative forestry practices that included improved vegetation inventory, site productivity, deer winter range, old growth, and riparian information.

On March 30, 2005 NSIFS made application for a further 500 000 cubic metres increase, based on innovative forestry practices that enhance efforts to suppress the current Mountain pine beetle (MPB) infestation. The infested area of MPB in the Merritt TSA quadrupled from 7 500 ha in 2003 to 30 000 ha in 2004. Provincial based predictions based on current strategies expect rapid expansion to continue. However, IFPA-holders and Cascades Forest District staff believe that there is an opportunity for the expansion to be slowed if proper resources, including a short term AAC increase, are directed at beetle management.

In this rationale, I confirm the 330 700 cubic metres per year previously awarded in December 2003. Further, I determine, effective July 13, 2005, that an additional 500 000 cubic metres per year is attributable to the proposed management strategy for Mountain pine beetle. In this decision, I recognize uncertainty related to several of the innovative forestry practices and therefore make the increase subject to several conditions outlined in the 'Determination and Conditions' section of this document.

The 830 700 cubic metres awarded under Section 59.1 will be allocated as follows:

- A18695 - Aspen Planers Ltd. by 45 683 cubic metres per year;
- A18696 - Tolko Industries Ltd. by 95 433 cubic metres per year;
- A18697 - Riverside Forest Products Ltd. by 7 554 cubic metres per year;
- A18698 - Weyerhaeuser Canada Ltd. by 200 903 cubic metres per year;
- A18039 - Ardeu Wood Products Ltd. by 26 722 cubic metres per year; and
- A65006 - Stuwix Resources Ltd. by 454 405 cubic metres per year.

Merritt IFPA AAC Increase Rationale (July 2005)

The determination is effective July 13, 2005 and will remain in effect until December 31, 2007.

Objective of this document

This document is intended to provide an accounting of the factors that I, as regional manager of the Southern Interior Forest Region, have considered, and the rationale that I have used in making my determination, under Section 59.1 of the *Forest Act*, of a March 30, 2005 request for an increase in allowable annual cut (AAC) of the replaceable forest licences FL A18695, A18696, A18697, A18698, A18039, and A65006 under Innovative Forestry Practices Agreements (IFPAs) in the Merritt TSA.

This document outlines the background of the Merritt IFPAs, statutory framework, guiding principles for the determination, the role of timber supply analysis in the process, the consideration of factors influencing the timber supply analysis, impacts on other licensees, First Nations' considerations, reasons for decision, determination, conditions and recommendations. The appendices contain the IFPA legislation, memorandum from the chief forester on timber supply methodology, the May 13, 2005 Forestry Plan acceptance letter, and information sources. This rationale does not identify all the work completed by the NSIFS, but is intended to address the AAC uplift application and resulting determination needs.

AAC Increase Request – Critical Issue: Epidemic Mountain pine beetle infestation

The infested area of MPB in the Merritt TSA quadrupled from 7500 ha in 2003 to 30 000 ha in 2004. Provincial predictions based on current strategies expect rapid expansion to continue despite current management strategies employed in the TSA to control the beetle.

Lodgepole pine is the leading component of 70% of the stands in the Merritt TSA, making up 50% of the volume in the timber harvesting land base. The loss of these stands could substantially affect timber supply in the short and mid-term if the infestation continues to expand. An estimated 4.5 million cubic metres of pine volume in the timber harvesting land base is currently affected by the beetles.

NSIFS has applied for a 500 000 cubic metres per year increase, based on proposed innovative forestry practices, which would provide more timely identification of MPB infested stands, permit more directed and prompt harvesting of infested stands before annual beetle flights, reduce the rate of spread of the beetle population, and ultimately result in a substantial reduction in the amount of unrecoverable volume.

In making AAC determinations, and particularly given the impacts on all forest values which may result from the current Mountain pine beetle infestation, I am mindful of my obligation as steward of the forest land of British Columbia, of the mandate of the Ministry of Forests as set out in Section 4 of the *Ministry of Forests Act*, and of my responsibilities under the *Forest Practices Code Act of BC* and the *Forest and Range Practices Act*.

During the writing of this rationale, government ministries have been reorganized. As the work involved in this application, and in the review, occurred prior to this reorganization, I am using the former names of ministries for temporal clarity: the Ministry of Forests (MOF), the Ministry of Sustainable Resource Management (MSRM), and the Ministry of Water, Lands and Air Protection (MWLAP). For the most part, staff within these ministries are now located respectively within the Ministry of Forests and Range, the Ministry of Agriculture and Lands, and the Ministry of Environment.

Merritt Innovative Forestry Practices Agreements

In the Merritt timber supply area (TSA), IFPAs were issued on March 25, 1998 for a ten-year term to: A18695 – Aspen Planers Ltd.; A18696 – Tolko Industries Ltd.; A18697 – Riverside Forest Products Ltd.; A18698 – Weyerhaeuser Canada Ltd.; and A18039 – Ardeu Wood Products Ltd. On December 1, 2001 a sixth IFPA was issued to A65006 – 9135 Investments Ltd. (now known as Stuwix Resources Ltd.). All six IFPAs expire on March 24, 2008. The Nicola-Similkameen Innovative Forestry Society (NSIFS) acts on behalf of the above six IFPA-holders.

Statutory framework

Section 59.1 of the *Forest Act* enables the regional manager to increase the current allowable annual cut associated with the licence of an innovative forestry practices agreement holder. Prior to such approval, the regional manager must have approved a forestry plan in which the innovative forestry practices or activities are identified.

Eligible categories of innovative forestry practices and activities are described in the Innovative Forestry Practices Regulation. These categories include improvements due to harvesting or silvicultural systems, silvicultural treatments, collection and analysis of new data on forest composition and expected growth, and management activities to enhance and protect other resource values. To be eligible, the practices and activities must be within the forestry plan approved by the regional manager. The collection and analysis of new data must be in accordance with the available specifications of the chief forester.

An increase in AAC must be justified based on timber supply analysis methodology approved by the chief forester. The chief forester has made known his approved timber supply analysis methodology in a memorandum dated April 6, 2001 to the regional managers. This memorandum provides the general principles of the timber supply analysis methodology that is required to justify an increase in allowable annual cut to the licence of an innovative forestry practices agreement holder.

Under section 59.1 of the *Forest Act*, the regional manager can limit an AAC increase to a period of time, area of land, type of timber or any other condition. The regional manager can also reduce or eliminate an increase at any future time given new information or for non-compliance with the forestry plan or the conditions set. Further,

the regional manager is enabled to suspend or cancel an innovative forestry practices agreement if the holder is not complying with the agreement, forestry plan, conditions, *Forest Act*, or *Forest and Range Practices Act*.

Section 59.1 of the *Forest Act*, the Innovative Forestry Practices Regulation, and the memorandum on timber supply methodology from the chief forester, are reprinted in the appendices.

Guiding principles

As I expect to have to make a number of decisions with respect to Innovative Forestry Practices Agreements under section 59.1 of the *Forest Act*, I have outlined the following guiding principles. These principles assist me in ensuring administrative fairness and consistency in how I approach my decisions.

- For an innovative practice or activity to be considered in an AAC increase decision, the practice or activity must be either currently implemented or the plans for the practice must be clear, practical, and feasible. Given the nature of innovative practices, I accept that some innovative activities presented may be at an initiation stage rather than a current practice stage.
- Innovative practices or activities identified in the approved forestry plan, but which are not addressed in an AAC increase request, need to be considered in the AAC increase determination. It is my expectation that the IFPA-holder will work towards implementing the forestry plan as approved. My approval is based on the whole plan, not simply components that might result in increased timber supply. As such, I may weigh the risks of practices not yet carried out against identified increases presented to me.
- Any AAC increase decision should be made in the context of current government policy. While I may be aware of proposed policy changes that could impact an AAC increase decision, I must be mindful of the ever changing nature of proposed policy and not speculate on the acceptance of proposed policy. Similarly, it would be inappropriate for me to speculate on the impacts of strategic land-use or treaty processes before the decisions have been made by government and the appropriate implementation details have been determined.
- The most recent timber supply review for the management unit in which the IFPA is located provides the basis for describing current practice. This base may be updated with new information or management practices that are not innovative practices or activities. While I will not credit the IFPA-holder for increases in harvest flow associated with practices that are not defined as innovative in the forestry plan and regulation, I must consider impacts on the harvest flow of these updates in relation to the base allowable annual cut and to any benefits derived from innovative practices and activities.
- The right of the IFPA-holder's licence to access timber volume within the timber supply area is not affected by the IFPA unless otherwise agreed upon. I expect that

any increase in AAC will be harvested from within the IFPA boundaries in accordance with the information and practices identified in the IFPA review.

- An AAC increase awarded under the IFPA must not cause a negative impact on non-IFPA licensees operating within the IFPA boundaries without the approval of the non-IFPA licensee. The non-IFPA licensees can agree to manage their operating areas within the IFPA area in accordance with the IFPA forestry plan but are not eligible for any AAC increase. However, any AAC increase associated with innovative practices carried out under the IFPA forestry plan within the IFPA area can be attributable to the IFPA-holder, even if the activities are undertaken by a non-IFPA licensee.
- IFPA practices and activities can be assumed to apply to areas that are temporarily excluded from the IFPA (e.g., timber licences, partitions outside of the IFPA-holder's licence) only after they have reverted to timber supply area status. Any increases in harvest flow identified on these stands before they revert will not be eligible under the IFPA. However, I recognise that these areas, when they revert to TSA status, are subject to licensee negotiations and, while the IFPA-holder does not have a specific right to harvest from such future stands, the IFPA-holder is as likely as others to obtain such rights. As such, I will consider these stands to be within the IFPA area at the time they revert.
- Uncertainty exists in the data and management practices presented and modelled in a review of timber supply. In my decision, I must consider this uncertainty and associated risks and, where necessary, I can account for such.
 - One method to reduce risk is to periodically review the determination. As such, I will specifically assign a time period for which an AAC increase is applicable. Nevertheless, if prior to this time period, new information or an assessment of the innovative practices indicates that the increment is not justified, or the licensee is not complying, I have the right to remove or decrease any AAC increase that I may have determined.
 - A second method to reduce risk associated with an increased harvest flow is to award a lower AAC increase than the timber supply analysis suggests. The level of caution that I exercise will depend on the uncertainty of the timber supply increase being attributed to an innovative practice, which is normally related to the quality of the information on the practice, and to inherent uncertainties in ecological dynamics and biophysical factors.

With respect to First Nations' issues, I am aware of the Crown's legal obligations resulting from recent court decisions including those in the British Columbia Court of Appeal and the Supreme Court of Canada. The AAC increase that I may determine should not in any way be construed as limiting those obligations under these decisions, and in this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within the Merritt IFPA area.

In my decision, I have considered all information brought forward respecting First Nations' interests, including information from the chief forester resulting from his July 1, 2005 Section 8 determination. If, subsequent to my determination, I become aware of information respecting First Nations' interests that was not available to me at the time of

this decision, and indications are that all or part of the allowable annual cut increase was not justified, I may re-visit my determination.

My acceptance of information on practices within this decision does not supersede or fetter other statutory decision-making authorities, and is not to be construed as approval required by any other authority or agency. My determination is also independent of any decision by the Minister of Forests with respect to subsequent allocation of the wood supply.

In making my decision, I am aware of my obligations as a steward of the forests of British Columbia and of the mandate of the Ministry of Forests as set out under the relevant legislation.

The role of timber supply analysis

Section 59.1(7) of the *Forest Act* identifies that an increase in allowable annual cut must be justified according to timber supply analysis methodology approved by the chief forester. The chief forester has made known this methodology in a memorandum dated April 6, 2001. The memorandum provides the general principles, not detailed procedures, of timber supply analysis that I have required be present in the AAC increase application and upon which I have based my decision.

The timber supply analysis consists of two components. The first component is an information package that includes information from three categories: land base and inventory; timber growth and yield; and management practices. The second component is a suite of timber supply forecasts based on the information package that investigates different harvest flow options and data uncertainty.

To determine an increase in AAC requires that I have both knowledge of timber supply based on current practices and of the changes associated with the IFPA innovative practices and activities. As such, the timber supply analysis provides separate forecasts without and with IFPA innovative practices and activities.

I also accept that this current status can be updated by new or specific information about the IFPA area. I discuss adjustments in information under 'Consideration of factors influencing timber supply analysis'. Adjustments are made based on my informed judgement of the information that is currently available to me.

For the current AAC increase application, I made use of timber supply analysis provided by NSIFS for their 2003 AAC increase application and additional sensitivity, updated background information, and timber supply analysis around bark beetle management in the Merritt TSA conducted by the Ministry of Forests.

Similarly, the chief forester under Section 8 of the *Forests Act* has been conducting a parallel Urgent Timber Supply Review, and determination, for the Merritt TSA.

Information with respect to timber supply analysis has been shared between these two processes.

The timber supply analysis with which I am provided is an integral component to my review of the AAC increase application. However, the determination itself is not a calculation but a synthesis of judgement and analysis in which numerous risks and uncertainties are weighed. Technical analytical methods such as computer models cannot incorporate all the social, cultural, and economic factors that are relevant when making forest management decisions. As such, depending upon the outcome of these considerations, the increase in AAC determined may or may not coincide with the original IFPA review analysis.

In this rationale, I will discuss many of the timber supply analysis assumptions in the context of my considerations for this determination. However, I may not discuss my considerations in detail about a factor where I am satisfied that the factor is appropriately modelled and described in the timber supply analysis report of the supplement to the 2003 AAC increase application. Nevertheless, I may elaborate on appropriately modelled factors for reasons such as high level of public input or lack of clarity in the analysis report.

Forestry Plan

Prior to awarding an AAC increase under Section 59.1, the regional manager must have approved a forestry plan in which the innovative forestry practices or activities are identified.

NSIFS presented a new and updated forestry plan on March 30, 2005, which was made available for public and First Nations review. This version expanded upon a Mountain pine beetle management strategy. A further update was received May 13, 2005 and is considered the version that I considered with respect to approval.

On June 8, 2005, I approved the Forestry Plan submitted on May 13, 2005 with the addendum of the March 30, 2005 AAC increase application and the Forestry Plan and amendments as identified in a July 5, 2004 letter of extension. This approval was conditional on NSIFS updating the Forestry Plan, by August 31, 2005, to better incorporate required descriptions of existing innovative forestry practices.

Allowable Annual Cut Increase Application

The chief forester, in his memorandum of April 6, 2001, identifies that information quality must be evaluated on a case by case basis.

On March 30, 2005 NSIFS applied to the regional manager for an allowable annual cut increase of 500 000 cubic metres, based on their innovative forestry practices for

managing Mountain pine beetle infestations. This increase is in addition to the current 330 700 cubic metres increase based on practices presented in their June 2003 AAC increase application for 549 000 cubic metres.

Consideration of factors influencing timber supply analysis

In this determination, I consider both the request for an uplift based on NSIFS proposed Mountain pine beetle management strategy and for the innovative forestry practices that supported or influenced the previously awarded AAC increase. It should be recognized that I am reconsidering the previous AAC increase application in view of updated information and that I may view the information, uncertainty, and risks different from the previous regional manager.

