

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

Tree Farm Licence 39

held by

Western Forest Products Inc.

Rationale for Allowable Annual Cut (AAC) Determination

Effective August 29, 2016

**Diane Nicholls, RPF
Chief Forester**

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Objective of this document

This document provides an accounting of the factors I have considered, and the rationale I have employed in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for Tree Farm Licence 39 (TFL 39). This document also identifies where new or better information is needed for incorporation in future determinations.

Statutory framework

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

Description of the TFL

TFL 39 is held by Western Forest Products Inc. (“WFP” the licensee) and is comprised of four separate blocks. Block 1 is located on the Sunshine Coast near Powell River. Block 2 is located in the Sayward area along the northeast side of Vancouver Island. Block 3 (North Broughton Island) and Block 5 (Phillips River) are located along the South Central Coast. Block 4, located on northern Vancouver Island (Benson River area), was recently transferred to TFL 6 (January 1, 2015) and as such is not considered in this AAC determination.

The Ministry of Forests, Lands and Natural Resource Operations (FLNRO) offices that administer this TFL are: Block 1: South Coast Region: Sunshine Coast Natural Resource District (located in Powell River); Block 2 and Block 5: West Coast Region: Campbell River Natural Resource District (located in Campbell River); and Block 3: West Coast Region: North Island – Central Coast Natural Resource District (located in Port McNeill).

There are eleven (11) First Nations that have traditional territories that overlap with portions of TFL 39, including:

- Block 1: Klahoose First Nation
Tla’amin (Sliammon) First Nation
shíshálh (Sechelt) First Nation
- Block 2: K’ómoks First Nation
Wei Wai Kum (Campbell River) First Nation
We Wai Kai (Cape Mudge) First Nation
Tlowitsis Nation
- Block 3: Gwawaenuk Tribe
Dzawada’enuxw (Tsawataineuk) First Nation
- Block 5: Kwiakah First Nation
Xwe’malhwu (Homalco) First Nation
Wei Wai Kum (Campbell River) First Nation
We Wai Kai (Cape Mudge) First Nation

A small portion of TFL 39, Block 2 overlaps with Mowachaht-Muchalaht First Nation’s traditional territory. As the overlapping area is outside of what the Province considers to be Mowachaht-Muchalaht core territory, the FLNRO staff assessed the AAC determination to have a very low potential to cause an adverse impact on Mowachaht-Muchalaht aboriginal interests. As such, FLNRO concluded that consultation with Mowachaht-Muchalaht was not required for this determination.

The major communities located near the blocks of TFL 39 include Campbell River, Powell River and Sayward. There are also numerous smaller First Nations and non-First Nations communities located along the coast. Economic activity in the area includes forestry, fishing, ecotourism and mining.

The total area of TFL 39 is 360 487 hectares. Of this total area, 302 948 hectares are forested and 148 879 hectares are available as the timber harvesting land base (THLB).

Block 1, located near Powell River, covers 153 377 hectares of which 118 062 hectares is forested and 47 639 hectares are established to be THLB. The southern portion of the block generally has gentle terrain while the northern, inland portion is dominated by mountains and steep valleys. The climate is relatively dry and the majority of the block area is within the dry maritime Coastal Western Hemlock (CWH) biogeoclimatic subzone. Logging dating back to the 1890's in combination with large forest fires during the late 1800's, 1920's and 1930's has resulted in significant areas of older second-growth timber. These forests are dominated by hemlock and balsam while the immature forests are composed of hemlock and Douglas-fir.

Block 2, located near Sayward, covers 156 205 hectares of which 147 020 hectares is forested with 91 666 hectares are established as THLB. The north-east half of the block is dominated by gentle coastal plains and the south-west half is dominated by mountainous terrain. Biogeoclimatic conditions range from the very dry maritime CWH subzone to the very wet maritime CWH subzone to the moist maritime Mountain Hemlock subzone. Logging dates back to the 1910's in the southern portion of the block. The forests are dominated by hemlock and balsam with a significant yellow-cedar component at higher elevations and Douglas-fir in the low elevation immature forests.

Block 3, located on North Broughton Island covers 4464 hectares of which 4183 hectares is forested with 2866 hectares of THLB. The terrain is rolling with no dominating features. The entire block is located in the very wet maritime CWH subzone with hemlock and western redcedar being the dominant tree species. A significant portion of the block was harvested in the first half of the 20th century and then in the 1980's. Less than 1000 hectares of old forest remains in Block 3.

Block 5, located on the mainland coast in the Phillips River watershed covers 46 441 hectares of which 33 683 hectares is forested with 6708 hectares of THLB. The terrain is dominated by steep mountains and narrow valleys. The block is split between the very wet maritime CWH zone and the moist maritime Mountain Hemlock zone biogeoclimatic conditions. Small scale logging started in the 1940's and significant harvest activity occurred in the 1970's and 1980's. The forests are comprised mainly of hemlock, balsam and western redcedar.

The four TFL 39 blocks are guided by different higher level plans or strategies: Block 1 and Block 2 are subject to the Western Forest Strategy (WFS) objectives developed by WFP. While the WFS objectives are not legally established nor approved by government they are reflected in current management. Block 2 is subject to the Vancouver Island Land Use Plan Higher Level Plan Order (VILUP HLP) effective December 1, 2000. Block 3 and Block 5 are subject to the Great Bear Rainforest Order (GBRO) effective January 28, 2016. This order replaced the South Central Coast Order (SCCO) that was established on July 27, 2007, and amended on March 31, 2009 and on June 13, 2013.

History of the AAC

TFL 39 was originally issued in October, 1961 to MacMillan Bloedel and Powell River Limited, with an AAC of 1 243 000 cubic metres.

Between 1961 and 2001, the AAC varied between 1.2 and 3.8 million cubic metres. It was adjusted to reflect, among other factors, additions to the land base, higher utilization standards, increased yield estimates for regenerated stands, reductions in rotation ages, and the amalgamation with former TFL 7.

From 2001 to 2015 the AAC fluctuated from 3 740 000 cubic metres to 1 683 980 cubic metres in relation to land transfers and land removals, including the January 2010 transfer of Block 6 (Haida Gwaii) to TFL 60 and the January 2015 transfer of Block 4 to TFL 6. On April 5, 2016, the TFL 39 AAC was reduced to 1 680 083 cubic metres by an AAC Reduction Order made in accordance with the *Tla'amin Final Agreement Act*.

New AAC determination

Effective August 29, 2016, the new AAC for TFL 39 is 1 416 300 cubic metres. Of this AAC, a partition of 1 375 000 cubic metres is attributable to the combined area of Blocks 1 and 2 (the area not covered by the Great Bear Rainforest Order), and a partition of 41 300 cubic metres is attributable to the combined area of Blocks 3 and 5 (the area covered by the Great Bear Rainforest Order). Within the AAC attributable to Blocks 1 and 2, there is a partition of no more than 1 203 000 cubic metres attributable to the area identified as conventional harvest area in Management Plan 9.

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

Information sources used in the AAC determination

The information sources considered in determining this AAC for TFL 39 include the following:

Legislation

- *Forest Act* and regulations, BC Government, current to August 17, 2016;
- *Ministry of Forests and Range Act*, BC Government, current to August 17, 2016;
- *Forest and Range Practices Act (FRPA)* and regulations and amendments, BC Government, current to August 17, 2016;
- *Forest Practices Code of British Columbia Act*, BC Government, current to August 17, 2016, and regulations and amendments;
- *Land Act*, BC Government current to August 17, 2016;
- *Environment and Land Use Act*, BC Government current to August 17, 2016;
- *Parks and Protected Areas Statutes Amendment Act*, BC Government current to August 17, 2016;
- *Species at Risk Act*, Government of Canada (S.C 2002, c29) current to August 15, 2016;
- *Forestry Revitalization Act*, BC Government current to August 17, 2016;
- *Heritage Conservation Act*, BC Government current to August 17, 2016;
- *Interpretation Act*, BC Government current to August 17, 2016;

- *Oil and Gas Activities Act* and regulations and amendments, BC Government current to August 17, 2016;
- *Great Bear Rainforest (Forest Management) Act* (expected to be brought into force by regulation by fall 2016), BC Government current to August 17, 2016;
- *Wildlife Act*, BC Government, current to August 17, 2016;

Licensee Plans and Timber Supply Review Documents

- Draft Management Plan #9, including Information Package and Timber Supply Analysis, Western Forest Products Inc. April 2014;
- Addendum #1 Management Plan #9, Western Forest Products Inc. August 2014;
- Addendum #2 Management Plan #9, Western Forest Products Inc. July 2015;
- Tree Farm Licence 39 Rationale for Allowable Annual Cut (AAC) Determination, Ministry of Forests. November 21, 2001;
- Input received from the public and First Nations for the Information Package, Management Plan #9 and the Timber Supply Analysis, including Addendum #1 and Addendum #2 to the analysis;
- Technical review and evaluation of current and expected operating conditions through comprehensive discussions with staff of Ministry of Forests, Lands and Natural Resource Operations, including the AAC determination meeting held in Powell River on December 10 and 11, 2015;
- Letter from the Minister of Forests and Range to the chief forester stating the economic and social objectives of the Crown, BC Government July 4, 2006;

Land Use Documents

- Vancouver Island Land Use Plan Higher Level Plan Order, effective December 1, 2000, pursuant to Sections 3(1) and 3(2) as well as Section 9.1 of the *Forest Practices Code of British Columbia Act*, BC Government current to August 17, 2016;
- Central and North Coast Minor Amendment Order April 2013, pursuant to Section 93.4 of the *Land Act*, BC Government current to August 17, 2016;
- South Central Coast Order, BC Government July 27, 2007, rescinded January 28, 2016;
- South Central Coast Amendment Order, BC Government March 23, 2009, rescinded January 28, 2016;
- South Central Coast Minor Amendment Order, BC Government June 10, 2013, rescinded January 28, 2016;
- Great Bear Rainforest Order, BC Government January 28, 2016;
- Bunster Landscape Unit Plan, BC Government September 21, 2000;
- Powell - Daniels Landscape Unit Plan, BC Government January 16, 2002;
- Lois Landscape Unit Plan, BC Government November 25, 2002;
- Powell Lake Landscape Unit Plan, BC Government November 25, 2002;
- Sayward Landscape Unit Plan, BC Government February 27, 2003;

- Western Forest Strategy, Final Implementation Version July 2007, Western Forest Products Inc. revised June 12 2008;
- Forest Stewardship Plan for the North Vancouver Island May 22, 2007 to May 20, 2017 Forest Operations of Western Forest Products Inc. (FSP #262), Western Forest Products Inc. Amended April 24, 2012;
- Mainland Coast Forest Stewardship Plan, Western Forest Products Inc. Amended April 28, 2013;
- Mid Island, Stillwater and Port Alberni Forest Operations Forest Stewardship Plan, Western Forest Products Inc. extension effective January 4, 2012;
- Regional District Parks and Greenspace Plan, Powell River Regional District, November 10, 2010;
- Electoral Area A Official Community Plan Schedule A to Bylaw No. 500, 2015, Powell River Regional District adopted December 16, 2015;
- Electoral Area B Official Community Plan Bylaw No. 465, 2012 March 28, 2013, Powell River Regional District consolidated June 15, 2015;
- Electoral Area C Official Community Plan Bylaw No. 467, 2012, Powell River Regional District April 24, 2013;
- Transfer of Planning Objectives under FRPA: Stillwater Timberlands Complaint Investigation, Forest Practices Board November 2007;
- Harvesting Near a Recreation Trail on the Sunshine Coast Complaint Investigation #121011, Forest Practices Board December 2013;
- Audit of Forest Planning and Practices Western Forest Products Inc. Tree Farm Licence 39 – Block 1 (FPB/ARC/160), Forest Practices Board December 2013;
- Implementation Monitoring of EBM in the Central Coast, Symmetree Consulting Group February 28, 2007;
- Identified Wildlife Management Strategy–Accounts and Measures for Managing Identified Wildlife Coast Forest Region Version 2004, Province of BC 2004;
- Government Actions Regulation (GAR) Orders applicable to TFL 39;
 - Order to Establish Scenic Areas and Visual Quality Objectives for the Campbell River Forest District, Ministry of Forests and Range December 14, 2005;
 - Order to Establish Visual Quality Objectives for Tree Farm Licence 39 Block 1 within the Sunshine Coast Forest District, Ministry of Forests and Range, June 19, 2009;
 - Order to Identify Recreation Resource Features for the Campbell River Forest District, Ministry of Forests April 12, 2006;
 - Order – Fisheries Sensitive Watersheds – Vancouver Island, Ministry of Environment December 19, 2005;
 - Order to Establish Karst resource features for the Sunshine Coast Forest District, Ministry of Forests and Range October 29, 2010;
 - Order to Establish Karst resource features for the North Island – Central Coast Forest District, Ministry of Forests and Range March 23, 2007;

Order to Establish Karst resource features Campbell River Forest District effective June 30, 2007, Ministry of Forests and Range May 30, 2007;

- Draft and established old growth management areas, Ministry of Forests, Lands and Natural Resource Operations current to July 1, 2016;
- Order Establishing Provincial Non-Spatial Old Growth Objectives, Ministry of Sustainable Resource Management, June 30, 2004;
- Approved Ungulate Winter Ranges, Ministry of Environment current to July 1, 2016;
- Approved Wildlife Habitat Areas, Ministry of Environment current to July 1, 2016;
- Management Principles Sunshine Coast Trails Crown Land Portions, Ministry of Forests and Range December 8, 2009;

First Nations

- Updated Procedures for Meeting Legal Obligations when Consulting First Nations, May 7, 2010;
- Haida Nation v. British Columbia (Minister of Forests), [2004] 3 S.C.R. 511, 2004 SCC 73;
- Tsilhqot'in Nation v. British Columbia, 2014 SCC 44, [2014] 2 S.C.R.;
- R. v. Sparrow, [1990] 1 S.C.R. 1075;
- Letter from the Minister of Forests, Lands and Natural Resource Operations to the chief forester stating the economic and social objectives of the government for signatory First Nations of the Nanwakolas Reconciliation Protocol, BC Government April 12, 2013;
- Bill C-34 – 2014 Tla'amin Final Agreement Act, Government of Canada 2014;
- *Tla'amin Final Agreement Act* and Tla'amin Final Agreement Interim Regulation, BC Government current to July 1, 2016;
- First Nations Consultation Summary TFL 39, Ministry of Forests, Lands and Natural Resource Operations, Consultation Report and Tracking System - TFL 39 MP # 9 & TSR, July, 2016;

Other related reports

- Adapting natural resource management to climate change in the West and South Coast Regions: Considerations for practitioners and Government staff, Ministry of Forest Lands and Natural Resource Operations, February 22, 2016;
- A Cumulative Effects Review & Sufficiency Analysis of Ecosystem-Based Management (EBM) in the Phillips Grizzly Bear-Salmon Ecosystem On The BC South Coast For Kwiakah First Nation Core Aboriginal Title Lands: Grizzly Bear Research Project, Wayne McCrory, R.P.Bio. February 20, 2014;

- Assessment of slope stability in Phillips River, Tom Millard, Research Geomorphologist, Ministry of Forests, Lands and Natural Resource Operations April 24, 2014;
- Cumulative Effects Framework: Assessing and Managing Cumulative Effects in British Columbia, Ministry of Forest Lands and Natural Resource Operations June 2016;
- ClimateBCv5.21 climate model, University of British Columbia July 5, 2015;
- Grizzly Bear Denning Habitat Suitability Assessment – TFL 39 – Clearwater River and Phillips Camp, Sally Leigh-Spencer R.P.Bio. Ecological Consulting October 30, 2015;
- Phillips Arm Salmon Data Analysis, Morgan D. Hocking Ph.D. R.P.Bio Ecofish Research Ltd. and Brendan M. Connors Ph.D. ESSA Technologies Ltd. February 12, 2015;
- Peter Tschaplinski, email to Rory Annett subject: Evaluating Fish Population Trends from ECA, May 4, 2016;
- Tony Hamilton, email to Jim Brown subject: Phillips Grizzly Bears, July 25, 2016;
- Tom Millard, email to Jim Brown subject: Ecofish report re: Phillips Arm Salmon Data Analysis, May 10, 2016.

Role and limitations of the technical information used

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

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

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

In determining this AAC for TFL 39 I have considered the known limitations of the technical information provided. I am satisfied that the information provides a suitable basis for my determination.

Guiding principles for AAC determinations

Section 8 of the Forest Act requires the chief forester to consider particular factors in determining the AACs for timber supply areas and tree farm licences.

Given the large number of periodic AAC determinations required for British Columbia's many forest management units, administrative fairness requires a reasonable degree of consistency of approach in addressing relevant factors associated with AAC determinations. In order to make my approach in these matters explicit, I have considered and adopted the following body of guiding principles, which have been developed over time by BC's chief and deputy chief

foresters. However, in any specific circumstance in a determination where I consider it necessary to deviate from these principles, I will explain my reasoning in detail.

When considering the factors required under Section 8, I am also mindful of my obligation as a steward of the forests of British Columbia, of the mandate of the Ministry of Forests, Lands and Natural Resource Operations as set out in Section 4 of the *Ministry of Forests and Range Act*, and of my responsibilities under the *Forest Act* and *Forest and Range Practices Act* (FRPA).

Integrated decision making

One of the key objectives of the Ministry of Forests, Lands and Natural Resource Operations is to take an integrated approach to all resource management decisions that considers all resource values. In considering the factors outlined in Section 8 of the *Forest Act*, I will continue to consider all available information on timber and non-timber resources in the management unit, and all available information on the interactions of the management of those resources on timber supply.

Information uncertainty

Given the complex and dynamic nature of forest ecosystems coupled with changes in resource use patterns and social priorities there is always a degree of uncertainty in the information used in AAC determinations.

Two important ways of dealing with this uncertainty are:

- (i) managing risks by evaluating the significance of specific uncertainties associated with the current information and assessing the various potential current and future, social, economic and environmental risks associated with a range of possible AACs; and
- (ii) re-determining AACs frequently, in cases where projections of short-term timber supply are not stable, to ensure they incorporate current information and knowledge.

In considering the various factors that Section 8 of the *Forest Act* requires the chief forester to take into account in determining AACs, it is important to reflect those factors, as closely as possible, that are a reasonable extrapolation of current practices. It is not appropriate to base decisions on proposed or potential practices that could affect the timber supply but are not substantiated by demonstrated performance or are beyond current legal requirements.

In many areas, the timber supply implications of some legislative provisions remain uncertain, particularly when considered in combination with other factors. In each AAC determination, this uncertainty is taken into account to the extent possible in the context of the best available information.

It is not appropriate to speculate on timber supply impacts that may eventually result from land-use decisions not yet finalized by government, nor is it possible at this time to speculate about the possible effect on timber supply that could result from possible eventual legal proof of aboriginal title. However, where specific protected areas, conservancies, or similar areas have been designated by legislation or by order in council, these areas are deducted from the timber harvesting land base (THLB) and are not considered to contribute any harvestable volume to the timber supply in AAC determinations, although they may contribute indirectly by providing forest cover to help in meeting resource management objectives such as for biodiversity.

In some cases, even when government has made a formal land-use decision, it is not necessarily possible to fully analyse and account for the consequent timber supply impacts in a current AAC determination. Many government land-use decisions must be followed by detailed implementation decisions requiring, for instance, further detailed planning or legal designations such as those provided for under the *Land Act* and FRPA. In cases where there is a clear intent

by government to implement these decisions that have not yet been finalized, I will consider information that is relevant to the decision in a manner that is appropriate to the circumstance. The requirement for regular AAC reviews will ensure that future determinations address ongoing plan implementation decisions.

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

I acknowledge the perspective that alternate strategies for dealing with information uncertainty are to delay AAC determinations or to generally reduce AACs in the interest of caution. However, given that there will always be uncertainty in information, and due to the significant impacts that AAC determinations can have on communities, I believe that no responsible AAC determination can be made solely on the basis of a response to uncertainty.

Nevertheless, in making a determination, allowances may need to be made to address risks that arise because of uncertainty by applying judgment to the available information. Where appropriate, the social and economic interests of the government, as articulated by the Minister of Forests, Lands and Natural Resource Operations, can assist in evaluating this uncertainty.

Climate change

One key area of uncertainty relates to climate change. While some controversy appears to remain on the causes of climate change, there is substantial scientific agreement that climate is changing, that the changes will affect forest ecosystems, and that forest management practices will need to be adapted. Nevertheless, the potential rate, amount, and specific characteristics of climate change in different parts of the province are uncertain. As research provides more definitive information on climate change, I will consider the findings in AAC determinations. Where forest practices are implemented to mitigate or adapt to the potential effects of climate change on forest resources, I will consider related information in my determinations.

In addition, vulnerability assessments can provide information on the potential risks associated with climate change, and could be useful in defining how to consider climate change in different AAC determinations. Such assessments could also highlight key topics in need of research that could improve climate change considerations for future determinations.

I note, however, that even with better information on climate change there will be a range of reasonable management responses. Considerations of how to respond in anticipation of uncertain, potential future impacts and risks differ from those related to responding to known or ongoing processes such as the recent mountain pine beetle (MPB) infestation. For example, it is not clear if either increases or decreases to current harvest levels would be appropriate in addressing potential future increases in natural disturbance due to climate change. Conversely, the present forest conditions resulting from the MPB infestation provide a clearer circumstance to which to respond.

To some extent, decisions on the preferred management responses to potential future risks, including potential changes to allowable timber harvests, are appropriately informed by broad discussion among interested parties. I will monitor such discussions and consider them insofar as they are relevant to AAC determinations. In general, the requirement for regular AAC reviews will allow for the incorporation of new information on climate change and its effects on forests and timber supply as it emerges.

First Nations

Aboriginal Title Lands and other areas, such as Treaty Lands or Indian Reserves, are not provincial Crown land. Consequently, the timber on these lands does not contribute to the AAC of the timber supply area or tree farm licence with which they overlap. For other areas, where aboriginal title has not been legally proven, the Crown has a legal obligation to consult with First Nations regarding their asserted rights and title (aboriginal interests) in a manner proportional to the strength of their aboriginal interests and the degree to which the decision may impact these interests. In this regard, full consideration will be given to:

1. the information provided to First Nations to explain the timber supply review process;
2. any information brought forward respecting First Nations' treaty rights or aboriginal interests, including how these rights or interests may be impacted; and
3. any operational plans and/or other information that describe how First Nations' treaty rights or interests are addressed through specific actions and forest practices.