Below I identify specific areas that are of concern to me.

Timber Supply Analysis Overview – The Base Case

A timber supply analysis completed by Timberline Forest Inventory Consultants for the 2003 NSIFS Section 59.1 AAC increase application was used as the basis for the current AAC increase application. This 2003 analysis provides the basis for supporting the awarded January 1, 2004 AAC increase. However, to support the further 500 000 cubic metres increase request for Mountain pine beetle management made on March 30, 2005, supplementary analysis by MOF Forest Analysis Branch was also considered.

To demonstrate the impacts of the innovative forestry practices supporting their 2003 AAC increase application, NSIFS first developed a base harvest flow that did not consider the identified innovative forestry practices and then demonstrated the impact of adding the innovative forestry practices to this base. The short-term difference, of 549 000 cubic metres, between these two scenarios, reflected the 2003 AAC increase application by NSIFS, of which 330 700 cubic metres per year was awarded by the regional manager effective January 1, 2004.

The base harvest flow that did not consider the innovative forestry practices was built on a data set that was benchmarked against the previous timber supply review used for the January 1, 2002 AAC decision and updated for new information not considered as innovative forestry practices. For this determination, I will be referring to the base harvest flow that did not consider the innovative forestry practices as the “TSA-like analysis” and the harvest flow that included all the innovative forestry practices as the “IFPA/expedited base”.

Supplementary analysis by MOF Forest Analysis Branch looked at a number of Mountain pine beetle management scenarios. This sensitivity is discussed under the section below titled ‘Mountain pine beetle management’.

For the 2003 NSIFS timber supply analysis, Timberline Forest Inventory Consultants used the model CASH6 as the primary timber supply model. The MOF FSSIM model was used for benchmarking purposes and Mountain Pine Beetle management sensitivity analyses. Both models are commonly used within the chief forester's timber supply review process.

I am satisfied that the above timber supply analysis meets the chief forester's standards for timber supply methodology and provides a suitable basis from which to evaluate assumptions regarding the land base, management practices, timber yields, and the impacts of the innovative forestry practices.

Land base

As part of the process used to define the timber harvesting land base in the timber supply analysis, a series of deductions are made from the modelled productive forest land base. These deductions account for the factors that effectively reduce the suitability or availability for harvest of the productive forest area for ecological, economic or social reasons. The deductions in the Merritt IFPA review analysis resulted in a current timber harvesting land base of 678 250 hectares.

I have considered all of the deductions applied in the derivation of the timber harvesting land base for the Merritt IFPA area. I am satisfied that the following were appropriately modelled, or would have had insignificant impact on the base harvest flows, and I will not discuss them in detail: TSA boundaries; landscape units; BGC subzone lines; operable land base; protected areas; environmentally sensitive areas; problem forest types; smallwood pine partition; roads, trails and landings; woodlot licenses; cutblock adjacency; incremental silviculture; utilization standards; silvicultural systems; and, not sufficiently restocked (NSR) area.

The factors discussed below are those for which I believe my consideration requires some documentation.

Forest inventory

A Vegetation Resource Inventory (VRI) phase II was initiated by NSIFS to increase confidence in the forest inventory, improve understanding of Douglas-fir forest types and address concerns on high elevation spruce forests. The establishment of 125 VRI timber emphasis plots was completed in 1999/2000 in the vegetated treed stratum of the TSA. MSRM staff established that the sample selection criteria and ground sampling was completed according to standards.

The VRI Phase II report concluded that volumes were underestimated by 6% (vegetated treed stratum, all age classes combined) but were not statistically different from unadjusted inventory volumes. When the volume adjustment ratios are stratified by species group, the increase was estimated to be 9%.

Net Volume Adjustment Factors (NVAF) sampling which is a component of the vegetation resource inventory has not been completed in the Merritt TSA. The Merritt NVAF program is approximately 50% completed. Instead of localized estimates, NSIFS considered the use of a conservative regional estimate. MSRM staff stated that VRI volume adjustments are not officially posted as inventory estimates until statistically valid local NVAF sampling is incorporated.

MSRM staff recommend that the Fraser Protocol be used to adjust age and height attributes to generate new volume curves, and subsequently compute volume adjustment ratios. NSIFS attempted to use the Fraser protocol in the timber supply analysis for this application but they identified that the application of the Fraser protocol resulted in a decrease in initial inventory, and that initial investigation failed to identify why such a decrease would occur. As such, the 2003 analysis applied a constant 6% increase to all natural stand yield tables.

As a condition of the 2004 AAC increase to IFPA-holders, the regional manager requested that NSIFS identify and document the deficiencies of the Fraser Protocol. As of the date of this determination, the society has not satisfactorily documented the deficiencies.

While mindful of the limitations around the use of a constant increase rather than the Fraser protocol, and the incompleteness of the NVAF sampling, I accept the VRI phase II sampling as an innovative forestry practice and will discuss my accounting for this factor under 'Reasons for decision'.

Predictive Ecosystem Mapping and Interpretative Uses

In British Columbia, the Biogeoclimatic Ecosystem Classification system provides the framework of the classification of ecosystem units and is an integral component of forest management planning. Predictive ecosystem mapping (PEM), a modelling approach used as an alternative to conventional mapping and classification (e.g., Terrestrial Ecosystem Mapping), is proving to be useful for a wide variety of resource planning needs including wildlife habitat, growth and yield, and traditional use and cultural studies. In addition to its prediction of ecosystem units, PEM's value is due to the availability of the many data layers used to create the PEM.

NSIFS completed a PEM to support several innovative forestry practices underlying this application including the identification of deer winter range, old growth management areas, and preliminary potential site indices. NSIFS has identified that they have made use of PEM and associated data to create predictive mapping tools for many resource values including traditional and cultural use. I discuss these practices, where necessary, elsewhere in the rationale.

Ministry of Forests Research Branch staff have reviewed the PEM project, which was initiated prior to standards for assessment were in place, and accepted the results for use at the strategic level in timber supply analysis. As with any modelling work, I recognize that there will be variability in the predictions that must be considered. I consider the underlying use of the PEM as appropriate, however, I encourage the society to continue to improve the PEM given its underlying importance to many interpretative uses and to continue to develop, or assist to develop, interpretative uses for PEM.

I consider that the PEM project is an innovative forestry practice. The accounting for PEM, where necessary, is discussed within factors that use the PEM.

Growth and yield

The timber supply methods used in this analysis require that matrices of volume yield over time for specific stand and management regimes are developed. Growth and yield models were used to develop these yield tables. These models require specific information related to the existing forest inventory and management, and to the expected future productivity of forested sites.

I have considered the expert advice of MOF and MSRM staff presented to me on inventory, management, and the expected rate of growth. I am satisfied that the analysis assumptions result in appropriate yield estimates except for the factors discussed below for which I believe my consideration requires some documentation.

Site productivity (low elevation)

Site index is a measure of the potential productivity of forested land and typically applies to areas of even-aged management. Site index is used as an input variable to growth and yield models to predict the rate of growth of existing managed stands and stands to be regenerated after harvesting.

NSIFS conducted a site index adjustment project for the low elevation even-aged stands. The project included (a) an assignment of potential site indices based on available information, (b) a statistically based field sample, and (c) an adjustment to the assigned potential site indices based on the field sample.

The target population (low elevation even-aged strata) represents 69% of the productive forest land base, whereas the sample population (stands 16-40 years) only represents 2% of the forested land base. Government staff expressed some concern about potential bias. While I recognize that a reasonable sampling procedure has been used, I am mindful of this potential bias and recognize the need to monitor such results. I discuss this recognition under 'Reasons for decision'.

The increased site productivity of future managed stands in the even-aged low elevation strata can result in an increased modelled harvest flow through all planning periods. An

increased harvest flow in the short term is the result of managed stands being available earlier in the mid-term, thus freeing existing stands whose harvest was delayed to meet mid-term needs. Much of the current AAC increase application is based upon these harvest flow movements. I further discuss this issue under the below section 'Harvest flow'.

As a condition of the previous determination, the regional manager requested the NSIFS provide a detailed, peer reviewed monitoring plan that would identify deviations from the expected overall site productivity estimates including low elevation stands. Such monitoring would enable the verification that the trends of the predictions are appropriate. While the condition stated that a plan shall be provided within 6 months, and initiated within 12 months, of the award of the AAC increase, NSIFS have only recently supplied a peer reviewed monitoring plan. The peer review of this plan suggests that the growth and yield monitoring is sufficient. Government staff have reviewed the plan and are generally satisfied with the plan but have also identified some concerns around sample size and bias. I expect that my staff will ensure that these concerns are addressed where possible and that the society will continue with the implementation of the plan.

In consideration of the above, I accept the low elevation site index adjustment project as improved information and an innovative forestry practice. I am mindful of the uncertainty and risk given the sample population and that short-term gains are the result of improved predicted yields in the mid-term and long-term.

I will discuss my accounting for this factor under 'Reasons for decision'.

Site productivity (high elevation)

NSIFS conducted a site index adjustment project for the high elevation even-aged stands (>1,650 metres above sea level). This project included an assignment of the potential site indices based on the available information and an adjustment based on an "elevation model". Government growth and yield specialists have expressed concerns around the certainty of these estimates particularly given that no statistically based local field samples were available to adjust the assigned potential site indices.

As discussed under Site productivity (low elevation), NSIFS has recently provided a monitoring plan to meet the condition identified in the January 1, 2004 AAC increase rationale.

It is my view that the high elevation site index adjustment project is an innovative forestry practice but that there has been insufficient field sampling to determine appropriate site indices.

I acknowledge that preliminary results indicate no or minimal impact on short-term harvest flow. Therefore, I will not consider this factor further in my reasons for

determination except with respect to monitoring. I encourage NSIFS to continue to validate site indices in the high elevation stratum.

Site productivity (smallwood)

NSIFS investigated determining site indices in the smallwood stratum by several methods and, for use in the timber supply analysis, selected a methodology that used site productivity information from the low elevation site index adjustment project in conjunction with available information on the smallwood stratum. Timber supply analysis indicated that this new information resulted in no short-term gains but a 72 085 cubic metres per year in the mid-term and a 106 253 cubic metres per year long-term increase. Alternatively, this gain could be flowed as an even distribution of 90 000 cubic metres per year increase across all time horizons.

MSRM staff have indicated that using this approach to estimate the site indices of smallwood stands contains a good deal of risk and uncertainty. To provide greater certainty, smallwood stands need to have a representative and adequate sample from within their target population as the portability of the low elevation information is unknown. As discussed under Site productivity (low elevation), NSIFS has recently provided a monitoring plan to meet the condition identified in the January 1, 2004 AAC increase rationale.

I am mindful that the IFPA-holders do not have harvest rights to the smallwood strata except in extraordinary cases and that the capture of the future site productivity gains is dependent on the harvest of such areas by other licensees. I am also mindful that the methods used do not fully address the uncertainty around site productivity in this stratum. I encourage NSIFS to reduce this uncertainty in the future by improving information through improved sampling or monitoring.

In consideration of the above, I accept the NSIFS investigation of site productivity in the smallwood stratum as an improvement over TSR2 and as an innovative forestry practice. I will discuss my accounting for this factor under 'Reasons for decision'.

Single tree selection

The NSIFS recognized opportunities associated with management of dry-belt Douglas-fir stand types. Growth and yield studies suggest these stands are growing at higher rates than had been assumed in previous timber supply reviews. NSIFS developed a local model to produce yield tables for the single tree selection stratum that could be applied in the IFPA/expedited timber supply analysis. Yield tables were based on "SINGROW", a volume increment model developed by J.S. Thrower & Associates using results from the MOF Prognosis model together with permanent sample plots from the Merritt dry-belt.

Over the mid- to long-term, application of the SINGROW model results in less harvest in the single tree selection stratum than was achieved in TSR2, even though SINGROW

models higher growth rates and was designed to harvest more volume at each cutting cycle than TSR2 assumptions. The spatial supply model has been identified by NSIFS to constrain the desired cutting cycles, and therefore underestimating the contribution from the stratum.

Improved management and modelling of the single tree selection stratum falls under a number of categories considered as innovative forestry practices within the approved forestry plan. As such, I am willing to consider this factor. However, I am mindful that the contribution of single tree selection may be underestimated as stated by NSIFS but that the application provides insufficient documentation, validation, or peer review of the model or associated yields to validate the claims.

I will discuss my accounting for this factor under 'Reasons for decision'.

Forest management practices

The MOF 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 realisation of fisheries, wildlife, water, outdoor recreation and other natural resource values are co-ordinated and integrated.

Recognizing the importance of forest stewardship, particularly in light of the projected substantial increase in harvesting and forest mortality due to the spread of the Mountain pine beetle infestation, it is incumbent upon forest managers to attempt to mitigate the effects of the outbreak through appropriate management that includes well-planned and properly executed forest management practices. Accordingly, the extent to which management practices for various forest and non-forest resources and values affect timber supply must be considered in AAC determinations.

To manage for resources such as water quality and aesthetics, current harvesting practices prescribe the size and shape of cutblocks, the amount of disturbance (areas covered by stands of less than a specified height), and minimum green-up heights for regenerated stands on harvested areas before adjacent areas may be harvested. Green-up requirements provide for a distribution of harvested areas and retention of forest cover in a variety of age classes across the landscape.

Visual quality is managed within the Merritt TSA near specific highways, lakes and trails. On September 30, 2003, the District Manager, using updated visual landscape inventory for the Merritt TSA, formally established VQO's for the TSA. This updated inventory includes about 20% more area than the old inventory used in the expedited IFPA analysis. However, visual zones may experience increased operations in the short term as a result of variances from the established VQO's in order to manage and salvage infested and/or susceptible stands.

Community fire interface was not modelled in the analysis, but it is recognized that the forests surrounding the communities at risk will not be managed primarily for sustainable timber production, as the objective of the interface area is public safety and prevention of wildfire.

I have reviewed the information presented to me about forest practices and management assumptions for community watersheds, conversion of grasslands, elk movement corridors, grizzly bear management zones, community fire interface, and harvest priority and I am satisfied that IFPA review analyses appropriately reflected current practices or would have had insignificant impact on my decision.

The factors discussed below are those for which I believe my consideration requires some documentation.

Landscape level biodiversity

NSIFS undertook identifying draft OGMA's for the Merritt TSA using the PEM tools that they had developed. Subsequently, MSRM staff, in conjunction with stakeholders, have been working on establishing "draft OGMA's". This work has not yet been finalized.

At the time of the 2003 AAC increase application NSIFS did not have a full draft of OGMA's. NSIFS estimated the likely effects by analyzing the timber supply impacts of potential OGMA's completed on four landscape units in the Merritt TSA. The modelling of the selected OGMA's in the four landscape units resulted in a 3.2% impact on the THLB. NSIFS then applied a slightly higher general reduction of 3.9% on the remaining landscape units in the Merritt TSA. Natural disturbance in the non-THLB was not considered in the analysis.