Treaty rights or aboriginal interests that may be impacted by AAC decisions will be addressed consistent with the scope of authority granted to the chief forester under Section 8 of the *Forest Act*. When information is brought forward that is outside of the chief forester's jurisdiction, this information will be forwarded to the appropriate decision makers for their consideration. Specific considerations identified by First Nations in relation to their aboriginal interests and the AAC determination are addressed in the various sections of this rationale.

AAC determinations should not be construed as limiting the Crown's obligations under court decisions in any way, and in this respect it should be noted that AAC determinations do not prescribe a particular plan of harvesting activity within the management units. They are also independent of any decisions by the Minister of Forests, Lands and Natural Resource Operations with respect to subsequent allocation of wood supply.

The role of the base case

In considering the factors required under Section 8 of the *Forest Act* to be addressed in AAC determinations, I am assisted by timber supply projections provided to me through the work of the Timber Supply Review Program (TSR) for TSAs and TFLs.

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

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

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

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case are realistic and current, and the degree to which resulting predictions of timber supply must be adjusted to more properly reflect the current and foreseeable situation.

These adjustments are made on the basis of informed judgment using currently available information about forest management, and that information may well have changed since the original information package was assembled. Forest management data are particularly subject to change during periods of legislative or regulatory change, or during the implementation of new policies, procedures, guidelines or plans.

Thus, in reviewing the considerations that lead to the AAC determination, it is important to remember that the AAC determination itself is not simply a calculation. Even though the timber supply analysis I am provided is integral to those considerations, the AAC determination is a synthesis of judgment and analysis in which numerous risks and uncertainties are weighed. Depending upon the outcome of these considerations, the AAC determined may or may not coincide with the base case. Judgments that in part may be based on uncertain information are essentially qualitative in nature and, as such, are subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation would be gained by attempting a computer analysis of the combined considerations.

Timber supply analysis

The timber supply analysis for TFL 39 was prepared by WFP using the Woodstock timber supply model. Woodstock was used to project timber harvest activities following current management practices including objectives for multiple values such as visual quality, biodiversity and wildlife habitat. Based on the review by FLNRO staff, as well as my own experience reviewing results from similar models, I am satisfied that Woodstock is capable of providing an appropriate projection of timber supply.

The base case comprises three independent projections, that are added together to produce the TFL 39 base case timber supply projection. Projections were modelled for each of Block 1 and Block 2 separately, and one harvest projection was modelled for Block 3 and Block 5 combined. Block 3 and Block 5 were combined as one supply unit, as both have relatively small areas of THLB and were subject to the same South Central Coast Order (SCCO) objectives at the time of the analysis.

The increases and decreases in harvest levels for each of the three independent projections were limited to 10 percent per decade while achieving a relatively stable long-term growing stock in conventionally operable areas (areas harvested with ground-based and cable systems) over the final 100 years of the projection. The combined harvest from non-conventional operable areas (area harvested with long-line and helicopter systems) in the three projections was limited to 95 000 cubic metres per year. The harvest objectives were set to ensure a minimum of 80 percent of the initial harvest in Block 1 and a minimum of 30 percent of the initial harvest from Block 2 was from immature stands (younger than 141 years) to reflect recent harvest practice and planned harvest.

Although the licensee indicated in their data package that at least 50 percent of the initial projected harvest from combined Block 3 and Block 5 would be from immature stands this requirement was removed from the final base case as it was realized the short-term timber supply from these blocks is highly dependent on the harvest of older forest. This is largely because 60 percent of the THLB is currently younger than the minimum harvest age. Without the immature objective, 10 percent of the initial volume harvested from Block 3 and Block 5 were projected to be from immature stands.

The base case, excluding Block 4, has a total initial harvest level of 1 340 900 cubic metres per year maintained for one decade before declining by six percent to 1 254 500 cubic metres per year for the second decade. The harvest declines a further six percent to 1 182 700 cubic metres per year in the third decade, following which the harvest increases by 11 percent through the fifth to eighth decades to the long-term harvest of 1 314 000 cubic metres per year. The initial annual contribution by each of the three independent harvest projections are: 435 300 cubic metres, of which 50 000 cubic metres was non-conventional for Block 1; 864 300 cubic metres, of which 40 000 cubic metres was non-conventional for Block 2; and 41 300 cubic metres, of which 5000 cubic metres was non-conventional for Block 3 and Block 5 combined. I have reviewed the information and I accept this projection as the base case for the purposes of this determination.

In the timber supply analysis, various sensitivity analyses were conducted to assess the potential implications and risk to timber supply arising from uncertainty in data assumptions. These sensitivity analyses and associated alternative harvest projections have also assisted me in considering the factors leading to my determination.

As discussed and quantified throughout this rationale, and in consideration of the items described above, I am satisfied the information presented to me provides an adequate basis from which I can assess the current timber supply for TFL 39 for this determination.

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

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

Table 1. List of accepted factors

Forest Act section and description	Factors accepted as modelled
8(8)(a)(i) Composition of the forest and its expected rate of growth	<ul style="list-style-type: none"> • Forest inventory • TFL 39 land base • Non-forest • Existing roads, trails and landings • Non-productive forest • Operability • Uneconomic and marginally uneconomic • Landslides / avalanche areas • Environmentally sensitive areas • Future roads • Deciduous • Aggregation procedures • Site productivity assignments • Natural stand yields • Log grades • Operational adjustment factors for managed stands
8(8)(a)(ii) Expected time that it will take the forest to become re-established following denudation	<ul style="list-style-type: none"> • Backlog and current non-stocked areas
8(8)(a)(iii) Silvicultural treatments to be applied	<ul style="list-style-type: none"> • Silvicultural systems • Fertilization • Genetic gain from tree improvement for managed stands
8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste, and breakage	<ul style="list-style-type: none"> • Decay, waste and breakage, and cull (Z) grade for unmanaged stands • Utilization level
8(8)(a)(v) Constraints on the amount of timber produced by use of the area for purposes other than timber production	<ul style="list-style-type: none"> • Land and resource management plans • Local Social and Economic Objectives • Western Forest Strategy • Objectives for adjacent cutblock green-up • Landscape-level biodiversity • Wildlife habitat areas and special reserves • Ungulate winter ranges (UWR) • Riparian reserve and management zones • Objectives for watersheds • Caves and Karst
8(8)(a)(vi) Any other information	<ul style="list-style-type: none"> • Cumulative effects • January 1, 2015 transfer of Block 4 from TFL 39 to TFL 6
8(8)(b) Alternative Rates of Timber Harvesting	<ul style="list-style-type: none"> • Alternative Rates of Timber Harvesting
8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area	<ul style="list-style-type: none"> • Abnormal Infestations and Salvage Programs • Unsalvaged Losses

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

Factors requiring additional explanatory consideration

Section 8 (8)

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

Section 8 (8) (a) the rate of timber production that may be sustained on the area, taking into account

Section 8 (8) (a) (i) the composition of the forest and its expected rate of growth on the area

Land base contributing to timber harvest

- transmission line right-of-way

The Toba Montrose “run-of-river” hydroelectric project includes two generating facilities in the Toba Valley, approximately 80 kilometres north of Powell River, and 155 kilometres of new transmission lines and right-of-ways (ROW). A portion of this transmission line passes through Block 1 of TFL 39.

The timber supply analysis correctly excluded the transmission ROW from the THLB since this area will undergo vegetation control that will preclude the regrowth of merchantable trees during the lifespan of the project. The analysis did not account for the potential impact of the clearance requirements under the transmission line that is necessary for the safe movement of equipment. This requirement may increase complexity and cost for access, and timber harvesting in some areas upslope of the transmission line may not be possible.

The total area potentially affected in Block 1 is 13 450 hectares, of which 5340 hectares are within the THLB. The greatest uncertainty is for 504 hectares of conventional and 294 hectares non-conventionally designated upslope area that is also classified as unstable or potentially unstable terrain. Expensive, non-conventional harvest systems may be required to access timber in these areas and in some extreme cases harvesting may be prohibitively expensive or not possible.

District staff suggested that the potential timber supply impacts of the project may be offset if timber harvesting in the vicinity of the transmission line is delayed until after the expected 40-year lifespan of the project. During the lifespan of the project, if some areas of the THLB are unavailable for harvesting due to potential risk to the transmission lines, these areas could be used to provide other resource values such as ecosystem representation.

I acknowledge the uncertainty regarding the potential impact from the transmission line on timber supply in Block 1. As indicated under ‘**Implementation**’, I request that, during the term of this determination, the TFL holder and district staff work together to monitor and quantify any impact on harvesting related to the transmission line. This information will be used for the next determination.

- Tla’amin Treaty Lands

The *Tla’amin Final Agreement Act* came into effect on April 5, 2016. It provides specific treaty rights for Tla’amin First Nation with respect to ownership and management of mineral, forestry and other resources on the treaty settlement lands. Provisions of the treaty included the transfers of approximately 1900 hectares of Tla’amin Indian reserve and approximately 6400 hectares of former provincial Crown land to Tla’amin First Nation ownership. As a result 552 hectares, of which 394 hectares of THLB have been deleted from TFL 39 Block 1.

On April 18, 2016, the Minister of Forests, Lands and Natural Resource Operations issued an order, in accordance with Subsection 14 (3) of the *Tla'amin Final Agreement Act*, that reduced the AAC of TFL 39 that is available to the holder of the licence by 3897 cubic metres, effective April 5, 2016.

I note that the base case timber supply projection did not account for the deletion of the Tla'amin Treaty lands and that this results in an overestimation in the base case harvest levels of 3900 cubic metres as discussed under '**Reasons for Decision**'.

- unstable terrain

Unstable and potentially unstable terrain in TFL 39 has been inventoried using three different mapping methods. Detailed Terrain Stability Mapping (DTSM) was used for 31 percent of the terrain, Landslide Hazard Mapping (LSHM) was used for 15 percent of the terrain and Environmentally Sensitive Area (ESA) mapping was used for 54 percent of the terrain. In the timber supply analysis, land base exclusions for terrain stability removed between 85 percent and 90 percent of the forest area classified as unstable terrain in the DTSM and LSHM, or classified as highly sensitive soils in ESA mapping. The land base exclusions also removed between 15 percent and 20 percent of the forest area classified as potentially unstable terrain in the DTSM and LSHM or classified as moderately sensitive soils in ESA mapping. Following these exclusions, approximately 18 100 hectares, of a total 30 500 hectares, of unstable or potentially unstable terrain were removed from the THLB and 12 400 hectares remained in the THLB.

In 2013, Kwiakah First Nation (Kwiakah), whose traditional territory overlaps Block 5, expressed concern that harvesting in areas of steep-slope and unstable terrain adjacent to their reserve may cause run-off, erosion and landslides, impacting waterways and risking safety. Kwiakah believe a number of landslides that have directly affected their reserve and have clogged streams with debris are the result of logging and requested that a slope stability study be done in the areas. In addition, Kwiakah expressed concern that increased harvest in non-conventional areas may lead to landslides or other less-severe erosion that may impact waterways.

A 2014 terrain stability and stream assessment in Block 5 conducted by a FLNRO Research Geomorphologist indicates that, while harvesting and road associated landslides from 1950 to 1996 resulted in disturbed channels; the extent of disturbance in the Phillips River watershed is moderate to low. The geomorphologist indicates the number of landslides in the Phillips River watershed have reduced significantly since 1996 following implementation of the Forest Practices Code (FPC), which was later replaced by FRPA, such that landslide incidence from current forestry activities is now fairly low compared to past forest practices. The geomorphologist suggests the decline in recent years of sediment supply combined with the forest regrowth along the stream riparian is likely increasing bank stability and increasing stream channel stability similar to the streams pre-development state. While individual landslides may result in significant local impacts, current forestry activities have a fairly low landslide incidence and have little impact on watershed health.

With regard to Kwiakah's concern for terrain stability, harvesting, increased water run-off and landslide impacts on waterways, I note that WFP has since visited key areas within the Phillips River watershed with a Kwiakah representative to verify assumptions and to validate site conditions as outlined in the First Nation's statements of concern.

I also note that WFP has implemented a statistically-based landslide hazard mapping model and prediction methodology in TFL 39 to help assess the risk of forestry operations in causing landslides. This landslide hazard model has been shown to Kwiakah to describe the considerations and factors WFP uses to assess the landslide risk of their planned operations.

I am satisfied that the landslide hazard mapping model, along with the expert assessment of terrain stability, applied by WFP during operational planning are adequate measures to ensure WFP primary forest activities do not cause landslides that would have a material adverse effect in relation to forest resource values in TFL 39.

I conclude that the areas excluded from the THLB to account for unstable and potentially unstable terrain reasonably reflect current practice in TFL 39 and I will make no adjustment to the base case on this account.

I note that the ESA-based terrain stability mapping used in the timber supply analysis is very old. I instruct the TFL holder, prior to the next management plan, to improve the terrain stability mapping information for the areas where currently only ESA-based terrain stability mapping is available and I have noted this in the **'Implementation'** section of this rationale.

Expected rate of growth

- managed stand yields

A significant planting program has existed in TFL 39 since 1962. All area planted since 1962 is represented in the analysis as managed stands using the Table Interpolation Program for Stand Yields (TIPSY) Version 4.1c.

For the past 15 years WFP and its predecessor companies have retained on 57 percent of the total area harvested in Block 1 and Block 2 an area equivalent to 10 to 20 percent of each cutblock for stand-level retention. This has been primarily through group retention which follows the guidelines specified in the Western Forest Strategy (WFS). Throughout the past 10 years stand-level retention in Block 3 and Block 5 has also been in accordance with the requirements of the SCCO.

In the base case, WFP assumed stand retention as specified in the WFS was fully implemented for the entire harvest projection. It was reflected in the analysis through reductions to the THLB by five percent in Block 1 and Block 2, and by six percent in Block 3 and Block 5. To account for reductions to stand yields due to increased levels of shading from retained trees, WFP also reduced the projected volume growth of managed stands younger than 15 years and in future managed stands. For Block 1 and Block 2, volume growth was reduced by two percent within the VILUP Enhanced Forestry Zone, three percent within the VILUP General Management Zone, and by five percent within the VILUP Special Management Zone. In Block 3 and Block 5, the volume growth was reduced by five percent.

shíshálh Nation (shíshálh) expressed concern that the growth effects of shading from variable retention was not adequately reflected in the managed stand yields, and questioned whether the effects of shade on stand growth in the analysis are based on empirical data. They also question why species specific growth effects were not utilized. shíshálh technical experts believe the growth of regenerating Douglas-fir, which is relatively shade intolerant, will be reduced by more than the two to five percent assumed in the analysis when 10 to 20 percent of the stand is retained as dispersed stand-level retention. shíshálh suggest the projections of future yields for stands with stand-level retention are inherently uncertain and note that while the sensitivity analysis explored the timber supply implications of more favourable understory growth rates, it did not explore the timber supply impact of less favourable understory growth rates.

In recognition of shíshálh Nation's concerns, I note that the growth and yield model TIPSY has been calibrated with empirical data to project the species specific effects of shade from stand-level retention on the growth of managed stands. A technical review by Forest Analysis and Inventory Branch (FAIB) staff concluded that had stand-level retention and shade effect

been modelled using TIPS Y, the effects on growth would have been similar to that assumed in WFPs analysis. In part, this is because WFP tends to retain larger patches, which impart less shading and experience less wind throw as compared to the leaving of many small and dispersed areas of retention.

For this determination, I accept that stand-level retention and the managed stand growth effects from shading have been adequately reflected in the estimates of volume yields for regenerating stands in the timber supply analysis. As indicated in the **'Implementation'** section, I expect the TFL holder to stay abreast of new developments in growth and yield regarding the effects of shading from stand-level retention and to use the best available information in future analysis.

- minimum harvestable age

The minimum harvestable age is the average number of years required for trees to obtain a minimum size to be economic to harvest. The minimum harvestable ages applied in the base case projection were based on the ages at which stands were projected to achieve minimum average tree diameters. The target tree diameters were specified considering log value relative to harvesting cost and varied by harvesting system and supply block.

District staff expressed concern that some stands in the TFL are currently being harvested below the age of culmination of mean annual increment (culmination age - is the age at which stand volume growth is at a maximum). They cited information on actual harvest during the period from 2003 to 2012 that indicated up to 25 percent of the harvest area was in stands younger than culmination age.

WFP indicated that during harvest planning the company ensures all management objectives are achieved across the entire landscape and that the timber supply implications of the harvest timing are considered. For example, some stands are scheduled to be harvested at ages younger than culmination age in order to reduce the area of stands that would later be harvested at ages older than culmination age. Such trade-offs on the scheduled timing of harvest is most common in landscapes with management objectives that greatly restrict the area that may be regenerating forest, such as within visual management zones.

In the base case projection, 18 percent of the area scheduled for harvest in the first decade is from stands younger than culmination age, which is lower than the average observed by district staff for the period from 2003 to 2012. I note that the long-term timber supply in TFL 39 may be less than indicated by the base case projection if a significantly greater amount of harvest continues to occur at ages younger than assumed in the projection. However, I do not expect this to have a significant effect on the timber supply over the term of this AAC when the harvest is predominately from old and mature stands. In **'Implementation'** I have directed staff to monitor the harvest of young stands annually and to report this information to me prior to the next AAC determination.

Overall, I am satisfied that the base case provides a reasonable representation of current practice in relation to minimum harvestable age and that the use of this assumption is appropriate in determining the AAC on this area. As such, I will make no adjustment to the base case harvest level for the harvesting of stands at ages younger than culmination age.

Section 8 (8) (a) (ii) the expected time that it will take the forest to become re-established on the area following denudation

- not satisfactorily restocked area and regeneration assumptions

I have reviewed the information regarding not satisfactorily restocked area, regeneration delay and regeneration assumptions used in the analysis and have discussed these assumptions with FLNRO operations staff. I am concerned that WFP has not been provided information describing the planting and condition of area recently harvested by BCTS, First Nations and other licensees. I accept, as the area in question is small, that the impact to timber supply is negligible and I make no adjustments on this account. As stated in 'Implementation', I expect that the TFL holder and the district will work with other licensees to collect information about forest regeneration for the entire TFL 39 and to incorporate this information into future timber supply reviews.

Section 8 (8) (a) (iii) silvicultural treatments to be applied to the area

As noted in Table 1, I accept that the factors related to this section of the *Forest Act* were appropriately addressed in the analysis, and I will not discuss them further in this document.

Section 8 (8) (a) (iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area

As noted in Table 1, I accept that the factors related to this section of the *Forest Act* were appropriately addressed in the analysis, and I will not discuss them further in this document.

Section 8 (8) (a) (v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production

In addition to the factors listed under this section in Table 1 above, I have also considered the following factors, which require additional discussion.

- climate change

Climate change is predicted to impact forest ecosystems in a number of ways including a general increase in temperatures, change in precipitation patterns, and an increase in the frequency and severity of disturbances. While the trends are generally consistent, the specific magnitude of these changes and their spatial and temporal distribution are uncertain.

The 2016 FLNRO, West Coast Region, Extension Note titled, *Adapting natural resource management to climate change in the West and South Coast Regions*, used current climate change research to summarize projected climate changes and impacts to ecosystems for British Columbia. The following are excerpts from this extension note:

Provincial level changes:

“Climate: As a whole, BC has become warmer and wetter over the last century. Winter has warmed the most. Extreme rainfall and dry conditions have increased and snowpacks have decreased. Due to the effects of greenhouse gas emissions already in the atmosphere, climate scientists agree these warming trends will continue. By the end of this century, mean annual temperature in BC could be at least 1.7 to 4.6°C warmer than it was in the last few decades. More winter precipitation will likely fall as rain rather than snow, resulting in lower snowpacks, earlier and more rapid snowmelt, and longer fire seasons.

Regional differences: Northern and southern interior regions of BC are expected to warm more than coastal BC and parts of central BC. Winter precipitation is expected to increase in all regions, but summer precipitation is expected to increase in northern BC and decrease in southern and coastal BC.

Impacts: Ecosystems will likely undergo both predictable and unpredictable ecological shifts. Climate envelopes (the climate associated with an ecosystem today) for subalpine and alpine areas will diminish in most locations while those for grasslands, shrub-steppe and dry forested ecosystems are expected to expand. In response, ecological communities will disassemble and reassemble—sometimes into novel combinations—as populations decline, move or adapt. Many species, including trees, will not be able to migrate quickly enough to keep pace with shifting climate. During this evolution, ecosystems will be strongly influenced by disturbances and invasive plants. Natural disturbance dynamics will change: likely changes include increased fire and drought in southern and coastal BC, increased storms and wind throw on the coast, and more frequent and extensive mortality due to bark beetles, defoliators and diseases across BC. Invasive species will increase. Hydrological regimes will shift due to increased evaporation, altered vegetation communities, increased storm frequency and magnitude, decreased snow accumulation, seasonal changes to precipitation, and accelerated ice melt followed by diminished glacier extent.”

West and South Coast Regional Changes:

“The coastal climate has changed over the past century and is expected to continue to change. Averaged across the coast, over 1°C of warming has occurred during the 20th century. Projections suggest the West Coast may warm, on average, an additional 1.2 to 3.5°C by the end of this century and the South Coast an additional 1.9 to 5°C, similar to moving from Prince Rupert to Victoria (2.5°C warmer).”

“While it is normal for temperatures to vary considerably between seasons or from day to night, even a fraction of a degree rise in temperatures, when averaged over decades, is significant for ecosystems.”

“Seemingly small increases in mean values of climate variables can substantially increase the probability of an extreme event. For example the 10% increase in precipitation predicted for the Georgia Basin in the 2080s would increase the frequency of slope instability by 165%.”

Climate change projections outlined in the regional extension note were derived from the Pacific Climate Impacts Consortium’s regional climate summaries for the South Coast and West Coast, the Plan2Adapt tool used for projecting future climate conditions, and the ClimateBC model developed by the University of British Columbia.

Projections for the period 2041 to 2070 using the ClimateBC suggest the climate over the area of TFL 39 may warm, on average 2.7°C, from 1961-1990 averages.

While projected climate changes are likely to affect forest productivity, forest health and hydrological balances (e.g., drought stress) the magnitude and extent of the affects are uncertain due to the limitations of ecological and climate models, and to alternative plausible emissions scenarios.

I note, however, that even with better information on climate change there will be a range of reasonable management responses. Considerations of how to respond in anticipation of uncertain, potential future impacts and risks differ from those related to responding to known or ongoing processes. For example, it is not clear if either increases or decreases to current harvest levels would be appropriate in addressing potential future increases in natural disturbance due to climate change.