During public and government review, many comments and concerns were expressed about the methodology and the application of the results of the project completed by NSIFS. MWLAP and MSRM staff expressed concern that the method used by NSIFS was insufficient to capture the full impact of the OGMA's that could be placed in the Merritt TSA. MWLAP expressed concerns regarding the long-term recruitment from the non-THLB, final BEO assignment, and applicability of 3.9% to the remaining eight landscape units. MWLAP did not believe that the information provided to date supported the NSIFS statement that "all environmental objectives can be met with a netdown of 4% or less". MWLAP also provided an environmental risk assessment that demonstrated the Merritt TSA has a high to moderate risk under current practices. While this assessment provided an informative look at old growth dynamics, I recognize some of the assumptions to ensure low risk suggest management requirements above those required for current practice.

Subsequent to the current analysis, in June 2004, the MSRM minister approved an order under section 4 of the *Forest Practices Code*, approving landscape units and non-spatial old forest retention targets for BEC units within the Merritt TSA. A 3.9% reduction of THLB is equivalent to about a quarter of the landbase required under this order. Subsequently in 2003/2004, MSRM staff, MOF staff, major licensees, and several First Nation groups participated in a process to further identify draft spatial OGMA's across the 12 landscape units within the Merritt TSA. MSRM staff have been working to establish "approved draft OGMA's" under section 8 of the order. MSRM suggests that that the likely THLB impact will be closer to 6% for these draft OGMA's but that this needs to be confirmed. Licensees are currently avoiding harvesting within the draft OGMA's.

Natural disturbances such as fire and catastrophic Mountain pine beetle infestation can change the seral stage of a forest stand. In the timber supply analysis, management objectives related to seral stage (e.g., maintaining old forest) are modelled. These objectives may consider forest both inside and outside of the timber harvesting land base. Within the timber harvesting land base these changes can be assumed to be accounted for

through the existing modelling, but in the area outside they may not. For this determination, with respect to landscape level biodiversity, I have accounted for this consideration and I am mindful that the achievement of some other forest cover objectives may be affected. I encourage the society to consider this concern in future applications.

As a condition to the January 1, 2004 determination, NSIFS was requested to work with MSRM, MOF, MWLAP, First Nations and others to complete the landscape level biodiversity plans within one year of the determination. The work has not yet been completed. However, it is recognized that such work is done in collaboration and that timelines are not the responsibility of NSIFS.

In consideration of the above, I accept the modelled scenario for use in the IFPA/expedited analysis. However, I am mindful of MSRM staff's concerns that the impact for OGMA's will be significantly higher than modelled and MWLAP staff's concerns and assessment of the risks of not maintaining sufficient old forest in certain BEC variants. I recognize that ageing of the non-THLB can impact long-term timber supply in all scenarios and such impacts may have short-term implications where the flexibility of the timber supply is low.

While much work is being done by government and others, I consider the contribution by NSIFS towards development of draft OGMA's as an innovative forestry practice.

I will discuss my accounting for this factor under 'Reasons for decision'.

Stand level biodiversity

TSR2 accounted for wildlife tree patches (WTPs) using both area exclusions and volume reductions. Approximately 2% of the timber harvesting landbase was excluded to account for existing WTPs > 2 ha. in size, and a 2% volume reduction was applied to all stands (existing and future yields) to account for WTPs < 2 ha. In the TSR2 AAC rationale, the chief forester concluded that the modelling assumption that 50% of WTP requirements could be met outside the timber harvesting landbase, was optimistic and underestimated the actual WTP impact, given the high degree of THLB in the Merritt TSA. A further 1.5% reduction to the short-term harvest level was applied for a total of 5.5% in the AAC determination.

NSIFS, through a GIS buffering exercise, identified the minimum amount of timber harvesting landbase required to fill deficiencies in wildlife tree patch requirements based on a guidebook recommendation of 500 metres between patches. This modelling exercise identified a 1.12% timber harvesting landbase requirement for wildlife tree patches.

The NSIFS analysis considered all non-timber harvesting landbase to be suitable for wildlife tree retention, thus overestimating both the amount of WTPs within non-THLB

and thus the inter-patch availability of patches in the non-THLB. NSFIS did not discuss how the wildlife tree retention modelled was to be operationally implemented.

MOF Cascades forest district staff, MWLAP, and MSRM indicate that, based on their knowledge of current practices, this 1.12% impact is low. Cascades forest district staff believe that the 5.5% recognized in the previous AAC determination is more appropriate. As such, there is increment associated with innovative forestry practices on area that should have been removed from the timber harvesting land base.

While WTP modelling was not considered an innovative forestry practice, I encourage appropriate monitoring of wildlife tree retention needs to ensure proper accounting of this factor. Without such monitoring, it is unknown whether actual practice reflects guidelines or modelling in processes such as timber supply review.

I will discuss my accounting for this factor under 'Reasons for decision'.

Identified wildlife management strategy

In the TSR2 AAC rationale, the chief forester acknowledged that it was reasonable to expect future measures to protect additional habitat for identified wildlife. In recognition, the chief forester applied a 1% reduction in harvest level across all planning horizons.

In the timber supply analysis, a wildlife habitat area (WHA) accounting of 60 ha for Coastal Tailed Frogs was established and incorporated as a THLB area reduction. Currently, wildlife habitat areas impact an equivalent of 144 ha of mature THLB and further indications are that the 1% will be reached for other considerations such as WHAs for grizzly bears.

As per direction of MOF staff, the 1% policy reduction was not applied in the analysis. MWLAP expressed concerns that the application and analysis insufficiently addressed the needs for identified wildlife.

While IWMS is not an innovative forestry practice, there is an increment associated with other innovative forestry practices that should not be considered on any landbase removed from the timber harvesting landbase. I will discuss my accounting for this factor under 'Reasons for decision'.

Riparian and temperature sensitive streams

In 2001, the NSIFS completed a stream classification model for the TSA. While this classification model has not been appropriately validated using an independent data set, MSRM staff had accepted the strategic use of the model.

Revisions to the THLB netdown criteria were made based the NSIFS stream classification model and on riparian reserve zone and riparian management zone exclusions following best management practices from the riparian management guidebook. The new stream classification resulted in approximately 7 672 ha less THLB exclusion than did the TSR2 netdown process.

NSIFS did not model the improved riparian management as an innovative forestry practice, rather they were just considered as an update to management. However, based on the forestry plan, I would consider these improvements to be an innovative forestry practice. As such, except for the increment related to other innovative factors (e.g. inventory, site productivity) on the additional landbase, the impact of increasing the timber harvesting landbase is not accounted for in the increment associated with the innovative forestry practices. I will discuss my accounting for this factor under 'Reasons for decision'.

In 2000, the district manager and designated environment official jointly made known a number of fish-bearing streams within the Nicola watershed as temperature sensitive streams. The analysis did not model the additional impact of temperature sensitive streams. In the TSR2 AAC determination an additional impact of approximately 1 000 ha was considered for temperature sensitive streams.

I will discuss my accounting for this factor under 'Reasons for decision'.

Deer winter range (DWR)

NSIFS created proposed deer winter range management zones and assessment units based on tools they developed (e.g., PEM). Subsequently, drafts of these zones and assessments were developed jointly with MSRM and MWLAP staff.

In the 2003 timber supply analysis, NSIFS modelled deer winter range objectives based on applying the Okanagan-Shuswap LRMP management objectives for an assessment unit, as planning cells had not been determined. MWLAP has expressed concerns that the application of management objectives at the planning cell level will be more constraining on timber supply, and that the retention requirement, modelled at 100 years rather than 140 years, is not as constraining.

The 2004 AAC increase was conditional to NSIFS updating the deer winter range mapping. NSIFS has indicated that they have worked to complete the assessment units with MWLAP. Closure on planning cells to allow a new analysis has not occurred, and once these are completed, the society notes that the results can be implemented in a new analysis.

While I recognize that work is being done by government and others, I consider the contribution by NSIFS towards development of draft deer winter range mapping as an innovative forestry practice.

I will discuss my accounting for this factor under 'Reasons for decision'.

Cultural Heritage Resources

Cultural heritage resources, as considered in this rationale, include archaeological sites and traditional land uses by First Nations.

In the Merritt TSA there are over 500 archaeological sites protected under the *Heritage Conservation Act*. The majority of these sites are either located outside of the crown productive forest land base or are in areas already considered removed from the timber harvesting land base for other reasons such as riparian reserves. In the timber supply analysis, sites not already considered outside of the timber harvesting land base were identified and a 50-metre radius no-harvest buffer was modelled. This resulted in about a 50 hectare reduction to the timber harvesting land base.

A number of traditional use and related studies have been conducted in the Merritt TSA. Approximately half of the TSA was covered in a traditional use study completed in 2000 within the Nicola Watershed. The need and importance of traditional use and cultural studies has been emphasized by speakers at public review forums, during a May 9th, 2005 meeting with chiefs or representatives from most First Nations with interest in the Merritt TSA, and from correspondence, particularly from Cook's Ferry Indian Band and Upper Nicola Indian Band. I am in agreement that traditional use information is an important component of forest management decisions and should be pursued as resources permit.

I acknowledge the Lower Nicola Indian Band concern that bands provide a significant component of the work related to cultural values that goes into the innovative forestry practices of NSIFS. Lower Nicola Indian Band expressed concerns that bands outside of Stuwix Resource Limited who have participated in such work receive no benefit from the uplift. I understand the view that the IFPA-holders may be receiving benefit for work accomplished by First Nations. I also recognize that benefits can exist for First Nations through the availability of tools that would not have been developed without their assistance. In terms of AAC increase benefits, the tools related to cultural values were not used or claimed as innovative forestry practices. As such, no direct benefit was derived by the IFPA-holders for such tools.

NSIFS has recognized the importance of traditional use information and the development of appropriate tools throughout their Forestry Plan documentation and through their current activities. I encourage NSIFS to continue with the development and use of predictive tools for traditional use and cultural studies. I would find it useful, in determinations such as this, to better understand the implications of changes in timber supply on such values.

I discuss my thoughts around the information needs for traditional use, and the resources necessary for First Nations to obtain such information, within the sections titled 'First

Nations Consultation’, ‘First Nations Accommodation and Considerations’ and ‘Determination and Conditions’.

Harvest Flow

The purpose of a timber supply analysis is to show the temporal dynamics of timber supply availability in relation to harvest and other management objectives. In a simulation model, as used in this analysis, the harvest flow (i.e., the harvest over time) is dependent on both the underlying model data set and on choices by the modeller. While a modeller has choice of harvest, the selection of a specific harvest flow in one time period can cause changes in harvest flow in other periods.

As modelled, the short-term for the IFPA/expedited base has an initial harvest flow that can be maintained for six decades. The IFPA/expedited base analysis, that includes all of the innovative projects, shows little flexibility in the availability of merchantable stock throughout the planning period. This raises concern that, if the managed stands do not realize the predicted yields in the mid-term, there is the potential of mid-term shortages. This shortage would be a direct result of the increased short-term harvesting. Harvesting more in the short-term also has the potential to push other current management objectives to their limits and could prevent future flexibility to adjust for changes in other management objectives such as Mountain pine beetle epidemics and catastrophic events.

District staff indicate that they are not experiencing the level of inflexibility suggested by the model. The model has applied a direct spatial adjacency constraint. Branch and regional timber supply analysts have found that the model, CASH6, used the application of the spatial adjacency rules which tends to be more restrictive than what is found operationally.

To understand the dynamics of the timber supply, it is desirable to view alternative harvest flows. However, as the IFPA/expedited analysis was near the highest initial harvest level, NSIFS provided no alternative harvest flows for the IFPA/expedited base.

The unprecedented increase in the spread of the Mountain pine beetle infestation is predicted (using the MOF Research Branch model and assuming no intervention), to result in approximately 21 million m³ of dead volume by 2009. To address Mountain pine beetle, both as a management tool to slow beetle spread, and for salvage, will likely result in relaxation of forest cover constraints associated with objectives such as visuals. As such, the Mountain pine beetle sensitivity provides a look at higher initial harvest levels where adjacency constraints have been relaxed. These sensitivities are discussed further in the Mountain pine beetle management factor below.

Regardless of the beetle sensitivities, I have concerns around the harvest flow chosen by the society and the low availability. I have concerns about increasing short term harvest levels while lacking information on future stand conditions. I also have concerns that the society did not meet, on time, a condition on monitoring in the previous determination. Monitoring and continued research on future yield expectations are crucial to ensure that

we are appropriately distributing existing stand volumes over the short-term without resulting in undue hardship in the mid-term.

I will discuss this factor and conditions further under 'Reasons for decision'.

Forest Health - Non-Mountain Pine Beetle

Other forest health agents besides Mountain pine beetle are present within the Merritt TSA and include:

- Western balsam bark beetle, spruce beetle, Douglas-fir beetle
- various defoliators such as Western spruce budworm, Douglas-fir tussock moth, gypsy moth
- root diseases such as Armillaria root disease and Phellinus root disease
- climatic injuries
- pine diseases
- animal damage

In the Merritt TSA, the highest priorities for inventory and treatment of the non-MPB agents are Armillaria root disease, Phellinus root disease, Western spruce budworm, Douglas-fir beetle, spruce beetle and hard pine stem rusts.

The base case reasonably reflects current practice in regards to non-MPB forest health factors. I have been made aware that, in the future, as a result of a significant proportion of the pine component of the forest being extensively removed, unknown forest health factors may become apparent and should be monitored for impacts when discovered.

At this time, I accept that non-MPB related forest health agents are appropriately modelled and are not discussed further.

Mountain Pine Beetle Management

Mountain pine beetle are part of the natural process of lodgepole pine ecosystems. However, the current Mountain pine beetle outbreak has reached unprecedented levels in British Columbia. In the Lakes, Prince George and Quesnel TSAs, the Mountain pine beetle infestation has resulted in immense tracts of dead trees. As the epidemic spreads, models developed by MOF Research Branch predict that about 50% of the lodgepole pine in the British Columbia interior will be impacted by 2006.

In the Merritt TSA, MPB populations are in the early stages of rapid expansion. In 2003, regional aerial overview surveys indicated 7500 ha of MPB infested stands. In 2004, this had jumped to about 30,000 hectares of MPB infested stands. A major portion of the current infestation occurs in the northern parts of the TSA in highly susceptible stands. Predictive models based on provincial averages of MPB infestation indicate rapid expansion in future years.

Forest managers and entomologists suggest that the diverse landscape of the Merritt TSA, in terms of geography and ecosystems, may allow the slowing of Mountain pine beetle expansion as compared to areas such as the central plateau where there were few geographic or species impediments to beetle expansion. The regional MOF entomologist suggests that the separation of the larger areas of susceptible lodgepole pine by areas of grassland, extensive Douglas fir forests, and high elevation spruce and balsam forests may slow beetle spread and enable the timely and directed harvesting of beetle infested stands to further slow the spread.

In 1999, the Merritt TSA received an AAC uplift to address a Mountain pine beetle outbreak in the southern portion of the TSA. Cascades Forest District staff and licensees believe that, through the effort of licensees who adjusted their harvest priorities, this outbreak was contained to manageable levels. As such, licensees feel that there is the opportunity, with proper resources, to effectively contain the current outbreak.