Having considered the information provided regarding climate change and the TFL 39 MP #9, I commend FLNRO staff for their work, most particularly the information on climate change as articulated in the 2016 regional extension notes, which help to improve our understanding of climate change and the potential effects this will have on forests. I find the results of past and projected warming trends helpful in understanding the dynamics of climate change occurring within TFL 39.

For this determination, I have considered the currently available climate change information. From this, I conclude that the level of uncertainty associated with climate change, and its implications for forest dynamics and management is too great to allow me to account for the potential timber supply impacts in this AAC determination. However, the requirement for the regular re-determination of AACs will ensure that as more information becomes available and the level of uncertainty is reduced, the necessary adjustments can be made. As summarized in the **'Implementation'** section, it is my expectation that FLNRO staff will continue to collect information, conduct analyses and monitor changes so that the appropriate forest management adaptations can occur within TFL 39.

Integrated Resource Management Objectives

- objectives for visual resources

A visual quality objective (VQO) is a resource management objective established for an area that reflects the desired level of visual quality based on the physical characteristics and social concern for the area.

VQOs in the North Island-Central Coast Natural Resource District were continued from previously established visual quality classes by order under Government Actions Regulation (GAR) Order Section 17 in December 2004, and VQOs for the Campbell River Natural Resource District and the Sunshine Coast Natural Resource District were legally established through separate orders under GAR Section 17 in December 2004 and June 2009, respectively.

VQOs, which apply to 50 508 hectares in TFL 39, were modelled in the base case for the Sunshine Coast Natural Resource District (Block 1) and for the Campbell River Natural Resource District (Block 2 and Block 5). The established VQOs for Block 3 were not modelled in the base case in error. The error omitted partial retention VQOs within Block 3 which cover 1511 hectares of productive forest containing 720 hectares of THLB. Recognizing that 720 hectares of THLB represents less than one percent of the total THLB in TFL 39 and based on the results of an assessment by FLNRO staff, I conclude that it is unlikely that the base case timber supply has been significantly overestimated from omitting VQOs within Block 3. This conclusion is further supported by subsequent analysis provided by WFP.

Having reviewed the information regarding VQOs in TFL 39, while recognizing that partial retention VQOs were not modelled for Block 3, I accept that the base case harvest level is not significantly inconsistent with management practices established for visual resources in TFL 39 and make no adjustments on this account. In **'Implementation'**, I direct the TFL holder to ensure all VQOs are incorporated in future analysis for TFL 39.

- wildlife tree retention and stand-level retention

Stand-level biodiversity management includes the retention of wildlife trees and wildlife tree patches (WTP) within or adjacent to cutblocks to provide structural diversity and wildlife habitat. As discussed under the *managed stand yields* factor, WFP is retaining trees on between 10 and 20 percent of the cutblock area on 57 percent of the area harvested in Block 1 and Block 2. This retention is consistent with the WFS objective to maintain a legacy of structural attributes from

the previous stands to enhance stand-level biodiversity. In all other areas within Block 1 and Block 2, WFP is leaving seven percent stand-level retention. In Block 3 and Block 5, WFP is leaving stand-level retention in accordance with the GBRO objectives for stand retention.

The amount of stand-level retention, as guided by the WFS is greater than is mandated by policy, regulation and land use plans. I am supportive of this example of innovative forest management to improve forest stewardship especially as this practice of leaving greater amounts of stand-level retention provides more biodiversity than is legally required. I encourage WFP to continue with such endeavours.

- recreation resources

The recreation inventory for TFL 39 identifies designated recreation sites and hiking trails. The inventory was completed in 1998 for Blocks 2, 3 and 5 and updated in 2001 for Block 1.

In 2006, an order was made under Section 5 of the GAR that identified significant recreation resource features for the Campbell River Natural Resource District, which comprises Block 2 and Block 5.

In Block 1, designated recreation sites were excluded from the THLB. Hiking trails, including the Sunshine Coast Trail (SCT) and Powell Forest Canoe Route portages, were not specifically excluded although 43 percent of these trails were removed from the THLB for other reasons. In their timber supply projection, WFP assumed that management objectives for trails within the THLB would be met using stand-level retention.

In Blocks 2 and 5, the areas containing identified recreation resource features covered by the GAR Order were removed from the THLB.

In Block 3, no area was excluded from the THLB for recreation resources.

Significant public comment was received regarding the SCT and the Powell Forest Canoe Route. Concern was expressed that the recreational values of these features are not being adequately maintained, with most people requesting a visual buffer to be placed along the SCT, and the Powell Forest Canoe Route.

During public review of the TFL 39 information package, the Powell River Parks and Wilderness Society commented that the 2002 Forest Stewardship Plan (FSP) for the area included legal requirements to maintain, at minimum a 10-metre reserve and a 20-metre management zone along the SCT except where the trail followed old road grades that could be used for future harvesting. They expressed concern that this protection of the SCT was significantly reduced when WFP replaced the Stillwater FSP with a new FSP prepared in 2007.

I note that in 2009 the Regional Manager of Recreation Sites and Trails established management principles for the Crown Land portions of the SCT to recognize the recreational values along the trail. These principles recognize that the SCT “is within the productive working forest and is part of the timber harvesting land base” and do not call for reserve buffers to be placed along the trail since canopy protected portions of the trail are provided in those sections that pass through Provincial Parks and Old Growth Management Areas.

District staff advised me that the assumptions applied for management of recreation features used in the analysis reflect current practices in TFL 39.

For this determination I accept that the management of recreation values assumed in the base case projection adequately reflect current management and I will make no adjustment to the base case on this account. However, given the public interest in the Sunshine Coast Trail, I expect the TFL holder to continue to work with all interested groups to maintain the recreational integrity of the Sunshine Coast Trail, as summarized in ‘**Implementation**’.

- cultural resources and features important to First Nations

In the base case projection, no area reduction was applied to the THLB in Block 1 and Block 2 specifically for cultural resources and features important to First Nations as it was assumed that management of the most common of these features, such as culturally modified trees (CMTs), is addressed through co-location with other reserve areas, riparian buffers or protected using stand-level retention. In Block 3 and Block 5, the THLB was reduced by 1.3 percent specifically to account for First Nation forest resources and features, including traditional heritage features; CMTs and monumental cedar which are covered by the rescinded SCCO objectives 4, 5, 6 and 7.

K’ómoks First Nation (K’ómoks), We Wai Kai Nation (We Wai Kai), Tlowitsis Nation, (Tlowitsis), Kwiakah First Nation (Kwiakah) and Wei Wai Kum First Nation (Wei Wai Kum) each separately expressed concern that cultural heritage resources, archaeological resources or monumental cedar were not adequately accounted for in the base case. WFP responded individually to each First Nation indicating that site-specific issues are managed during the cutblock layout phase in a manner that must comply with the *Heritage Conservation Act*. WFP indicated that for strategic-level analysis purposes it assumed that cultural resources and features will be managed in association with other areas excluded from the THLB.

Wei Wai Kum and Tlowitsis express serious concern regarding the harvesting of old-growth cedar and its impact on the sustainable availability over the long term of Large Cultural Cedar (LCC) in the sizes and with the characteristics necessary for the construction of traditionally important First Nations structures including canoes, Big Houses and totem poles.

We Wai Kai believe, as a result of insufficient attention by government, their Aboriginal Rights are being directly infringed upon as they have not been ensured a guaranteed, measurable and sustainable supply of LCC for their use. We Wai Kai requested government to acknowledge and solve this problem. They believe part of the solution involves increasing the protection given to monumental cedar and LCC, while also improving the planning and management to ensure a stable and sustainable supply of LCC. They also believe that having these concerns referenced in my AAC decision will motivate the implementation of solutions. We Wai Kai also supports adjustment to the AAC for these reasons as a form of accommodation.

I note that the N̓anwak̓olas Council is working with the Campbell River Natural Resource District to implement a Western Redcedar LCC inventory project aimed at improving information about the location, size and quality of LCC for use by First Nations in future consultation referrals, treaty negotiations, community development and First Nations Land/Resource management, and to create cultural facilities like Big Houses and Canoes. I am aware the N̓anwak̓olas Council has already initiated training of WFP planning staff and contractors on identifying LCC within the company’s Mid-Island Operation (TFL 39 Block 2).

While We Wai Kai recognized the forest companies, government and the N̓anwak̓olas Council have made substantial progress since October 2012 towards an LCC strategy, they request that until the LCC strategy is established and supported through regulation that all rare LCC be preserved.

Ministry staff advised me that since LCC can be obtained from areas outside of the THLB, such as wildlife tree patches, riparian area, reserves for meeting old forest representation, the proportion of THLB that would need to be managed for LCC – through additional reserves or extended rotation – is likely to have a negligible impact on timber supply. Staff have estimated that the projected LCC requirements for Nanwakolas could be met over an area equivalent to about four percent of the forested land base in Nanwakolas territory.

I note that WFP incorporated projections of cedar in MP #9 and provided localized estimates of cedar volume and age to some First Nations. In their communications with these First Nations, WFP noted that, although the information does not specifically identify the number of LCC it does indicate that a significant volume of old cedar occurs within TFL 39 over the projection time period.

I agree with the district staff and WFP that most of the future LCC requirements of First Nations is likely to be sustained in areas removed from the THLB and that an overestimation in the long-term timber supply from not adequately accounting for future LCC needs is likely negligible.

I am aware that some LCC is currently being identified in the THLB and retained during cutblock development. I am also aware that the volume of LCC trees harvested for First Nation use is included in the total volume that the licensee is entitled to cut under control provisions of their licence. For this reason I do not need to account for the volume of LCC trees harvested from the THLB that is incremental to the AAC.

In their 2012 response to the TFL 39 information package, Wei Wai Kum and K'ómoks separately requested that additional reserve areas be designated to protect important cultural and archaeological values within the H'Kusam Forest (also known as the "Hotel Block"), an area near the village of Sayward. WFP agreed in July 2013 to amend the OGMA at H'Kusam which increased its size from four hectares to 199 hectares. To offset the loss of THLB from the expanded H'Kusam OGMA, a similar area was removed from OGMA's in other parts of the TFL. Although, these OGMA changes were not reflected in the base case projection, the net effect on the THLB used in the base case projection is negligible.

In 2014, the H'Kusam Forest Study Area was established over the expanded OGMA to protect unique cultural features in the area. A proposed second phase may in the future increase the area of the H'Kusam Forest Study Area and any reduction in THLB that results from this is expected to be offset elsewhere in the TFL.

I commend WFP for facilitating these OGMA amendments, which ultimately improve the protection of CMTs and increase the contiguous area of low elevation old growth forest that better enables K'ómoks, Wei Wai Kum and We Wai Kai to demonstrate traditional practices and provides improved access to large cultural cedar.

I have considered the information on resources and features important to First Nations, the assumptions made in the base case, and comments made by First Nations. From this, I conclude that the current management regarding resources and features important to First Nations have been adequately accounted for in the base case projection and I will make no adjustments on this account.

I encourage the licensee and district staff to continue working with First Nations to identify and operationally manage culturally important resources and features, including LCC. In 'Implementation', I have issued instructions in this regard. The first is for the TFL holder and district staff to continue working with First Nations to identify and manage culturally important resources and features at both operational and strategic scales. The second is for the TFL holder and district staff to continue improving processes in which they engage First Nations and

undertake information sharing about these culturally important resources and features, and to monitor the actual outcomes and impacts of forest practices on them.

If new information regarding resources and features important to First Nations becomes available that significantly varies from the information that was available for this determination, I am prepared to revisit this determination sooner than the 10 years as permitted by legislation.

- Great Bear Rainforest

Block 3 and Block 5 fall within the area covered by the Coast Land Use Decision which is now known as the Great Bear Rainforest (GBR). Since July 2007, these blocks have been subject to the South Central Coast Order (SCCO). On January 28, 2016, after the TFL 39 MP #9 was released for public comment, the SCCO was rescinded and replaced with the Great Bear Rainforest Order (GBRO).

FLNRO staff compared the objectives under the new GBRO applicable to the South Central Coast (SCC) area with the objectives of the rescinded SCCO (which WFP modelled in their base case). They found that while there are several significant differences between the orders, many of the GBRO objectives have a corresponding objective in the rescinded SCCO and, for the purpose of projecting timber supply, the objectives are effectively unchanged between the orders. The objectives that are effectively unchanged between GBRO and the SCCO for the purpose of strategic-level timber supply projections are as follows:

- Objectives for identification Aboriginal Forest Resources and Aboriginal Heritage Features;
- Objectives for Important Fisheries Watersheds;
- Objectives for High Value Fish Habitat;
- Objectives for Aquatic Habitat that is not High Value Fish Habitat;
- Objectives for Forested Swamps;
- Objectives for Upland Stream areas;
- Objectives for Active Fluvial Units;
- Objectives for Red-Listed Plant Communities and Blue-Listed Plant Communities;
- Objectives for Stand Retention;
- Objectives for grizzly bear habitat.

I have reviewed how the above listed objectives were modelled in the base case and have concluded that the base case appropriately represents current management for these objectives or that uncertainties about these objectives have little influence on the projected timber supply. No further discussion on these objectives is included in this rationale.

Other GBRO Objectives applicable to the South Central Coast (SCC) are effectively different from the objectives in the rescinded SCCO or have no equivalent in the rescinded SCCO. I will discuss these objectives together with those factors where public or First Nations' input indicates uncertainty regarding the information used, modelling methods, or other aspects under consideration.

Objective for First Nations Information Sharing and Engagement

The GBRO includes an over-arching objective for First Nations information sharing and engagement that clarifies and reinforces the requirements for forest licensees to share information and engage with applicable First Nations in implementing all objectives in the Order. This includes making reasonable efforts to communicate, share information, engage in dialogue, and identify and resolve issues with applicable First Nations and includes provision and consideration of all relevant information about potential impacts on Aboriginal interests. FLNRO staff advised me that the consequence this objective, although not currently quantifiable, likely constitute a downward pressure on the timber supply modelled within the GBR. Therefore, I conclude that

management under this GBRO objective represents an unquantified reduction in timber supply projected in the base case, which I will discuss further under '**Reasons for Decision**'.

Objectives for Ecological Representation

The GBRO Objectives for ecological representation are significantly changed from the SCCO landscape-level biodiversity objectives. The GBRO objectives are to maintain a proportion of old forest for each site series group (SSG) over the GBR plan area based on the historical level of natural disturbance. Old forest is generally defined as a stand of trees 250 years of age or older but may also include structurally complex stands of climax species which may be younger than 250 years of age. There are two targets for each SSG: the Minimum Old Forest Retention Level (MOFRL) that must be met immediately and the Old Forest Representation Target (OFRT) that must be achieved by 2264.

In general, most ecosystems across the GBR have an OFRT at or above 70 percent of the Range of Natural Variability (RONV which is the range of dynamic change in natural systems over historic time periods). The MOFRL, which must be met immediately, is often less than OFRT. The gap between the MOFRL and the OFRT provides flexibility for licensees since it can be filled by old and non-old stands.

The base case projection was formulated assuming the now-rescinded SCCO objectives for landscape biodiversity applied to Blocks 3 and 5. These objectives were modelled spatially using strategic level reserve designs (SLRD) which are networks of reserve areas in each landscape unit (LU) that meet the representation targets specified in the objectives.

In July 2015, WFP provided Addendum #2 to MP #9 which contains sensitivity analysis that projected the timber supply for Blocks 3 and 5 under the new GBRO ecological representation objective. Results of the Addendum #2 analysis suggest that, relative to the SCCO, the GBRO representation objectives are more constraining for Block 3 and less constraining for Block 5. As a result the conventional harvest level from Block 5 in the first decade of the Addendum #2 projection was 21 600 cubic metres higher than the base case, while the conventional harvest level from Block 3 in the first decade was 8700 cubic metres lower than the base case.

I note that the first projection in the Addendum #2 analysis allowed for the controlled contribution of 5000 cubic metres from non-conventional harvest, the same amount as the base case, while an alternative projection allowed for a higher contribution of non-conventional harvesting in Block 5. I will further discuss the contribution of volume from non-conventional harvesting under *non-conventional harvest area*.

The GBRO ecological representation objectives were modelled aspatially (i.e., reserve areas were not delineated spatially) using the MOFRL and OFRT listed in a non-legal guidance table. This guidance table was created to aid forest planners in assessing the local-level impact of the legally specified targets. It provided a distribution of MOFRL and OFRT by landscape unit and SSG which collectively achieve the legally specified plan area objectives.

Kwiah First Nation inquired about the extent to which aspatial modelling of the GBRO would affect commercial logging within Kwiah territory relative to other parts of the GBR. FAIB staff confirmed that the overall retention amount assumed for Block 5 is lower than the retention amounts for the SCC sub-plan area and the entire GBR area. Staff also confirmed, as stated in the report, that the long-term old forest retention modelled for Addendum #2 are significantly lower than the base case projection. It is for these reasons that the conventional harvest volume projected for Block 5 in the Addendum #2 analysis is higher than the base case.

In response to Kwiakah's concerns regarding the lower old growth targets in Block 5, I note that there is uncertainty about how the plan area GBRO representation objectives will eventually be distributed among landscape units. I also note that target distributions in the guidance table are subject to periodic revisions and that the landscape reserve design (LRD), which will be developed for these blocks following consultation with First Nations, may delineate different amounts of reserve area within the THLB as was modelled for Blocks 3 and 5. I am also mindful that, at the time of my determination, implementation of the GBRO is in a formative stage and that more experience will be needed by forest managers before the implications of the new objectives are fully understood at the operational level.

Given the uncertainty about old forest retention that will be required in the Phillips LU in order to meet the full scope of GBRO objectives, I am inclined to be cautious in my expectation regarding the old forest harvest levels that can be sustained in Blocks 3 and 5 over the next 10 years. I believe the higher overall old forest retention levels modelled for these blocks in the base case projection to be a more reasonable basis for projecting the timber supply from these blocks under the GBRO than the Addendum #2 projection. Therefore, I will make no adjustment to the base case harvest level to account for the GBRO Objectives for Ecological Representation in Block 3 and Block 5.

Objectives for Landscape Reserve Designs

A Landscape Reserve Design (LRD), similar to a SLRD, is a system of delineated reserve areas in a LU designed to meet the MOFRL and OFRT, and simultaneously contribute to the protection of Aboriginal heritage features, Aboriginal forest resources and other land use objectives. Under these objectives, a LRD must be in place within five years of establishment of the GBRO for a LU that will have activity in the next five years, or completed prior to declaration of cutblocks and roads for a LU with no activity planned for the next five years.

At the time of my AAC determination, LRDs reflective of the GBRO have not been finalized for Blocks 3 and 5, although a draft LRD for Block 3 existed. A sensitivity analysis, described in Addendum #2, applied the draft LRD for Block 3 in place of aspatial assumptions. The projected harvest level for this scenario was slightly reduced in Block 3 compared to the projection with the aspatial method.

As noted in *Objectives for ecological representation*, the LRD, which will eventually be implemented in Blocks 3 and 5, may delineate a different reserve area than was assumed in the base case analysis. This may mean future timber supply in these blocks will vary from the projection. Based on the information available to me at this time, I will make no adjustment to the base case amount on this account. However, my expectation is that future timber supply analyses and AAC determinations will take into account the spatially-explicit LRD in Blocks 3 and 5.

Objectives for Managed Forest and Natural Forest

The Objectives for Managed and Natural Forest represent an agreement on the total area of forested land in the plan area that is sufficient to support a viable commercial forest sector and the maintenance of ecological integrity. These objectives apply to the entire GBR. Since there are no equivalent objectives in the rescinded SCCO, it was not deliberately accounted for in the base case projection.

Until LRDs, which will identify how the managed and natural forest objectives will be achieved in Blocks 3 and 5 are finalized, it is not possible for me to assess the consistency between the analysis assumptions and these objectives. I will make no adjustment on this account.

Objectives for Restoration Zones and Restoration Landscape Units

The intent of this objective is to emphasize restoration and recruitment of old forest in landscape units where the current level of old forest is below 30 percent. The Phillips LU (Block 5) is a Restoration Landscape Unit under the rescinded SCCO and the GBRO. The GBRO objective requires that, within two years of the GBRO establishment, a minimum of 30 percent of each SSG be established as a restoration zone in which the forest is to be restored to old forest condition.

These objectives were not modelled in the MP #9 analyses. WFP has indicated that, since the full SSG targets were to take effect immediately in the Addendum 2 analyses, they did not anticipate these requirements would have a significant incremental impact on the projected timber supply for Block 5. I will make no adjustment on this account.

Aboriginal Heritage Features, Historical Culturally Modified Trees, Aboriginal Tree Use and Retention of Western Yew

The objectives for First Nations set out in Division 2 of the GBRO replace objectives 3 through 7 in the rescinded SCCO which were established to protect and maintain First Nations' traditional forest resources, First Nation's traditional heritage features, culturally modified trees, monumental cedar, and stand retention for western red- and yellow-cedar. The intent of the GBRO for these objectives are similar to that of the SCCO objectives 3 through 7, which is to ensure forest resources important to and traditionally used by First Nations for food, social, treaty or ceremonial purposes including monumental cedar are managed and protected for present and future First Nation use.

In their analysis, WFP assumed First Nations' values covered by SCCO objectives 3 through 7 were sufficiently addressed through various land base allowances or yield adjustment applied for other reasons, including non-recoverable timber losses, OGMAs, wildlife trees, stand level retention, area reductions applied for cultural heritage resources within Blocks 3 and 5, and reductions to the THLB for other reasons.

Kwiakah First Nation commented that they found it incomprehensible that the 1.3 percent incremental reduction to the THLB with respect to SCCO objectives 4 through 7 could sufficiently accommodate the full and modern expression of Aboriginal Rights and Title. They also questioned how having 90 percent of the harvest within Block 5 coming from old forests is commensurate with the protection of monumental cedar and LCC.

WFP replied to Kwiakah indicating that due to the coinciding nature of these objectives and the fact that landscape-level reserves can partially address them, the incremental impact to the THLB is reduced. They cited an example where cedar trees retained within a cutblock concurrently address objectives for monumental cedar and stand level retention of western redcedar. WFP also provided information about how the volume of cedar stands in Block 5 is projected to change in the base case. This information shows that, with SCCO objectives and limited non-conventional harvesting, old cedar within the non-contributing land base is projected to increase over time.

In response to the comments by Kwiakah, I note that the assumptions applied in the analysis were formulated to approximate the timber supply implications of the objectives for First Nations. They do not limit operational management activities that may be required in the future to meet the GBRO objectives or other government-to-government commitments. The assumptions were

deemed by WFP to be the best available information about how much harvestable land will need to be set aside from operations to achieve the objectives.