To address the current outbreak, MOF and licensees collaboratively have developed and initiated a Merritt TSA forest health plan that includes a Harvest Eligibility Matrix. Implementation of this matrix directs harvest of current AAC and any uplift volumes to high priority MPB infested stands. The aim of this strategy is to maintain the existing mature pine inventory as long as possible and to minimize the drop between the mid-term and long-term timber supply.

As an innovative forestry practice, NSIFS is proposing a management strategy that is incremental to the strategy outlined within the Merritt TSA forest health plan. The strategy would enable the more timely harvest of infested stands. The strategy includes early detection of priority beetle infested stands, maximizing harvest of these stands by critical dates, ensuring that there is improved silviculture performance on beetle affected areas, developing a roads ahead program to ensure timely access, and having an appropriate reporting process to enable assessing the outbreak.

Through the use of aerial overview information and refined with local knowledge, NSIFS licensees have quantified and qualified the current MPB outbreak into two categories; 1) heavily infested pine stands and 2) high risk pine stands.

- 1) Heavily infested pine stands are infested at an intensity of greater than 200 green attacks per 20 ha area. At these infestation levels, dramatic expansion into new areas is possible and for this reason it is preferred that these currently infested stands be harvested prior to the 2005 beetle flight. Recognizing the large volume in this category and the short time frame in which it could be harvested, the beetle flight of 2006 is the absolute critical date for having the heavily infested stands removed. All stands falling into this category (Category 1) would be prioritized for harvest dependent upon numerous criteria including percent green (current) attack in the stand.
- 2) High risk pine stands are infested at an intensity of 1-200 green attacks per 20 ha area and are located within 2 km of either a currently or past heavily infested stand.

Although the infestation levels are low, the infestations may be increasing rapidly (e.g. green/red ratio's greater than 4:1). At these infestation levels, these stands could most likely be held through the 2006 beetle flight before harvesting is required. Many stands in Category 2 may be elevated to Category 1 after the 2006 beetle flight. These stands would then be prioritized for harvest with existing Category 1 stands.

The above categories translate overview flight information of hectares affected into estimates of volumes of priority beetle stands requiring harvest. The data indicate approximately 2 455 000 cubic metres are currently heavily infested and require removal prior to the 2006 MPB flight. The TSA licensees estimate another 2 047 000 cubic metres are at high risk and will likely be heavily infested following the 2006 flight. Any harvest of heavily infested MPB stands prior to the 2005 flight will help reduce the risk of beetle expansion into existing high risk stands and potentially other stands currently not infested. Along these lines, Aspen Planers Ltd. have indicated that they plan to harvest their current AAC prior to the flight.

The NSIFS feels that current regional overview flight information is of insufficient detail and timing for the operational planning required to slow beetle expansion significantly. However, the overview does give good direction as to where to focus the detailed aerial surveys and information dissemination proposed by NSIFS for which the methodology is described below:

- a. Licensees will conduct early overview flights when the majority of fading attacked trees are visible (approx. July 1-15 when >50% fade will have occurred) and follow up with ground surveys.
- b. Overview flights will be conducted over those areas having the greatest risk of outbreak or continued exponential expansion. These flights will be primarily focused in areas with a Holding strategy (not covered by MOF detailed aerial surveys) where by definition there are higher levels of beetle activity.
- c. Detailed information from overview flights will be available to licensees for use in operational planning as early as July 15 and no later than September 1.

Overview flights conducted by the MOF are directed at determining the current extent of the MPB. This information is available to licensees late in the year when unfortunately there is little opportunity to respond with development in time to harvest by the next beetle flight. Further, MOF overview flights are typically only conducted in Suppression Beetle Management Units (BMU's) and not Holding or Salvage BMU's. Very little of the Merritt TSA is still in Suppression. By conducting detailed aerial surveys in Holding BMU's, the licensees expect to significantly improve their ability to address the MPB in a timely and efficient manner.

The NSIFS 2003 timber supply analysis did not consider a Mountain pine beetle outbreak. To understand the implications for the chief forester's decision, and my

decision, the MOF Forest Analysis Branch provided supplementary analysis that looked at the outbreak under 2 differing assumptions about rate of spread and harvest rate. In the first scenario, there was an increase of the AAC by 1 000 000 cubic metres per year for 5 years (total harvest 2.84 million m³/yr), the rate of spread is as per MOF research models and after 5 years beetle-killed wood becomes useless. This analysis projects that 13.5 million cubic metres of mature pine will become unmerchantable and likely not salvaged.

The second scenario done by MOF Forest Analysis Branch shows an analysis using the NSIFS projected slower rates of beetle spread and an AAC increase of 500 000 cubic metres per year for 7 years. Under this scenario, there were no losses of unsalvaged merchantable timber. Thus, if the NSIFS strategy has the expected results, greater timber supply from existing mature stands would be available in the mid-term. Based on this strategy, NSIFS proposed a Section 59.1 AAC increase of 500 000 cubic metres per year, attributable to the NSIFS IFPA members over a 7 year period. This strategy, while increasing short-term harvest flow, would also enable maintaining the timber supply in the mid-term at a higher level through the reduction of unrecoverable losses.

Ministry staff expressed opinions that the amount of Mountain pine beetle expansion is likely overstated by the MOF Research Branch model and optimistic in the NSIFS model. Detailed monitoring of the Mountain pine beetle expansion and the implementation of any beetle management strategy is imperative to understand the population dynamics and its impact on timber supply.

Large scale harvesting for Mountain pine beetle management can affect other resource values. Cascades Forest District staff have presented a number of recommendations to be followed to mitigate the negative effects of increased harvesting on all forest values. These recommendations are in line with those discussed in the paper “Forest Stewardship in the Context of Large-Scale Salvage Operations” (MOF Research Branch, 2004). A brief summary of the key recommendations includes:

- provisions for old growth management areas
- little or no harvest in the non-contributing land base
- no changes to the provisions for riparian management areas (RMA's)
- higher legacies of coarse woody debris throughout the blocks
- appropriate creation of large openings with proportional increased unharvested legacies
- spatial distribution of in-block retention and coarse woody debris representative of the original “matrix” forest
- considerations of access management, hydrologic stability, prevention of open slope failures, and planting to prevent future outbreaks
- the development and implementation of a long-term monitoring program for improved future forest management

While on June 8, 2005 I conditionally approved the Forestry Plan that contains the above Mountain pine beetle strategy, I did not specifically identify individual innovative practices. For this determination, I have reflected on the society's Mountain pine beetle

strategy and the Innovative Forestry Practices Regulation that identifies authorized practices and activities.

I find that there are 3 components of the strategy that I consider to be innovative forestry practices and activities:

1. Early overview flights and follow up ground surveys. These practices, that fall under Section 2(e) of the regulation, will provide a more accurate representation of the forest composition and subsequently its expected rate of growth necessary for timely management decisions as compared to relying on current surveys
2. Forecasting and monitoring the process of beetle spread. These practices also fall under Section 2(e) of the regulation and will provide more accurate representation of forest composition and subsequently expected rates of growth if these practices involve the collection and analysis of new data as compared to current efforts.
3. Maximize the harvest of priority beetle infested stands by critical dates. This practice incorporates a number of needs including the above two components, co-ordinated plans, monitoring of infestation and harvest, roads ahead planning, and proactively considering environmental and other non-timber objectives in order to mitigate threats. This "harvesting practice" can be considered to fall under Section 2(a)(i) which identifies the implementation of a harvesting method that increases the total amount of timber available to harvest in the timber supply area over the amount available under standard practices. Based on Forest Analysis Branch predictions where beetle spread rates are higher, there is an estimated 13.5 million cubic metres of timber supply lost (i.e., not harvested before losing merchantability) if current spread is allowed to occur. If the Mountain pine beetle management strategy is successful by reducing the rate of spread, no timber supply is expected to be lost beyond currently expected non-recoverable losses.

It is necessary to consider the strategy as whole. The collection and analysis of new information on forest composition around Mountain pine beetle in itself does not result or show any increases in forest productivity or demonstrate an increase in timber supply. However, as a tool to direct the harvest priority of infested beetle stands, these innovative forestry practices enable the slowing of the spread of beetle. Similarly, harvesting of beetle infested stands would not by itself be an innovative practice without the expedited survey and forecasting of beetle infestation. The slowing of the spread of beetle results in forest managers being able to capture timber supply expected to have been lost due to the lack of access to, or resources for, harvesting all dead pine.

The current strategy provides an outline rather than specifics around each of the components. As noted in the outline, the society will build a co-ordinated beetle response and management strategy. I expect that this strategy will provide further details that demonstrate how the components of the strategy are innovative forestry practices (e.g., collection and analysis of new data increase the total amount of timber available over the amount available under standard practice).

I also will expect, as noted under conditions for the decision, that the society will provide sufficient monitoring and related information so that I can compare the impacts of the Mountain pine beetle management strategy to current predictions. If the hypothesis of the spread of beetle infestation differs from that on which the Mountain pine beetle management strategy is predicated, I will need to reconsider my decision of any AAC increase associated with the strategy. I plan to revisit this decision each year to assess the monitoring information in relation to original and updated predictions of Mountain pine beetle spread.

I am satisfied that the overall intent of, and individual practices within, the proposed Mountain pine beetle management strategy proposed by the IFPA-holders, meet criteria under the Innovative forestry practices regulation as authorized innovative forestry practices and activities, and that the approved forestry plan contains sufficient information for me to consider in determining if an increase in allowable annual cut is justified.

I will discuss this factor further under 'Reasons for decision'.

Impacts on other licensees

Under my guiding principles, I identify that an AAC increase decision should have no impact on non-IFPA holder's rights.

No specific comments were brought to my attention by other timber tenure holders. I note that the current licences of IFPA-holders do not permit harvesting of smallwood except for reasons such as Mountain pine beetle outbreak.

During the public review sessions, a concern was brought forward by a range tenure holder about harvesting operations decreasing natural barriers to cattle. I do not consider this to be problematic, as Forest licensees are required to consult with range managers on impacts to cattle control and movement and to provide corrective actions where needed. These actions are normally recognized within the stumpage system.

I do not foresee that the innovative forestry practices proposed would have negative impact on other licensees. I would expect that if increased harvest is needed in smallwood pine, licensees would work together appropriately.

First Nations Consultation

The Nlaka'pamux and Okanagan Nations have traditional territories within the IFPA area. The IFPA area covers the following six communities; Coldwater Band, Lower Nicola Band, Nooaitch Band, Shackan Band, Upper Nicola Band and Upper Similkameen Band. Five other First Nations' communities located outside the IFPA area have reserves and/or traditional interests within the IFPA area. These are the Westbank First Nations (Westbank), Lower Similkameen Band (Keremeos), Nicomen Band (near Spences Bridge), Cook's Ferry Band (Spences Bridge) and the Siska Band (near Lytton).

The vision of the Nicola Similkameen Innovative Forestry Society in part states:

NSIFS uses innovative forest management practices that incorporate Aboriginal knowledge and values and public involvement in order to increase the productivity of a healthy and resilient working forest.

A strategic objective of the society is to

Support First Nation's communities

- *Ensure First Nation's role in the management of the NSIFS*
- *Incorporate First Nation's values in the management of the IFPAs*
- *Increase forest sector business opportunities for First Nations.*

Along these lines the society members have assisted with enabling local First Nations to obtain a replaceable forest licence and an innovative forestry practice agreement that enables First Nations to share in an allowable annual cut increase. The society has funded and continues to fund projects that address First Nations' information needs.

The MOF regional office initiated First Nations consultation with respect to the March 30, 2005 application and Forestry Plan II on April 11, 2005 via a letter to all Bands with an interest in the TSA. This consultation occurred with individual Bands unless a written request to do otherwise was provided. Due to the expedited nature of the decision with respect to Mountain pine beetle management, the letter indicated input would be accepted up to May 25, 2005. Additional input has been accepted up until June 21, 2005.

The following Bands/Councils were contacted: Nicola Tribal Association, Coldwater Indian Band, Cook's Ferry Indian Band, Lower Nicola Indian Band, Upper Similkameen Indian Band, Siska Indian Band, Upper Nicola Indian Band, Westbank Indian Band, Lower Similkameen Indian Band, Nicomen Indian Band, Nooatich Indian Band, Shackan Indian Band, Kamloops Indian Band, Nicola Tribal Association, Nlaka'pamux Tribal Council.

My staff prepared a "A consultation summary for the Merritt IFPA First Nations Consultation" and provided this document for my consideration on June 28, 2005. This summary memorandum documents the key communications that I have received and shared with respect to this decision. The chief forester, in making his July 1, 2005 Section 8 determination, has made me aware of First Nations concerns regarding the allocation of timber rights, improvements to Forest and Range Agreements (FRA's), and the need for improved capacity to participate in future planning initiatives and referral processes. My staff have also made me aware of information and previous communications relevant to this decision.

Considering the information that I have been presented, I have concluded the following:

- I am satisfied that the Provincial Policy for Consultation with First Nations has been adhered to and, that even with the expedited review request, reasonable opportunities have been made to the First Nations Bands to make direct presentation about the Forestry Plan and the AAC increase application.
- I have considered the issues and materials presented to me by First Nations and have put my mind to the specific concerns identified.
- The potential rights and title of First Nations in the Merritt TSA introduces uncertainty into my determination. I recognize that there is the potential for aboriginal rights and title to exist somewhere within the Merritt Timber Supply Area.

I discuss how I consider accommodation under the section “First Nation Accommodation and Consideration”

If information becomes available during the term of this AAC increase that concerns potential rights and title of First Nations in the Merritt TSA, I may re-visit this determination.

The allowable annual cut increase that I determine should not in any way be construed as limiting obligations under recent decisions by the British Columbia Court of Appeal or the Supreme Court of Canada. My determination does not prescribe a particular plan of harvesting activity within the Merritt TSA and does not affect consultation obligations with respect to referrals on harvest operations.

Reasons for decision

In reaching my decision on a request for an increase in allowable annual cut to the forest licences held by the six IFPA-holders, I have considered all of the factors presented to me, and I have reasoned as follows.

An increase in allowable annual cut is based upon the increment in short-term harvest flow attributable to the innovative forestry practices and activities. These innovative forestry practices and activities are identified in the forestry plan, that I have previously approved, and have been, or will be carried out, by the IFPA-holders in accordance with the forestry plan.

Section 59.1 of the *Forest Act* requires that I justify an increase in allowable annual cut based on timber supply analysis methodology approved by the chief forester. The chief forester, in his timber supply analysis considerations for IFPAs, identifies the types of information that should be included in an analysis. I have reviewed factors related to the land base and inventory, growth and yield, and management objectives and I am satisfied that the majority of the assumptions appropriately reflect the best available information and current practices. I have identified a number of forest management or data issues that either cause uncertainty or lead to changes in analysis assumptions relative to the

analysis. Some of these factors can be quantified and their impacts assessed with dependability. Other factors may influence the timber supply by adding an element of risk or uncertainty to the decision but cannot be reliably quantified at the time of this determination. Some of these factors may favour an AAC increase while others may not.