In conclusion, I am satisfied that the base case applied the best available information about the amount of THLB that will be set aside from harvesting in order to achieve GBRO objectives for First Nations forest resources and features. However, there is significant uncertainty about this information and I will ask that licensees and district staff work with local First Nations to collect locally applicable information about the management for these resources and features in TFL 39 before the time of the next AAC determination, which I have addressed in **'Implementation'**.

Objectives for grizzly and black bear dens

The intent of these objectives is to conserve bear dens during forestry operations. Since there are no equivalent objectives in the rescinded SCCO, it was not deliberately accounted for in the base case projection.

Implementation guidance for these objectives suggests that bear den trees can be incorporated into stand retention or other reserves to minimize impact to timber. It also indicates grizzly bear dens are generally located at higher elevations in old forests and sparsely treed areas with good drainage. The Large Carnivore Specialist employed by the Ministry of Environment (MOE) indicated that denning opportunity is scattered throughout unharvested and harvested higher elevation areas. For these reasons I do not anticipate management under these objectives to have a significant incremental impact on future timber supply in Blocks 3 and 5, and I will make no adjustment on this account.

AAC partition for the GBR

While being mindful of the uncertainty that exists with respect to the implementation of the GBRO, I am satisfied the information presented to me in the base case provides an adequate basis from which I can assess the timber supply for Block 3 and Block 5 for this determination. However, in recognition of the existing differences in forest management between the GBR (Blocks 3 and 5) and the balance of the TFL (Blocks 1 and 2), I am establishing a partition in the AAC attributable to the two separate areas. I will consider the appropriate levels for the partitioned AAC in the context of my other considerations in my **"Reasons for Decision"**.

- research installation areas

Within TFL 39, there are 62 government research installations occupying 275 hectares in addition to the numerous corporate research installations that WFP maintains. The area impacted by these research installations were not explicitly excluded from the THLB in the base case projection.

The objectives of research areas vary, with some designed to measure changes and implications following harvest, and others are designed to compare unharvested area with harvested forests. FAIB staff have advised me that some stands within the government research installations may be constrained from harvesting within the short term. WFP indicated harvesting is not constrained by any of their corporate research installations.

I recognize that the THLB for TFL 39 may be overestimated by the area within government research installations and for this reason the base case projected timber supply may be overestimated in the short- and mid-term by 0.2 percent. This equates to an overestimation of timber supply of up to 2700 cubic metres in the short term and 2400 cubic metres in the mid term. I will discuss my considerations of the impact from research installations on timber supply under **'Reasons for Decision'**.

Section 8 (8) (a) (vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber

In addition to the factors listed under this section in Table 1 above, I have also considered the following factors, which require additional comment.

- non-conventional harvest areas

The timber supply analysis examined the implications of varying contributions from the non-conventional harvesting areas in Blocks 1, 2 and 5. These are areas where timber harvesting requires the use of long-line cable or helicopter-based systems and are often situated in steep terrain or in areas where road construction opportunity is limited.

In the base case, the annual volume from non-conventional harvest areas was limited to 95 000 cubic metres which aligns with the volume harvested from non-conventional areas in TFL 39 during the years 2000 to 2010. WFP reported that lumber markets have improved since 2012 and that higher lumber prices should allow more harvesting from high cost non-conventional harvesting areas. The company provided a sensitivity analysis that increased the non-conventional harvest in the TFL over the first 40 years by 86 100 cubic metres. The additional volume, includes 39 200 cubic metres in Block 1, 42 800 cubic metres in Block 2 and 4100 cubic metres in Block 5. They recommended that this short-term increase in the harvest be factored into the TFL 39 AAC, stating that it would provide opportunity to “take advantage of the expected higher lumber prices - to harvest additional volume from the higher cost non-conventional land base”. They also suggested that harvesting non-conventional areas in the first 40 years would avoid the requirement to maintain large log handling equipment long into the future.

The Addendum #2 analysis included a sensitivity projection that assumed an increased harvest from non-conventional harvest areas in Block 5 combined with the GBRO representation targets. In that projection the short-term non-conventional harvest level for Blocks 3 and 5 combined was increased from the base case by 27 500 cubic metres over the first 40 years of the projection.

Kwiah First Nation expressed concern that increased harvest in non-conventional harvest areas in Block 5 may lead to landslides or other less severe erosion that may impact waterways. In “*unstable terrain*” I note that, although I recognize that the risk of landslide is higher in steep slope areas, the landslide hazard mapping modelling and expert assessment of terrain stability applied by WFP during operational planning are adequate measures to ensure primary forest activities do not cause landslides that would have a material adverse effect in relation to forest resource values in TFL 39.

Kwiah First Nation also commented that the harvest of non-conventional areas within Block 5 will result in further degradation of grizzly bear habitat in the Phillips River watershed. They commented that the proposed amount of non-conventional harvesting demonstrates a specific objective to harvest mid-elevation cedar within Block 5. They believe harvesting the mid-elevation cedar will limit the abundance of grizzly bear and will remove the last of the remaining monumental cedar, thus impacting their economic development interests and their supply of cedar for traditional use.

WFP replied to Kwiah that the amount of non-conventional harvest proposed within Block 5 is not due to a specific objective to harvest the mid-elevation cedar as suggested by Kwiah. Rather, WFP indicated, that it is a result of having two-thirds of the available volume within Block 5 located within non-conventional harvest area in combination with the spatial distribution of this volume.

A report titled, ‘*Grizzly Bear Denning Habitat Suitability Assessment – TFL 39 - Clearwater River and Phillips Camp*’, provided by WFP, concluded that the probability of grizzly bear dens occurring within the area currently proposed for harvest is low as the attributes of a suitable den site are often outside the area currently proposed for harvest. The report indicates that potentially suitable denning habitat in the Phillips River watershed includes areas with suitably dry substrate for denning potential on slopes greater than 45 percent in the Coastal Western Hemlock/ Mountain Hemlock (CWH/MH) transition zone.

The MOE Large Carnivore Specialist advised me that the Phillips River watershed is one of the few premier grizzly bear locations on the south coast of British Columbia. The specialist also confirmed that grizzly bears prefer to den at higher elevation within the area of transition from the CWH/MH transition zones.

I note that 1341 hectares of “Class 1” grizzly bear habitat are protected within three WHAs along the Phillips River within Block 5.

In making my decision, I have reflected upon the concerns raised by Kwiakah about non-conventional harvest in Block 5, the information provided by the WFP biologist and the advice of the MOE Large Carnivore Specialist. I am also mindful of the uncertainty that exists with respect to the implementation of the GBRO in Block 5 which I noted in ‘*objectives for ecological representation*’. After considering this information, I am inclined to be cautious in my expectation about the contribution from non-conventional harvesting areas in Block 5, which is primarily from old forest, at levels above the base case projection. I conclude the volume from these areas in the base case provides a reasonable balance of harvest opportunity in these areas, the uncertainty about implementation of the GBRO and the concerns raised by Kwiakah.

For Block 1 and Block 2, the elevated harvest from non-conventional areas projected in the sensitivity analysis increased the projected short-term timber supply by 82 000 cubic metres. Although I recognize that an AAC at the lower base case level would not prevent the licensee from harvesting this amount of non-conventional volume should they choose to do so, I accept WFP’s rationale that it will be more efficient to mobilize harvest equipment if the short-term harvest level is set at a higher level than in the base case for these blocks.

Although I am confident that WFP is capable of harvesting the non-conventional volume at this increased level, I note that in the period from 2003 to 2012 the average annual volume from non-conventional harvest areas is lower than the amount assumed in the sensitivity forecast. If over the term of this AAC WFP is unable to harvest the projected amount from non-conventional harvest areas, it is important that volume attributed to these areas is not taken from the conventional harvest areas.

Based on the considerations described above I conclude that the addition of 82 000 cubic metres per year to the base case timber supply for Blocks 1 and 2, attributed to non-conventional harvest areas, does not present a risk to the long term timber supply. Therefore, in ‘**Reasons for Decision**’, I have accounted for an underestimation of the base case timber supply from non-conventional harvest areas in Blocks 1 and 2 by this amount.

Representatives of the Nanwakolas RP First Nations and the Province of British Columbia have recommend that I establish an AAC partition for the conventional harvest area within Block 2. I agree with this recommendation in that a partition will help ensure that the significant contribution of volume expected from the non-conventional area is not taken from the conventional harvest area, however I believe this partition is appropriately applied to the conventional harvest area for Blocks 1 and 2.

As summarized in '**Implementation**', I expect the TFL holder to continue to engage with Kwiakah and other First Nations with interests in Block 5 of TFL 39, to ensure that First Nations' interests, both known and yet undiscovered, are appropriately considered during operational planning in areas of steep slope or unstable terrain in Block 5.

- harvest performance

Over the five-year cut control period ending December 31, 2013, WFP harvested 99 percent of the AAC available to them. Prior to 2009, a total of 1.2 million cubic metres of unharvested volume had accumulated in the TFL. Of this unharvested volume, 400 000 cubic metres was designated by FLNRO for future disposition to licences held by First Nations.

To account for the unharvested volume to be carried forward, the forest inventory in the analysis was depleted by 122 285 cubic metres, which is the volume that had been disposed of at the time of the information package. The balance of unharvested volume, 277 715 cubic metres, represents less than one percent of the current TFL growing stock. While I accept the base case analysis overestimates the timber supply on account of this portion of the unharvested volume to be carried forward, I consider the difference insignificant and I make no adjustment on this account.

- avoidable harvest waste

The merchantable volume that remains in a cutblock following harvest is known as avoidable waste. From 2009 to 2012, about 240 000 to 275 000 cubic metres per year of avoidable waste has remained following harvest on TFL 39.

District staff have indicated that the levels of avoidable harvest waste within TFL 39 are greater than they believe is reasonable. They are concerned that trees left on the ground reduce the number of seedlings that can be planted in some areas. They are also concerned that the live trees left as standing waste will shade and reduce the growth of regenerating trees.

I note the inventory volumes and stand yields used in the base case projection have been reduced for decay, waste, breakage and cull (Z) grade volume. The inventory volumes are reduced by 7.82 percent on this account and the stand yields have similar adjustments. In addition, avoidable waste is measured and charged against the AAC. As such, I do not need to account for the volume of avoidable or unavoidable waste.

The government harvest billing system suggests the level of avoidable waste realized within TFL 39 is lower than in some other management units. I am also aware that WFP provides volume that would otherwise be retained as avoidable waste to bioenergy facilities when harvest is within close proximity of these facilities. Nevertheless, I am concerned that the level of avoidable waste, as reported for the period 2009 to 2012, is greater than it should be.

While recognizing the challenges of reducing avoidable waste, especially from area harvested by helicopter and from blocks that are at greater distances from bioenergy facilities, I encourage WFP to utilize as much of the volume as is possible. As summarized under '**Implementation**', I expect the TFL holder to monitor and report the levels of waste by block to district staff to improve the information available for the next timber supply review and AAC determination.

While the issues of avoidable harvest waste impart some uncertainty, I am satisfied the base case harvest projection adequately reflects current management and I will not make any adjustment on this account.