The following is a summary of the factors that I consider require an adjustment to the modelled base AAC increase of 549 000 cubic metres. As noted under 'Timber Supply Overview – The Base Case', this 549 000 cubic metres is the modelled difference between the analysis considering all the innovative forestry practices and the analysis without the practices. The adjustment to this base AAC increase may be upward or downward based on the results of the innovative practices identified in the IFPA application and my determination of the level of risk and uncertainty with each factor. Factors with uncertainty that were discussed previously in my consideration but do not influence the existing AAC are not discussed below.

Adjustments to the base AAC increase

- (1) *Forest Inventory Volume*: I have decided that the use of the 6% increase in inventory is reasonable based on the VRI Phase II information provided and expert staff opinion and I re-affirm the base AAC increase as modelled. This decision recognizes some incompleteness and uncertainties around the potentially “conservative” 6% estimate but assumes the positives and negatives balance. I have questioned why the Fraser Protocol adjustment process, which is considered standard procedure, did not produce reliable results. I have chosen to address this uncertainty by requesting that the IFPA-holders work with appropriate government staff to identify and document the deficiencies with the Fraser protocol adjustment in the Merritt TSA or to provide an updated timber supply analysis with an acceptable adjustment using the Fraser protocol. If the documentation presents new information that is contrary to accepting a 6% increase in inventory, I may revisit this decision.
- (2) *Site Index – Even-Aged Stratum (low elevation)*: I am mindful of the concerns raised about the sample population and that the short-term harvest flow increase is the result of improved predicted yields in the mid- and long-term. Further, the delay in meeting the condition within the January 1, 2004 determination related to this factor raises further concern. Therefore, I feel that I must continue to account for some uncertainty and risk related to site indices in the low elevation even-aged stratum. As such, I will maintain a reduction of 21 000 cubic metres to the base AAC increase as presented in the January 1, 2004 rationale. I will also maintain a condition for monitoring of the productivity of these stands.
- (3) *Site Index – (smallwood)*: I recognize that there is elevated uncertainty around the estimates of site productivity in the smallwood stratum and that more work is required to obtain defensible site productivity estimates in this stratum. Further, delay in meeting the conditions of the January 1, 2004 determination raises concern for my acceptance of greater risk related to this factor. As such, recognizing the

need for further study and the uncertainty remaining around site productivity in this stratum, I will re-affirm the reduction to the base AAC increase of 80 000 cubic metres. I will also maintain a condition for monitoring on the productivity of these stands.

- (4) *Single Tree Selection*: The AAC increase application raised concerns that the presented modelling of single tree selection underestimated the harvest flow contribution from this stratum. However, I find the supporting documentation insufficient to judge both the growth and yield model SINGROW (i.e., lack of validation or peer review of model and yields) and the CASH6 application. Further, there is also no information on the possibility or amount of harvest that could be flowed into the short-term from mid-term and long-term impacts identified by this modelling activity. While I am mindful that it is likely this stratum has a higher timber supply contribution, I do not have sufficient information to quantify an upward pressure.
- (5) *Landscape Level Biodiversity*: I accept the scenario modelled for use in the IFPA/expedited analysis but conclude that there is a great deal of uncertainty about this factor. The methods used to model landscape level biodiversity impacts in the IFPA/expedited analysis have not been demonstrated to better represent current landscape level biodiversity practice than those modelled in the previous timber supply review. I am aware that government, First Nations and NSIFS consultants are currently working on a process to establish OGMA's within the TSA. I am mindful of MSRM staff concerns that the impact for OGMA's will be significantly higher than the percentage modelled and MWLAP staff concerns regarding the Environmental Risk Assessment in the Merritt TSA. The implication is that a reduction of 3.9% in THLB for OGMA's represents a short-term reduction of 71 413 m³ per year (as modelled in scenario 1.1). A higher percentage reduction in THLB, such as the 7.9% estimated by MSRM, would represent an even higher short-term reduction. Given that I have not viewed the updated OGMA's, a great deal of uncertainty still remains. I have chosen to re-affirm the reduction to the base AAC increase request attributable to this factor by 71 000 cubic metres. NSIFS is requested to submit the completed plans and updated analysis, identifying impacts, to the regional manager, at which time the decision on this factor may be revisited.
- (6) *Stand Level Biodiversity*: I re-affirm the conclusion that the 5.5% recognized in the previous AAC determination is more reflective of current practice with regards to wildlife tree patch retention. Increment associated with innovative forestry practices is not eligible for capture on this additional area needed for stand level biodiversity. I have re-affirmed that the impact for stand level biodiversity is an additional reduction of 22 600 cubic metres to the base AAC increase request.
- (7) *Identified Wildlife Management Strategy*: I conclude that the application of the provincial planning threshold of 1% for Identified Wildlife Management Strategy is appropriate. The impact of applying the 1% policy, as has been done in the recent AAC determinations, would be an equivalent timber harvesting landbase reduction

of 1% less the 60 ha already considered. I re-affirm the reduction of 5 200 cubic metres to the base AAC increase request.

- (8) *Riparian and temperature sensitive streams:* I acknowledge that the IFPA-holders have provided an improved estimate of riparian management areas. However, I also recognize that there is uncertainty in the modelled results due to the incomplete stream class model validation. Although the stream classification model can be identified as an innovative activity, the updated riparian netdown was not modelled as an innovative activity. NSIFS application identified a 7 872 ha increase in timber harvesting land base. I am mindful that MSRM staff has accepted the strategic use of the model but that this classification model has not been appropriately validated using an independent data set. I re-affirm the credit for 50% of the observed gains or a base AAC increase request of 8 700 cubic metres per year. I also conclude that temperature sensitive streams were not accounted for in the analysis, which was considered to be an impact of 1000 ha of THLB. Therefore, to account for temperature sensitive streams, I will re-affirm the reduction to the AAC increment of 0.15%. This is a 850 cubic metres downward pressure. I note in the previous determination a 2 200 cubic metres downward pressure was assigned. I encourage NSIFS to work on the validation of the modelling to capture the remaining potential increment.
- (9) *Deer Winter Range:* I have concluded that the assessment units and management zones that NSIFS have developed jointly with the former MSRM and MWLAP represents much improved information. There is some uncertainty as planning cells have not been determined yet and there is a risk that the application of management objectives at the planning cell level will be more constraining on timber supply. To account for this uncertainty, I will apply a 12 000 cubic metres per year reduction to the base AAC increase. I note in the previous determination a 5 000 cubic metres per year downward pressure was assigned. The January 1, 2004 determination was conditional on NSIFS updating the timber supply modelling when new ungulate winter range mapping and management based on the planning cell level is established. I recognise that this work has yet to be completed and the role that government agencies have to play in these efforts. Nevertheless, I will maintain a condition similar to the previous determination asking NSIFS to report to me the progress of this work and the timber supply implications.
- (10) *Harvest Flow:* I believe that the timber supply availability is not as constraining as modelled, particularly I am willing to assume greater flexibility or relaxation of other management objectives in light of expected Mountain pine beetle management. Nevertheless, I have chosen to reduce the base AAC increase request by 46 375 cubic metres as a level of caution to account for uncertainty around the modelled limited availability. The IFPA-holders in their analysis could have recognized the potential for concern around the limited availability in the short-term and provided greater information on what is constraining and how realistic is the constraint. Further, while the society has recently provided an updated monitoring plan, I am concerned that the society did not pursue providing and implementing

the monitoring plan as per the timeline in the previous determination. I will maintain the requirement for monitoring as a condition. Further, I highly recommend, in future analyses, that the IFPA-holders consider providing greater detail around harvest flow issues.

- (11) *IFPA Mountain Pine Beetle (MPB) Strategy/MPB Management/Stewardship:* NSIFS is proposing, as an innovative forestry practice, to annually conduct more timely, and more detailed, overview surveys of Mountain pine beetle infested stands to enable effective harvesting of high priority beetle infested stands. With such information, I agree that harvesting could be more effectively directed before annual beetle flights, particularly before the critical 2006 flight, than could be conducted under current detection procedures. Considering the professional opinion of MOF staff, I believe that it is likely that the projections of the infestation spread would fall somewhere between the expectations of the MOF Research Branch provincial model and the NSIFS model. Nevertheless, I am willing to credit the IFPA-holders with an increase of 500 000 cubic metres per year in order for the licensees to prove the effectiveness of their enhanced MPB strategy. If successful, this increased allowable annual cut is attributable to the predicted results of the society's strategy of reducing future merchantable volume losses. However, given the uncertainty in predicting beetle spread rates, the uplift is conditional upon annual monitoring and verification of the projected performance of the beetle management strategy.

In summary, over all factors, I am satisfied that the information provided with the application is sufficient upon which for me to base a decision about an AAC increase.

Determination and conditions

I have reviewed and considered all the factors and the associated uncertainties described in this document. I determine that innovative forestry practices or activities under the IFPAs still provide 330 700 cubic metres per year from within the Merritt IFPA boundaries that is attributable to the innovative forestry practices of the IFPA holders. Further, I determine that innovative forestry practices, with regard to MPB management activities planned by the IFPA holders, justifies an uplift of 500 000 cubic metres per year. This increase is subject to conditions below and in the section titled "First Nations Accommodation and Considerations". The total AAC increase on the Merritt IFPA-holders' licences, attributable to a Section 59.1 increase, is therefore 830 700 cubic metres.

With respect to assigning the increases in AAC to individual Forest Licences, I am aware of the subsidiary agreements made in the past that exist between Aspen Planers Ltd. and Weyerhaeuser Canada Ltd, and between First Nations and licensees with respect to a Jobs Plan. I do not feel obligated in this decision to consider any subsidiary agreements, other than the share agreement between IFPA-holders that I have requested. Further, I do not

feel obligated to the decision made by the previous regional manager with respect to allocation.

The share agreement between IFPA-holders identifies that the First Nations licensee (i.e., Stuwix Resources Ltd.) should be awarded 50% of the AAC increase, existing forest industry licensees 45%, and the Ministry of Forests Small Business Forest Enterprise Program 5%. There was no consensus on a formula for sharing the increase amongst existing forest industry licensees. Four of the licensees felt sharing on a pro rata basis, based on the initial allowable annual cut, was appropriate.

The share agreement does not bind me to an allocation of the identified allowable annual cut increase. As a generality, I accept the desire that Stuwix Resources Ltd to receive 50% of the increase and the other forest industry licensees 45%. I also find, for the division of the 45%, that a pro rata basis is reasonable given the majority opinion of the licensees. However, with respect to the proposed allocation of 5% to the small business program, now B.C. Timber Sales, I have no legal vehicle for awarding an IFPA AAC increase directly to the program. As such, I am considering this volume to be a Crown asset that I can distribute within this decision if needed.

I recognize that licensees do have concerns around the consistency of the allocation of a Section 59.1 allowable annual cut increase decision with respect to their individual planning needs. I also recognize that there are differences between the innovative forestry practice under the Mountain pine beetle management strategy and those practices that were considered in the prior decision. As such, in my allocation I will discuss the these two components separately.

In the previous Section 59.1 allowable annual cut determination, the regional manager chose to award additional volume to Stuwix Resources Ltd. and Ardeu Wood Products Ltd. It was recognized that Ardeu Wood Products Ltd. assisted First Nations by transferring a portion of their forest licence and had made a significant socio-economic contribution to the community in doing so. In this decision, for consistency, I will maintain the allowable annual cut increase as assigned in the previous determination to the Forest Licences as follows:

A18695 - Aspen Planers Ltd. by 16 535 cubic metres per year;
A18696 - Tolko Industries Ltd. by 36 377 cubic metres per year;
A18697 - Riverside Forest Products Ltd. by 3 307 cubic metres per year;
A18698 - Weyerhaeuser Canada Ltd. by 76 061 cubic metres per year;
A18039 - Ardeu Wood Products Ltd. by 19 015 cubic metres per year; and
A65006 - Stuwix Resources Ltd. by 179 405 cubic metres per year.

For the allowable annual cut increase attributable to Mountain pine beetle management, I will assign, on a pro rata basis of pre-uplift volume, 45% of the increase to the initial forest industry IFPA-holders. I will assign 55% to Stuwix Resources Ltd. My reasoning for this assignment of an additional 5% to Stuwix Resources Ltd is discussed under 'First Nations Accommodation and Considerations'. The additional allowable annual cut

increase based on the beetle management strategy is assigned to the Forest Licences as follows:

A18695 - Aspen Planners Ltd. by 29 148 cubic metres per year;
A18696 - Tolko Industries Ltd. by 59 056 cubic metres per year;
A18697 - Riverside Forest Products Ltd. by 4 247 cubic metres per year;
A18698 - Weyerhaeuser Canada Ltd. by 124 842 cubic metres per year;
A18039 - Ardew Wood Products Ltd. by 7 707 cubic metres per year; and
A65006 - Stuwix Resources Ltd. by 275 000 cubic metres per year.

The award is subject to the conditions below:

- (1) Submission of an annual report by April 30th of each year that summarizes the activities completed by the society in the past year, the expected activities in the upcoming year, how conditions of this award have been met, and any other requirements identified in the below conditions.
- (2) Document and provide a summary of all work completed in the forestry plan and providing copies of associated data and resulting information to the regional manager. This condition is to be completed by December 31, 2005 with annual updates to be submitted each year with the annual report.
- (3) Maintain a detailed, peer reviewed monitoring plan, and implementation schedule, and submit an annual monitoring results summary with the annual report. The plan components should:
 - include a growth and yield monitoring program that will identify deviations from expected overall average site productivity estimates, including low elevation, high elevation, smallwood, natural and managed stands;
 - monitor information to enable comparison of past and recent silviculture and harvest regimes with the regimes modelled in the current AAC increase application and for use in future analyses.
 - track and summarize First Nation employment in relation to commitments made in past and current forestry plans and within the Jobs Plan identified in the April 2, 2001 share agreement
- (4) identify and document the deficiencies in the Fraser protocol forest inventory adjustment derived by IFPA-holders and the timber supply implications for the 2003 AAC increase application, or alternatively, complete a new timber supply analysis that includes an acceptable Fraser protocol adjusted inventory. This is to be completed by April 30, 2006.
- (5) complete landscape level biodiversity plans (OGMAs) with responsible government agencies and submitting an analysis of the impacts on timber supply to the regional manager. The proportion of work completed by government agencies relative to IFPA-holders should also be identified. This work is to be completed within 6

months of the statutory decision maker approval of old growth management areas or as otherwise arranged with the regional manager.

- (6) completing deer winter range mapping and management objectives with responsible government agencies and submitting an analysis of the impacts on timber supply to the regional manager when these plans are completed. The proportion of work completed by government agencies relative to NSIFS should also be identified. This work is to be completed within 6 months of statutory decision maker approval of deer winter range or as otherwise arranged with the regional manager.
- (7) complete an updated forestry plan by August 31, 2005.
- (8) provide a detailed report that (a) describes the co-ordinated beetle response and management strategy to be used by IFPA-holders, (b) methodology and schedule for forecasting beetle spread, (c) identifies biodiversity features at risk due to beetle spread or increased harvest associated with beetle management, and the recommended actions to mitigate threats, (d) describes the strategy for a “roads ahead program”, (e) details information to be provided with the annual beetle management strategy and operational report, and (f) a schedule of reporting activities. This plan is to be provided by October 30, 2005 and updated annually.
- (9) provide an annual beetle management strategy and operational report by October 30 of each year or as per timing identified under condition (8). This report will include harvest activities, past and future projections of beetle spread, current beetle spread as identified from surveys, operational plans for current year, and information as identified by IFPA-holders under condition (8)

This determination is effective July 13, 2005 and will remain in effect until December 31, 2007, subject to annual reviews of achievement of the conditions identified in this rationale and the review of assumptions of Mountain pine beetle spread within the Merritt TSA. I note that I am prepared to reduce the allowable annual cut awarded if I find information or assumptions upon which this decision is based are not justified or that conditions of this decision have not been met. I expect that all IFPA-holders will work together to ensure that the proposed strategy is successfully implemented.

I note that my decision will only cover a 3 year period whereas the society’s strategy suggests 7 years of a beetle uplift is required. This length of period is due to my current uncertainty around the appropriateness of assigning an allowable annual cut increase beyond the term of the innovative forestry practices agreements. It also reflects that there is the possibility of a higher harvest level occurring given the recent chief forester decision and, if the society’s assumption holds true, could reduce the beetle infestation sooner. I expect to re-visit this decision annually in review of beetle infestation rates and if clarification is received by government on the term of innovative forestry practices agreements.

First Nations Accommodation and Considerations

During the review phase for this determination, input was received from First Nations that raised a variety of issues. I have also reviewed and considered issues brought to the attention of government by First Nations in other processes. Some issues were brought to my attention related directly to the technical aspects of my allowable annual cut increase decision and were discussed earlier. Some of the issues, related to my area of authority, concern accommodation of interests, which I discuss below.

My authority as the decision maker under Section 59.1 enables me only to award an increase in allowable annual cut on the licences of innovative forestry practice agreement holders. I cannot award direct harvest volume to other forms of tenure. However, legislation does allow me to make various conditions on innovative forestry practice agreement holders if the licensees wish to access the awarded allowable annual cut. I recognize that such conditions can be used as a tool to accommodate aboriginal interests, where appropriate, but that such a tool needs to be used responsibly.

Further, I am mindful that my decision under Section 59.1 falls within a line of decisions made by government. These decisions include, for example, the awarding of innovative forestry practice agreements by the minister, the allowable annual cut determination of the timber supply area by the chief forester, and the apportionment of allowable annual cut by the minister. While I cannot direct other decision makers, I can provide them with information brought to my attention, and my recommendations for consideration.

There is the potential for aboriginal rights and title to exist somewhere within the Merritt TSA. The additional increase in harvest level awarded to innovative forestry practices agreement holders likely would impact on aboriginal interests somewhere within the timber supply area at some unknown level. As such, I believe that it is reasonable that I consider and address, where appropriate, accommodation related to aboriginal interests raised during the consultation process that may be affected by my determination. However, as discussed under my “guiding principles”, it is inappropriate for me to speculate on the future impacts of treaty processes before decisions have been made by government and implementation details have been determined. If decisions are made by government that affect my decision, I am prepared, as allowed under legislation and identified in the conditions of my determination, to revisit the decision.

My accommodation of aboriginal interests for this decision, and rationalization of such, is as follows.

I feel that my decision provides indirect economic benefits to the eight bands involved with Stuwix Resources Ltd., which was awarded an innovative forestry practices agreement by the minister. Stuwix Resources Ltd. receives the majority of the allowable annual cut increase and I purposely awarded Stuwix Resources Ltd. more of the increase than suggested by the share agreement provided by the licensees in recognition of the indirect benefits to bands involved.

Along these lines, I recognize Chief Walkem's concern about the length of award of an increase under Section 59.1. The "permanency" is recognized to influence the ability of Stuwix Resources Ltd. to establish a market for their allocated volume. This issue has been brought to the attention of the minister. The minister has initiated a study of the innovative forestry practices agreement pilots in which the permanency question is to be addressed. I encourage my staff, other government personnel, and innovative forestry practice holders, to assist with the review where needed in order that the permanency question can be addressed thoroughly and expediently.

The July 1, 2005 determination by the chief forester identified an allowable annual cut of 2 814 171 cubic metres. The chief forester's determination identified, specifically, one million cubic metres per year for Mountain pine beetle management. This harvest level is 500 000 cubic metres above the level of harvest that I determined. If the spread rate assumptions that I based my decision upon hold true, a higher harvest level would enable the beetle spread to be controlled sooner and remove the continued need for a "beetle uplift".

In making my decision, I recognize that the chief forester's allowable annual cut level provides flexibility to the minister, if he feels appropriate, to apportion volume to First Nations as part of direct accommodation from government.

To assist the minister and other related decision-makers to understand the distribution of current benefits attributable to my decision:

As a condition, the six innovative forestry practices agreement holders shall report, through the Nicola Similkameen Innovative Forestry Society, how the awarded volume was actually distributed to holders through secondary agreements and which bands will actively and directly benefit within and outside of Stuwix Resources Ltd. This condition is to be met by December 31, 2005.

Further, I confirm that the Ministry of Forests and Range will continue to negotiate Forest and Range Agreements to address economic accommodation matters.

First Nations have identified to me the need to have appropriate information, resources and tools, to be able to be involved with operational decisions that provide for increased harvest levels within their areas of interest. Such involvement is also identified within the strategic objectives of the Nicola Similkameen Innovative Forestry Society. However, to ensure that First Nations are aware of the activities:

As a condition, the six innovative forestry practices agreement holders shall update potentially affected First Nations/Indian Bands on a regular basis about where proposed harvesting is to take place, the status of beetle infestation, how First Nations are to be involved in the planning process in order to incorporate their aboriginal interests, and to identify any harvesting economic opportunities. Copies of the above communications updates will be filed annually with the annual report.

Stoyoma Mountain has been consistently identified by First Nations as a sacred Mountain. However, government has not specifically recognized this area through legislative protection such as park status. As discussed under my “Guiding Principles”, it is inappropriate for me to attempt to speculate on the impacts on timber supply that may result from decisions that have not yet been made by government or to fetter other statutory decision-making authorities.

However, as a condition, the six innovative forestry practices agreement holders shall involve First Nations, to a very high degree where requested, in the planning and harvest monitoring which is required on Stoyoma Mountain.

As a recommendation, I suggest that the innovative forestry practices agreement holders communicate any plans to harvest on Stoyoma Mountain as soon as possible to the District Manager, and to work proactively with First Nations during the planning phases.

First Nations have identified the need for increased resources to obtain information and tools related to traditional use, and as related to this decision, particularly in areas to be impacted by increased harvesting for beetle management. I recognize that, within the current Forestry Plan, the society identifies a similar need, and that the society’s workplan includes “First Nations Cultural Modeling”, “Field Testing of First Nation Modeling” and “Archeology Projects and Modelling”.

As a condition, I request that innovative forestry practices agreement holders provide a detailed budget by September 30, 2005 showing how the society will fund the collection, analysis, and modelling of traditional use information necessary for forest management planning within the area to be harvested under the beetle management strategy, in addition to existing proposed projects. By January 30, 2006, the innovative forestry practices agreement holders are to provide a detailed plan around the above, and that identifies how the traditional use information gathered, analysed and modelled will be effectively used to address First Nations aboriginal interests.

Further, for accommodation of potential infringement upon claimed aboriginal rights by the Ministry of Forests and Range, I commit, upon review of the above budget from the society, and subject to the approval of funding, to providing \$30 000 per year to the Nicola Similkameen Innovative Forestry Society to resource the request by First Nations to have a technically qualified person work with them to incorporate their cultural interests into the innovative forestry practices agreement holders’ forest management planning. The duration of the funding would be for the term of the award of the Section 59.1 increase associated with beetle management and subject to funding availability.

The Upper Nicola Indian Band’s traditional use assessment process is separate from the Nicola Similkameen Innovative Forestry Society’s studies, and the band’s aboriginal interests may be potentially affected by a proposed uplift. I commit, upon approval of

funding, \$10 000 annually over the duration of the allowable annual cut increase in order to assist the band in collecting Traditional Use information, and to help assess the impact of harvesting on their aboriginal interests across the affected part (40%) of their asserted traditional territory. I reference this partly due to the Upper Nicola Indian Band's high level of interest in traditional land use initiatives, their expertise and resources to manage traditional use information, and as a measure of good faith, to assist in avoiding potential infringement beyond efforts requested of the innovative forestry practices agreement holders.

The Lower Similkameen Indian Band has indicated their desire to be officially part of the Nicola Similkameen Innovative Forestry Society. The society's strategic objectives support First Nation's role in the management of the society.

As a recommendation, I encourage the Innovative Forestry Practice Agreement holders to endorse the Lower Similkameen Indian Band's request to become a member of the Nicola Similkameen Innovative Forestry Society.

Through the above, I have attempted within my authority and understanding, to fairly accommodate First Nations for potential infringement in relation to my current decision. I am mindful that my decision is one in a line of decisions by government related to the eventual harvesting in the Merritt Timber Supply Area, particularly as related to areas infested by Mountain pine beetle. It is through this rationale that I make known my considerations with regard to accommodation of aboriginal interests that have been made known through the consultation process.

Recommendations

The review of information in support of an AAC increase determination provides me with the opportunity to make recommendations on several issues. These recommendations are intended to reduce the uncertainty and risk associated with future determinations and to ensure the intent of the forestry plan is met. Below are specific recommendations that I have identified. Other recommendations are found throughout the rationale.

- continue to work to improve the forest inventory in the Merritt TSA including the completion of Local Net Volume Adjustment Factor sampling;
- continue to obtain improved site productivity estimates across the entire productive forested land base for all major species;
- provide a complete and reasonable description and validation documentation for all models used in future applications;
- provide greater explanation of the timber supply dynamics in future timber supply analyses;
- provide sensitivity analyses of different harvest rules and priorities in future timber supply analyses;

- provide a detailed description of the calculations used to determine genetic gain in future analyses;
- explicitly include the higher utilization levels of smallwood in future timber supply analyses;
- improve upon the documentation of objectives and methods used to determine OGMA's;
- work with responsible government agencies in the development of appropriate environmental risk assessment indicators for use in future analysis;
- ensure that future wildlife tree patch modelling is understandable and reflective of past and current practice;
- improve information around retention levels in Douglas-fir with reserve systems;
- model the management of elk movement corridors in greater detail;
- improve presented information on community watersheds management;
- follow up with activities or documentation on why activities not pursued of all activities identified in the forestry plan;
- monitor the status and impact of other forest health factors; and
- initiate and complete projects that result in the greater integration of First Nation's values and land uses and where appropriate incorporate into future timber supply analyses.

Yours truly,



**T.P. (Phil) Zacharatos, R.P.F.
Regional Executive Director
Southern Interior Forest Region**

July 13, 2005

Appendix 1: Section 59.1 of Forest Act

Innovative forestry practices 59.1

- (1) For the purpose of improving the productivity of the forestry resource, the minister, at his or her discretion, may enter into an agreement with a person referred to in subsection (2) to allow that person to carry out, subject to subsection (5) and the *Forest and Range Practices Act*, one or more of the innovative forestry practices and other activities that are set out in a regulation made under subsection (4).
- (2) For the purposes of subsection (1), the minister may enter into an agreement with a person who (a) is the holder of a forest licence or other agreement that is entered into under section 12 and specified in a regulation made under subsection (4) of this section, and (b) presents a written proposal for an agreement to the minister.
- (3) An agreement under subsection (1) (a) must be for a term not exceeding 15 years, and (b) may include terms and conditions that (i) the minister considers are necessary to effectively carry out the purpose of the agreement and further the social and economic objectives of the government, and (ii) are consistent with this Act and the regulations and the *Forest and Range Practices Act*, and the regulations and standards made under that Act.
- (4) The Lieutenant Governor in Council may make regulations specifying (a) the innovative forestry practices and other activities that may be the subject of an agreement referred to in subsection (1), and (b) the agreements entered into under section 12, the holders of which may enter into an agreement with the minister under subsection (1) of this section.
- (5) A person may only carry out an innovative forestry practice or other activity referred to in subsection (1) if the person (a) has prepared and obtained the regional manager's approval of a forestry plan that meets the requirements of subsection (6), and (b) is carrying out the practice or activity in accordance with the plan.
- (6) A forestry plan (a) must contain a description of the management area where the innovative forestry practices or other activities will be carried out, (b) must specify the particulars of the innovative forestry practices or other activities, (c) must contain a description of how the innovative forestry practices or other activities will be carried out, (d) must contain a schedule of when the innovative forestry practices or other activities will be carried out, (e) must specify how the innovative forestry practices or other activities will contribute to improved productivity of the forestry resource, (f) must specify how the innovative forestry practices or other activities will justify an increase in the allowable annual cut of the participant's licence or agreement referred to in subsection (2) (a), and (g) may include other terms and conditions that (i) the regional manager believes are necessary to effectively carry out the agreement referred to in subsection (1), and (ii) are consistent with this Act and the regulations and the *Forest and Range Practices Act*, and the regulations and standards made under that Act.
- (7) After approving a person's forestry plan, the regional manager may increase the allowable annual cut authorized in the person's licence or agreement referred to in subsection (2) (a) by an amount that is justified according to timber supply analysis methodology approved by the chief forester or the chief forester's designate.
- (8) When the regional manager increases an allowable annual cut under subsection (7), the regional manager may limit the increase to a period of time, area of land and type of timber, and may make the increase subject to conditions.
- (9) If an assessment of (a) the innovative forestry practices or other activities being carried out under the forestry plan, or (b) information that was not available at the time the regional manager increased the

allowable annual cut under subsection (7) indicates that all or part of the allowable annual cut increase was not justified, the regional manager may reduce the allowable annual cut of the licence or agreement referred to in subsection (2) (a) by an amount not exceeding the increase granted under subsection (7).

- (10) If, with respect to an innovative forestry practice or other activity, a person is not complying with (a) the agreement referred to in subsection (1), (b) the forestry plan approved under subsection (5), (c) any limitation or conditions imposed under subsection (8), or (d) this Act and the regulations made under this Act, or the *Forest and Range Practices Act* and the regulations or standards made under that Act, the regional manager may do one or both of the following: (e) suspend or cancel the agreement referred to in subsection (1) and sections 76 and 77 apply with respect to that suspension or cancellation; (f) reduce the allowable annual cut of the person's licence or agreement referred to in subsection (2) (a) by an amount the regional manager determines is attributable to the default.
- (11) A reduction under subsection (9) or (10) may be apportioned over a period of up to 5 years.
- (12) If the forest licence, or other agreement referred to in subsection (2) (a), is suspended, the agreement under subsection (1) is suspended.
- (13) If the forest licence, or other agreement referred to in subsection (2) (a), is cancelled or surrendered, the agreement under subsection (1) is cancelled.
- (14) If the agreement referred to in subsection (1) is suspended or cancelled, the forestry plan is suspended or cancelled, as the case may be.

Appendix 2: Innovative forestry practices regulation

**B.C. Reg. 197/97, O.C. 0694/97 - Deposited June 18, 1997
Consolidated to August 5, 2003**

[1. Definitions](#)

[2. Authorized innovative forestry practices and activities](#)

[3. Authorized forms of agreement](#)

Definitions

1. In this regulation:

"**Act**" means the *Forest Act*;

"**forestry plan**" means a forestry plan required to be submitted for approval under section 59.1(5) of the Act;

"**forest practice**" has the same meaning as in the *Forest Practices Code of British Columbia Act*;

"**free-growing stand**" has the same meaning as in the *Forest Practices Code of British Columbia Act*;

"**holder**" means a person that presents a written proposal for an agreement under section 59.1(2)(b) of the Act;

"**permanent access structure**" has the same meaning as in the *Forest Practices Code of British Columbia Act*;

"**standard practices**" means the forest practices routinely applied by licensees in the timber supply area when the forestry plan is submitted or at any other time determined by the regional manager;

"**stocking requirements**" has the same meaning as in section 1 (1) of the Operational and Site Planning Regulation, B.C. Reg. 107/98.

Authorized innovative forestry practices and activities

2. The innovative forestry practices and other activities that may be the subject of an agreement under section 59.1(1) of the Act are the following:

(a) the implementation of harvesting methods or silvicultural systems that may

(i) increase the total amount of timber available to harvest in the timber supply area over the amount available under standard practices, or

(ii) reduce the loss of productivity associated with permanent access structures from the loss of productivity under standard practices for similar terrain and timber types in the timber supply area;

(b) activities that result in the establishment of free-growing stands on

(i) previously unforested areas,

(ii) areas that are below stocking requirements and are not part of the holder's free-growing responsibilities under section 69.1 (3) and 70(3) of the *Forest Practices Code of British Columbia Act*, or

(iii) areas that

(A) have stands of timber with repressed growth or that contain brush or species that are not commercially valuable, and

(B) are not part of the holder's free-growing responsibilities under section 69.1 (3) and 70 (3) of the *Forest Practices Code of British Columbia Act*;

(c) silviculture treatments on free-growing stands;

(d) silviculture treatments on sites that are not free growing in order to produce stands that exceed current growth performance or standards achieved using standard practices for the timber supply area;

(e) the collection and analysis of new data, in accordance with the specifications of the chief forester, to provide a more accurate representation of the forest composition and its expected rate of growth compared to the rate existing when the forest plan is submitted or at any other time determined by the regional manager;

(f) activities that will enhance and protect other resource values, including, but not limited to, water, fisheries, wildlife, biological diversity, soil productivity and stability, forage production, grazing and recreation values.

Authorized forms of agreement

3. The holders of the following agreements under section 12 of the Act may enter into an agreement under section 59.1 of the Act:

(a) replaceable forest licences, and

(b) replaceable timber sale licences with an allowable annual cut greater than 10 000 cubic metres.

Appendix 3: Memorandum from chief forester on timber supply methodology



Ministry of
Forests

Chief Forester

MEMORANDUM

File: 19500-01/IFPA

April 6, 2001

To: Regional Managers

From: Larry Pedersen
Chief Forester

Re: **Timber Supply Analysis Methodology Related to Innovative Forest Practices Agreements (IFPAs)**

I am certain you are aware that the *Forest Act*, section 59.1, gives regional managers the responsibility for determining if increases in allowable annual cuts (AACs) for IFPA holders are justified. The *Act* requires regional managers to make their judgements according to a timber supply analysis methodology approved by the Chief Forester or the Chief Forester's designate. Attached to this memorandum is a timber supply analysis methodology to fulfill my responsibility under section 59.1 of the *Act*.



The methodology covers general analytical issues related to information needs, analysis outputs, links between AACs for IFPAs and TSAs, harvest flow, AAC increases, and legislation and policy. The method does not dictate the types of innovative practices that should or may be considered appropriate for approval as part of forestry plans, or for justifying AAC increases. Approval of forestry plans is clearly the regional managers' responsibility under the *Act*. Further, I believe that information and practices must be evaluated on their own merits within specific contexts; hence it would not be reasonable for me to prescribe evaluative criteria.

In the end, regional managers must make their own determinations based on analysis that provides insight on the full range of relevant factors, including the important risks and uncertainties. The analysis methodology is designed to assist in this undertaking.

Timber supply analysis methodology – IFPAs
Page 2

The methodology should be included as an appendix to the Forestry Plan Outline to ensure the approach is clear to all government staff and external stakeholders. Please contact Chris Fletcher of Timber Supply Branch (250-356-5959, Chris.Fletcher@gems8.gov.bc.ca) with comments or concerns.



Larry Pedersen
Chief Forester

Attachment: Timber Supply Analysis Considerations for Innovative Practices Agreements

cc: Gary Townsend, Director, Timber Supply Branch
Ralph Archibald, Director, Forest Practices Branch
Henry Benskin, Director, Research Branch
Dave Gilbert, Director, Resources Inventory Branch
Dale Draper, Director, Tree Improvement Branch
Jim Langridge, Director, Resource Tenures and Engineering Branch
Drew Brazier, Resource Tenures and Engineering Branch

Timber Supply Analysis Considerations for Innovative Forest Practices Agreements

Section 59.1 (7) of the *Forest Act* allows regional managers, after approving an IFPA forestry plan, to increase the allowable annual cut of the holder's forest licence by an amount that is justified according to a timber supply analysis method approved by the chief forester or the chief forester's designate. The following discussion outlines the timber supply analysis method and allowable annual cut decision principles used by the chief forester.

The focus is on components and principles of timber supply analysis that are crucial in gaining an understanding of factors that determine timber supply in an area. Because of the complexities involved in determining harvest levels, it is not possible to develop precise procedures or simple calculations for timber supply analysis. The process can be guided by general principles—which are outlined below—however, the detailed aspects must be developed using case specific professional judgement. In this light, the following ideas are provided as guidance, not as firm procedural requirements that must be followed in all cases. While the general ideas apply in almost all cases, each case must be viewed as unique: some cases may require additional analysis to that outlined, while others may be assessed satisfactorily with less detail than suggested here.

If a timber supply analysis incorporates the types of information noted below, and facilitates evaluation of the considerations discussed, it will have followed a timber supply analysis method supported by the chief forester.

The chief forester's task under the *Forest Act* is to provide an analysis method, not to evaluate, or provide a method for evaluating information quality. Hence, the discussion here does not address information quality, rather it focuses on an analytical method. Nevertheless, the results of any analysis depend heavily on the quality of the information used in the analysis; that is, information about the forest land base, growth and yield, and management objectives. Evaluation of information quality must be done on a case-specific basis, which regional managers, in their evaluation of IFPA analyses, are best positioned to do.

Analysis should consist of clear descriptions of issues, information sources, assumptions, and any relevant data manipulations or adjustments related to the following three categories:

Land base:

- A tabular description of the categories of land and forest that are excluded from the timber harvesting land base, and the area excluded in each category. Such tabular descriptions are included in all timber supply analysis reports published for TSAs as part of the Timber Supply Review.
- A detailed description of the criteria employed in deriving the area included in the above table. This description should follow a format similar to the Information Package for Tree Farm Licence analyses.
- A description of the composition of the timber harvesting land base and the total forested land base in terms of species, site quality, stand age, and any other features relevant in the area.

Growth and yield:

- A description of the models and methods used in generating timber yield tables for existing and regenerated stands.
- The yield tables used for each species and site quality group and silvicultural regime.
- Detailed descriptions of methods and concepts underlying site productivity estimates and yield tables that reflect any planned innovative management.
- Notice of acceptance by appropriate BC Ministry of Forests staff of site productivity or yield estimates or adjustments corresponding to both baseline and innovative practices, and of any sampling or study methods related to deriving the estimates.
- MoF, Regional Growth and Yield Foresters will coordinate the growth and yield review process.

Management objectives:

- A description of the various management objectives that apply to the area and the methods used to represent actions used to achieve the objectives (e.g., silvicultural regimes, utilization levels, seral forest cover requirements, extended "rotations," alternative harvesting systems). The description should specify the component of the

land base to which the objective applies; for example, timber harvesting land base, or Crown forested area. The template for Information Packages for Tree Farm Licence analyses provides a framework for organizing relevant information.

Analysis is facilitated if communication between relevant ministry staff and the agreement holders regarding land base, growth and yield, and management inputs occurs as early as possible in the analysis process.

Other considerations include:

Model review and benchmarking. There are no specific requirements or limitations on which analysis models may be used. However, interpretation of results and confidence that timber supply effects can be attributed to innovative practices rather than model differences requires a detailed understanding of assumptions made in the model about relevant processes and features. The best method of gaining this understanding is to benchmark the model with FSSIM, or other models used and understood by Timber Supply Branch staff. This is not to imply that FSSIM is a better model, or produces more accurate results than other models. It is simply the case that Ministry of Forests staff understands how FSSIM works, and can therefore use it as a basis for understanding how other models work. If the model to be used has not been reviewed and benchmarked by Ministry of Forests staff, the agreement holder should develop a review process in cooperation with Timber Supply Branch or a regional timber supply analyst. If the model being benchmarked produces different results from FSSIM (or other models used and understood by Timber Supply Branch staff), the agreement holder or its representative should be responsible for explaining the differences in detail in a technical document.

Even with a benchmarked model, the potential to increase harvest levels should be evaluated using the same model for both current and innovative practices. For example, a timber supply forecast corresponding to an innovative management regime and generated with a model other than FSSIM should not be compared directly to a forecast derived using FSSIM and the current management regime. Using results generated with the same model will help ensure any timber supply increase is based on management not model differences.

Results and reporting. The analysis report and related appendices should include sufficient output information to allow understanding of the main factors determining timber supply, and if applicable, reasons behind timber supply changes due to proposed innovative practices. Management, land base and growth and yield assumptions are to be documented in an Information Package. The timber supply analysis should demonstrate how these assumptions affect timber supply. The outputs should allow for examination of all relevant forest management objectives; for example, areas in seral stages by landscape unit, or area achieving visually effective green-up in visual management zones. Outputs related to timber inventory levels, areas and average volumes harvested, average age of harvested stands, and age class distributions over time all assist in understanding timber supply dynamics and evaluating the feasibility and realism of analysis results.

Sensitivity analysis. The analysis report must include results of sensitivity analyses that examine a reasonable range of uncertainty around management, land base and growth and yield assumptions and proposed innovative practices. The implications of changes in available funding to undertake planned innovative practice may be an important consideration for sensitivity analysis.

Operational feasibility. The analysis should examine any issues that may affect the operational feasibility of harvesting at the levels indicated. The most common issue involves the ability to locate harvest opportunities spatially.

Interactions between IFPA area and the TSA. IFPA timber supply analysis should demonstrate that any harvest level increases related to IFPAs will not disadvantage timber supply at the TSA level, or timber supply available to other operators in the TSA. An IFPA area may not be representative of the forest and management conditions for the TSA, and hence analysis results for the IFPA area should not be extrapolated and assumed to apply to the whole TSA.

Administration of IFPAs is the purview of the regional manager, and it is the regional manager's prerogative to require or request any analysis that s/he believes will assist in clarifying matters regarding IFPA AACs. It may be appropriate to investigate, using timber supply analysis, the advantages and disadvantages of different approaches to administering timber supply in the IFPA in the context of the TSA. For example, benefits may be gained by administering timber supply flexibly at the TSA level (e.g., allowing for harvesting of an IFPA increase from throughout the TSA not only the IFPA area) rather than combining timber supplies that have been assessed separately for spatial sub-units of the TSA. Ultimately, the regional manager will decide on the administrative approach, and the analysis must be consistent with that approach.

The intent here is to highlight that analysis must show that timber supply benefits for IFPAs will not come at the cost of supply at the TSA level or other operators in the area.

Harvest flow. Timber supply forecasts employing assumptions/estimates of both current and proposed innovative practices must follow reasonable flow patterns over time. In general, a reasonable flow pattern provides for a controlled and gradual transition from short-term to medium- and long-term harvests, and avoids large and abrupt disruptions in supply. Considerations include: rate of harvest level decline if any is necessary; the degree to which mid-term timber supply may appropriately drop below the long-term sustainable harvest level; and the timing of increase to the long-term sustainable timber supply if it is higher than mid-term levels.

A difference between mid-term and long-term levels may be justified because mid-term supply depends more on the existing stock of timber and the timing of availability of regenerated stands, while long-term timber supply is based on timber growth which is affected by site productivity and forest management practices. Maintaining mid-term levels above or equal to the long-term level could in some circumstances delay the achievement of, or lead to failure to achieve the maximum long-term level, or cause timber supply disruptions, because of limited supply of existing timber. Likewise, a decline in timber supply from a higher short-term supply to a lower mid-term may be

appropriate if it can be shown that the associated harvests do not jeopardize or cause disruptions in long-term productivity.

The analysis should include different harvest flows that examine each of these considerations. A "base case" harvest flow for current practices must be chosen from the range of possibilities. The choice should be explained. In most cases this explanation can be brief, and consist primarily of reference to alternative harvest flow patterns. The IFPA base case harvest flow should reflect that used in the Timber Supply Review base case, if relevant. This will ensure that any change in short-term timber supply is due to changes in management, not harvest flow.

The analysis report should describe the criteria used to determine:

- the long-term harvest level and growing stock (criteria for sustainability);
- the harvest flow (e.g., maintain current harvest level for as long as possible, maximize volume harvested over a specified time frame, control the rate of decline);
- the minimum harvest level allowed in the medium term.

Allowable cut increases. Harvest forecasts for many management units in B.C. show declining timber supply over a period of decades. The general approach in cases of declining timber supply is that short-term allowable cuts are not usually increased unless there is a sound demonstrated forest management reason. This approach ensures that allowable cuts are not increased in the short term only to force reductions in the near future. There may be sound forest management reasons, such as existence of high risk of loss of stands to fire, insects or disease due to current or developing stand attributes (e.g., age or diameter distribution favourable to beetle attack, etc.).

An AAC increase in the short term should not decrease future timber supply below the levels forecast without the increase, unless there is a documented and compelling reason to do so.

The general approach described above for TSA and TFL AAC determinations with respect to potential increases leads to some issues for IFPAs. One of the explicit aims of the IFPA initiative is to allow AAC increases for IFPA holders. However, one stipulation of an increase is that other license holders will not be negatively affected by any AAC increases for the IFPA. In this context, important considerations in designing and interpreting an IFPA timber supply analysis would include:

- what are the forest management reasons that justify an AAC increase?
- what effects would an increase have on future timber supply?
- would a boost in AAC increase the sensitivity of future timber supply to uncertainties?
- if the forecast is for a temporary short-term increase (that is, timber supply is forecast to decline from the higher level) what actions will be taken to mitigate or avoid future socio-economic impacts? In other words: in the absence of a forest management objective for increasing the AAC, how will a temporary increase assist in strengthening the long-term role of timber harvesting and processing in the social and economic fabric of the area (capacity-building, diversification, etc.)?

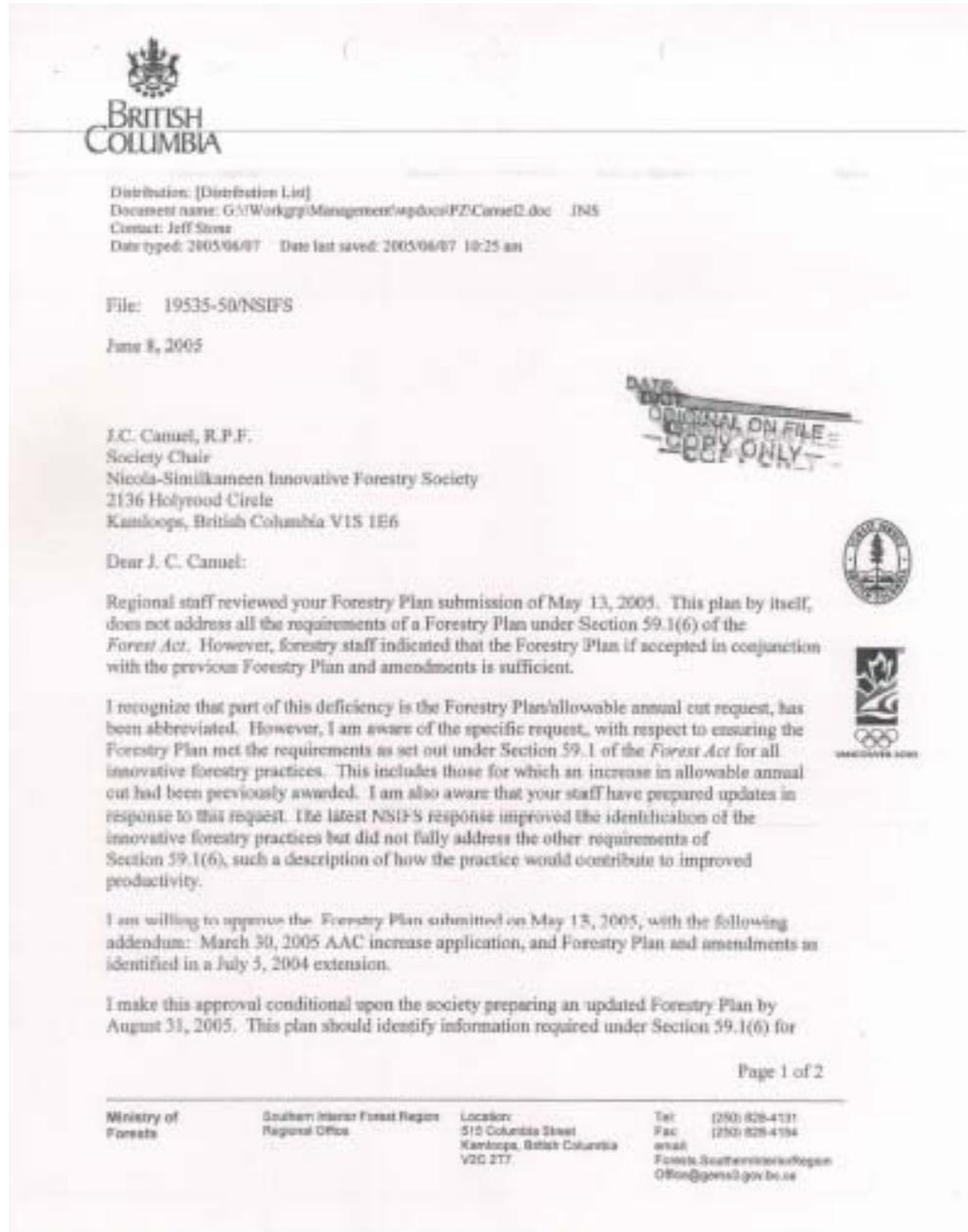
Consistency with legislation and policy. The land base, growth and yield and management regime modeled in the analysis should be consistent with current legislation and policy. While the need for consistency with laws and policy is perhaps self-evident, it must be acknowledged that one of the goals of IFPAs is to move management in new directions. Therefore, it is imperative that modeling of proposed innovative management does not imply conflicts with legislation and policy. This analytical consideration differs from the approval of innovative management that is the regional manager's responsibility as part of forestry plan approval. The intent here is to highlight the need to evaluate analysis inputs and results to ensure that they do not create or imply conflicts. If a timber supply forecast is based on conflicts with designations or objectives that are the responsibility of other statutory decision makers under existing laws or policies, that forecast cannot reasonably be accepted as a basis for harvest level determination.

Relationship between chief forester (TSA) and regional manager (IFPA) determinations. The concern has been raised that AAC determinations for TSAs under Section 8 of the *Forest Act* may conflict in some way with AAC determinations for IFPAs. Communication between the chief forester and regional manager will be necessary to avoid discrepancies or conflicts regarding AAC determinations. It is not possible to generalize about the relationship between TSA AAC determinations and related to IFPAs given the diversity of timber supply conditions across the province.

A guiding principle for TSA and TFL AACs is that the determination should reflect current or reasonably foreseeable practices. Use of the preceding method and considerations should ensure that practices approved under IFPAs will constitute current or reasonably foreseeable management, and will be considered as such in TSA AAC determinations.

Documentation of decisions. Documentation of reasons for decision is useful to ensure the basis for the decision is clear and understandable. Further, both the regional manager and the chief forester have AAC determination responsibilities under the *Forest Act*. Reasonably detailed decision documentation, referring to the technical considerations discussed in this methods document, would help ensure consistency between regional manager and chief forester determinations, particularly when the time period between the decisions is long.

Appendix 4: Forestry Plan Acceptance Letter



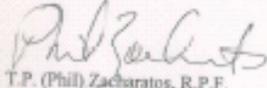
J. C. Canuel, R.P.F.

specific innovative forestry practices or other activities in a clear and concise format. This includes innovative forestry practices already completed and which support the current AAC increase.

If this update does not meet the requirements identified in Section 59.1(6), I will reduce the allowable annual cut by an amount attributable to any innovative forestry practice supporting the AAC increase or a level related to the uncertainty that is not sufficiently addressed.

This letter is an integral part of the Forestry Plan for IFPA holders of the Nicola Similkameen Forestry Society, and should be attached thereto.

Yours truly,



T.P. (Phil) Zacharatos, R.P.F.
Regional Executive Director
Southern Interior Forest

pc: Rod DeBoice, District Manager, Cascades Forest District
Frank Blom, Regional Staff Manager, Southern Interior Forest Region
Craig Sutherland, Regional Staff Manager, Southern Interior Forest Region
bpc: Jeff Stone, Regional Timber Supply Analyst, Southern Interior Forest Region
Dave McBeth, Regional Forest Practices Specialist, Southern Interior Forest Region

Appendix 5: Information Sources

The Nicola-Similkameen Innovative Forestry Society (NSIFS) undertook numerous projects that were used in support of their applications for an AAC increase in 2003 and 2005. Some of the information sources provided by NSIFS that I have considered include:

- J.S. Thrower & Associates Ltd., Change Monitoring Inventory Pilot Project for the Merritt IFPAs – Strategic Implementation Plan version 2, March 31, 2003.
- J.S. Thrower & Associates Ltd., Memo to NSIFS Technical Committee, Spatial Timber Supply Analysis Assumptions, December 19, 2002.
- J.S. Thrower & Associates Ltd., Memo to NSIFS Technical Committee, Spatial Timber Supply Analysis OAF1 Estimates, December 19, 2002.
- J.S. Thrower & Associates Ltd., Memo to NSIFS Technical Committee, Smallwood Site Index in Spatial Timber Supply Analysis, December 11, 2002.
- J.S. Thrower & Associates Ltd., Memo to NSIFS Technical Committee, Merritt IFPA Proposed Timber Supply Scenarios, January 7, 2003 (revised January 21, 2003)
- J.S. Thrower & Associates Ltd., Merritt TSA Predictive Ecosystem Mapping: Final Report, December 31, 2002.
- J.S. Thrower & Associates Ltd., Merritt TSA Predictive Ecosystem Mapping: Accuracy Assessment Report, December 19, 2002.
- J.S. Thrower & Associates Ltd., Natural and Managed Stand Yield Tables for the Merritt IFPA Innovative Analysis, March 31, 2003.
- J.S. Thrower & Associates Ltd., Site Index Adjustment for the Merritt IFPA Area – Final Report, March 17, 2003.
- J.S. Thrower & Associates Ltd., Site Index Adjustment for the Smallwood Population in the Merritt IFPA Area – Final Report, March 17, 2003.
- J.S. Thrower & Associates Ltd., Site Productivity Models for the ESSF in the Merritt TSA, March 22, 2002.
- J.S. Thrower & Associates Ltd., Vegetation Resources Inventory Statistical Adjustment for the Merritt TSA – Final Report (2003 Update), March 31, 2003.
- Keystone Wildlife Research, Environmental Plan Components 1999-2003.
- Keystone Wildlife Research, Merritt IFPA Environmental Management Plan – Status Report, prepared for NSIFS, March 2001.
- Keystone Wildlife Research, Merritt Innovative Forestry Practices Agreement Environmental Status Report March 2002 – Year 3.
- Keystone Wildlife Research, Merritt TSA OGMA Selections and Rationale, January 9, 2003.
- Keystone Wildlife Research, Methodology for Developing the “X-Pert Model” to Assign a Streamclass Within a Watershed, February 27, 2001.
- Keystone Wildlife Research, Mule Deer Winter Range Definition and Management for the Merritt TSA, March 2003.
- Keystone Wildlife Research, Spatial OGMA Designation for Four Landscape Units in the Merritt TSA, March 2003.

Merritt IFPA AAC Increase Rationale (July 2005)

- Nicola Watershed Stewardship Fisheries Association, in co-operation with Keystone Wildlife Research and Nk'losm Resource Management, Local Watershed Expert Model for the Merritt Timber Supply Area, September 2001.
- Nicola-Similkameen Innovative Forestry Society, Summary of April 2002 Public Review.
- Nicola-Similkameen Innovative Forestry Society, Application for an AAC Increase for the Merritt IFPAs: Amendment to Forestry Plan #1, December 31, 2001.
- Nicola-Similkameen Innovative Forestry Society, Initial IFPA Proposal - Enhanced Forestry within the Merritt TSA Proposal for Innovative Forestry Practices Agreements, July 31, 1997.
- Nicola-Similkameen Innovative Forestry Society, J.S. Thrower & Associates Ltd., Timberline Forest Inventory Consultants Ltd., Keystone Wildlife Research, NSIFS Forestry Plan #1, July 14, 2000.
- Nicola-Similkameen Innovative Forestry Society, letter to Regional Manager, Addendum to Forestry Plan #1, December 31, 2001.
- Nicola-Similkameen Innovative Forestry Society, Share Agreement, April 2, 2001.
- Nicola-Similkameen Innovative Forestry Society, Supporting Documentation for December 31, 2001 AAC Increase Application, April 30, 2003.
- Nicola-Similkameen Innovative Forestry Society. 2004 (revised May 13, 2005) Forestry plan II for the innovative forestry practices agreements in the Merritt timber supply area. Prepared by Nesoo Watchie Resource Management.
- Nicola-Similkameen Innovative Forestry Society. 2005. NSIFS MPB uplift application March 30, 2005.
- Norgaard, Erik, President, Ardeu Wood Products Ltd., letter to regional manager dated August 14, 2003, NSIFS AAC uplift application
- Timberline Forest Inventory Consultants Ltd., NSIFS IFPA Innovative Timber Supply Analysis – Final Draft, April 30, 2003.
- Timberline Forest Inventory Consultants Ltd., Timber Supply Analysis Report, NIFS, Timber Supply Review 2 Benchmark Analysis, December 14, 2001.
- Timberline Forest Inventory Consultants Ltd., Timber Supply Analysis Report NSIFS Base Case and Innovative Timber Supply Analysis, April 2000.

I have also considered information from the previous timber supply review (commonly called TSR2) including the following key documents:

- Ministry of Forests. 2001. Merritt TSA timber supply analysis, March 2001.
- Ministry of Forests. 2001. Merritt. Timber Supply Area Summary of public input on data package and TSA analysis report, October 2001.
- Ministry of Forests. 2002. Merritt TSA Rationale for AAC determination, January 2002.

Other information that I have considered includes:

- Chief Forester. 2001. Memo dated April 6, 2001 to regional managers [re: stating timber supply analysis methodology related to Innovative Forest Practice Agreements (IFPAs)].
- Deputy Ministers of Forests and Environment, Lands, and Parks. 1997. Letter dated August 25, 1997 [re: conveying government's objectives for achieving acceptable impacts on timber supply from biodiversity management].
- Forest and Range Practices Act, 2002 and amendments
- Forest and Range Practices Regulations, 2004 and amendments
- 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, BCFS and MELP.
- Government of British Columbia. 2002. Provincial policy for consultation with First Nations. October 2002.
- Ministry of Forests. 2005. Cascades Forest District. 2005/2006 Merritt TSA Forest Health Strategy. March 2005. Update supplied by Ed Senger, RPBio, Landscape Consulting Corporation.
- Ministry of Forests. 2003. Policy 15.1 – Aboriginal Rights and Title. Effective date May 14, 2003.
- Ministry of Forests. 2000. Innovative Forestry Practices Agreements: Handbook.
- Minister of Forests. 1994. Letter dated July 28, 1994 to chief forester [re: stating the Crown's economic and social objectives for the province].
- Minister of Forests. 1996. Memo dated February 26, 1996 to chief forester [re: stating the Crown's economic and social objectives for the province regarding visual resources].
- Nigh, G.D., 1998. Site Index Adjustments for Old-Growth Stands Based on Veteran Trees, BCFS Research Branch, Working Paper 36/1998.
- Nussbaum, A.F., 1998. Site Index Adjustments for Old-Growth Stands Based on Paired Plots, BCFS Research Branch, Working Paper 37/1998.

I have received input from public and First Nations either through written or verbal correspondence. These are summarized in:

- Blackstock, M. 2005. Consultation summary for the Merritt IFPA First Nations Consultation. June 28, 2005 Memorandum to Regional Executive Director.

I have also received information through:

- Technical information provided through correspondence and communication among staff from the Ministry of Forests (MOF), the Ministry of Sustainable Resource Management (MSRM), and the Ministry of Water, Land, and Air Protection (MWLAP).
- Technical review and evaluation of current and expected operating conditions through comprehensive discussions with BC Ministry of Forests staff, including a meeting

held in Quilchena on May 18-19, 2005 and a helicopter review of portions of the TSA on May 18, 2005 with district and regional staff.

Most of the above and other information sources are documented in the summary document

- Ministry of Forests (unpublished). Urgent timber supply review for the Merritt TSA: technical summary for the allowable annual cut determination meeting for Section 8 and Section 59.1 decisions. May 18-19, 2005, Quilchena Hotel, Quilchena.