First Nations considerations

- First Nations consultation

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

There are eleven First Nations that have traditional territories that encompass parts of TFL 39. They are the: Klahoose First Nation, Tla'amin (Sliammon) First Nation, shíshálh (Sechelt) Nation, Gwawaenuk Tribe, Dzawada'enuxw (Tsawataineuk) First Nation, Xwe'malhkwa (Homalco) First Nation, K'ómoks First Nation, Tlowitsis Nation, Kwiakah First Nation, Wei Wai Kum (Campbell River) First Nation, and We Wai Kai (Cape Mudge) Nation.

N̓anw̓akolas First Nations

The N̓anw̓akolas First Nations are a part of the Kwakwaka'wakw – a culturally defined group of First Nations that share the same language and whose traditional territories are located in the Northern Vancouver Island and adjacent South Central Coast areas of British Columbia. The outer boundary of the N̓anw̓akolas First Nations overlaps Blocks 2 and 5 within TFL 39; Blocks 1 and 3 are external to the N̓anw̓akolas territory.

The N̓anw̓akolas First Nations are represented by the N̓anw̓akolas Council which negotiates land use and marine planning agreements, as well as economic development initiatives on behalf of its member bands outside of the BC Treaty process. There are six member First Nations of the N̓anw̓akolas Council of which four have traditional territory that encompass parts of TFL 39: K'ómoks, Tlowitsis, Wei Wai Kum, and We Wai Kai. All have signed the current N̓anw̓akolas-BC Framework Agreement (Spring 2014) which is also referred to as the N̓anw̓akolas Strategic Engagement Agreement (SEA). Kwiakah became party to the framework agreement in September 2010 and withdrew effective July 5, 2016.

The SEA is a strategic-level agreement that defines the engagement levels and processes for various administrative decisions made by the Province. The Engagement Framework contained within the SEA, constitutes the processes by which the Province intends to fulfill consultation obligations owed to the N̓anw̓akolas First Nations with respect to asserted or proven aboriginal rights of the N̓anw̓akolas First Nations. The N̓anw̓akolas Referrals Clearinghouse is the agency that provides coordination for the implementation of the SEA.

N̓anw̓akolas Reconciliation Protocol

On July 29, 2011, the N̓anw̓akolas Council and five of the N̓anw̓akolas First Nations (K'ómoks First Nation, Tlowitsis Nation, Mamalilikulla-Qwe'Qwa'Sot'Em First Nation, Da'naxda'xw-Awaetlala First Nation, Gwa'sala-'Nakwaxda'xw First Nation) and the Province signed the N̓anw̓akolas Reconciliation Protocol (RP). We Wai Kum First Nation joined the RP on May 2, 2016. The RP includes provisions for shared decision making, carbon offset sharing, revenue sharing, economic opportunities, economic strategies, community well-being, stakeholders interests and resourcing for RP implementation. Particularly relevant to this AAC determination are the provisions for shared decision making and economic opportunities, as I will explain further below.

The N̓anw̓akolas First Nations Letter of Understanding was signed by the Province and the N̓anw̓akolas Council Society on behalf of the five Reconciliation Protocol First Nations on

April 16, 2013. This document brought into effect the Shared Decision Making process of the RP and describes the steps that must be taken for shared decision making for three initial strategic forest management decisions: AAC determinations, decisions on land use objectives, and other strategic forest management decisions as agreed to by both parties. For this AAC determination the parties have shared information and had discussions about the projected timber supply for TFL 39 and have provided me with their common views and recommendations related to AAC. I will discuss this further under 'Nanwakolas First Nations shared decision making.

On April 12, 2013, and in accordance with Section 1.1 of the above Shared Decision Making Process, the Minister of Forests, Lands and Natural Resource Operations provided the chief forester with a letter detailing the government's economic and social objectives for First Nations who signed the Reconciliation Protocol. This letter is included in Appendix 5 of this rationale and I will discuss my considerations of its provisions under 'Minister's Letters'.

Atmospheric sharing agreements

In 2016, the Nanwakolas First Nations who are partners in the Nanwakolas Reconciliation Protocol, signed an Atmospheric Benefit Sharing Agreement with the province. This agreement is enabled by the Forest Carbon Offset Protocol that was developed by the Province and the Pacific Carbon Trust. Following the protocol, Nanwakolas First Nations has undertaken a carbon offset for areas within the GBR to generate and sell carbon credits within local and international carbon markets. The agreement is in effect until March 31, 2025 with periodic reviews to be done every five years. I have discussed this under 'Nanwakolas First Nations carbon project'.

Treaty processes

The Klahoose, Kwiakah, Tlowitsis, Wei Wai Kum, We Wai Kai, shíshálh and Xwe'malhkwa First Nations are negotiating at Stage 4 – Agreement in Principle in the BC Treaty Commission (BCTC) process. K'ómoks First Nation is negotiating at Stage 5 – Final Agreement in the process. They achieved Agreement-in-Principle in March 2012. Tla'amin Nation ratified and implemented a treaty April 5, 2016.

The Gwawaenuk Tribe and Dzawada'enuxw First Nations are not involved in the BCTC process and are members of the Musgamagw Dzawada'enuxw Tribal Council.

Consultation process

A general review of available information was conducted by FLNRO for each First Nation. Information reviewed included available ethno historic reports, traditional use studies, archaeological records, wildlife assessments, court declarations or comments on any specific Aboriginal interests, information previously shared by the First Nation(s), BC Treaty Commission information and existing agreements, and notes from related consultation processes. The findings of these reviews were communicated to the First Nations as required and the initial level of consultation was derived by FLNRO staff based either on this information or as specified in agreements.

For First Nations which have negotiated treaties or contractually agreed upon consultation processes, FLNRO staff followed those agreed upon processes. For First Nations that do not have a specific consultation process agreement in place, FLNRO staff were guided by the document, 'Updated Procedures for Meeting Legal Obligations When Consulting First Nations' (May 7, 2010) and Government consultation policy. These guidelines and policy are based on the consultation principles set out in the Supreme Court of Canada Haida decision (2004) as amended or modified through subsequent court decisions. Consideration was also given to the June 2014 Supreme Court of Canada Tsilhqot'in decision, which provides additional detail in the assessment of the strength of Aboriginal title claims.

Over the course of the timber supply review, the Provincial consultation process had to be responsive and adaptive to the changing landscape related to consultation process agreements, as many of the original Interim Agreements on Forestry and Range Opportunities (FRO) expired, new Forest and Range Consultation and Revenue Sharing Agreements (FCRSA) were negotiated, First Nations joined or withdrew from under the Strategic Engagement Agreement (SEA), and others participated in shared decision making under a Reconciliation Protocol (RP).

For those First Nations who at start of consultation were signatory to the Nanwakolas SEA (i.e., K'ómoks, Kwiakah, Tlowitsis, Wei Wai Kum, We Wai Kai and 'Namgis First Nations), engagement was predetermined in the SEA at Engagement Level 4 (Deep). For those non-SEA First Nations who are signatory to a Forest Consultation and Revenue Sharing Agreement (FCRSA), engagement was suggested at Level 5 (Normal) in accordance with those agreements. These include the Dzawada'enuxw, Quatsino, shíshálh, Sliammon and Xwemalhkwa First Nations. For all other First Nations, including Gwawaenuk Tribe, Klahoosle, and Kwakiutl, consultation was undertaken in accordance with the Provincial consultation guidance that was relevant and current to the time. Consultation at the Normal level on the Haida spectrum was recommended for these First Nations. I note that the traditional territories of the Quatsino, Kwakiutl and 'Namgis First Nations overlapped Block 4 in TFL 39 which was recently transferred to TFL 6 (January 1, 2015).

FLNRO staff led the consultation process for the TFL 39 AAC determination and MP #9 approval. WFP undertook significant information sharing and engagement with First Nations throughout the timber supply review process. In June 2012, the process was initiated through the sharing of the Information Package with all First Nations. Letters sent to the First Nations indicated that two administrative decisions were pending; the AAC determination for TFL 39 and the approval of MP #9. The letters invited comment on the draft Information Package and confirmed that further consultation would occur with release of the draft management plan and analysis report.

In July 2013, the information sharing process continued for all non-SEA First Nations with WFP sharing the draft MP #9 and associated timber supply analysis for TFL 39. Concurrently, FLNRO initiated formal consultation with non-SEA First Nations through correspondence which described the AAC determination process, provided an initial assessment of interests and impact, and recommended an appropriate engagement level. In August 2013, WFP sent a copy of the draft MP #9 and associated timber supply analysis to the Nanwakolas Referrals Office and to the SEA signatories. Concurrently, FLNRO initiated formal consultation on the AAC determination and MP #9 approval with all SEA First Nations following the Nanwakolas SEA at Engagement Level 4.

While much of the formal consultation on the Draft MP #9 and associated AAC determination had concluded by May 2014, additional consultation was commenced with the Nanwakolas and Xwe'malhkwa First Nation (Xwe'malhkwa) regarding Addendums 1 and 2 to Draft MP #9, which provided sensitivity analyses to examine the possible changes to non-conventional harvest levels and impact of the implementation of the GBRO in Block 3 and Block 5. The consultation on the MP #9 addenda concluded June 6, 2016, with the Nanwakolas, and June 13, 2016 with Xwe'malhkwa.

Additionally, as with all timber supply reviews, the Province continued to accept and respond to additional or new information from First Nations up to the time of this decision.

The consultation response that has been received to date, specific to each of the First Nations is described in the following sections.

Non- Strategic Engagement Agreement (SEA) First Nations

Tla'amin First Nation (Tla'amin) indicated by e-mail on July 16, 2012, that they had no comments regarding the Information Package. On July 29, 2013, Tla'amin responded in a letter that they had no concerns with the Draft MP #9 or AAC determination for TFL 39 and they provided their "conditional approval" for the decision. They also advised that they expect to be contacted if any archaeological features are discovered on the TFL and that they would be interested in being extended employment opportunities in exchange for their support.

shísháhlh Nation commented on the Draft MP #9 in a letter sent October 15, 2013. In the letter, they identified that their interest was in Block 1 which overlaps their traditional territory over which they assert Aboriginal Title and Rights, including the lands, waters and resources. They commented that in general they find the Draft MP #9 to be both extensive and comprehensive, and the information is reasonably detailed. They found some information deficient, and in some cases unsubstantiated and unverified (e.g., inventory, TIPSY outputs, analysis units, growth rate assumptions for understory stands, long-run sustained yield) and suggested an explanation of the optimization approach be appended to the analysis. I discussed my consideration of these concerns under 'managed stand yields'.

Xwe'malhkwa sent a letter to WFP on July 9, 2012, requesting a meeting with WFP and FLNRO to discuss the Information Package. The meeting occurred on July 26, 2012. Following the meeting, on August 13, 2012, Xwe'malhkwa, provided written comments on the Information Package which expressed concern about the negative impacts that the SCCO would have on future timber supply in Block 5 and the potential of diminished opportunities for jobs and income for Xwe'malhkwa who have been a significant participant in the forestry industry in the area. On May 4, 2016, ministry staff and WFP met with Xwe'malhkwa representatives to discuss Addendum #2 of the Draft MP #9. At that meeting, Xwe'malhkwa representatives reiterated their concern about diminished economic opportunities' from a lower AAC and their expectation for a greater level of involvement in forestry activities in the area through partnership with other licence holders.

Klahoose First Nation, Gwawaenuk Tribe, and Dzawada'enuxw First Nation (previously known as Tsawataineuk) did not provide any response to information sharing or consultation.

Strategic Engagement Agreement (SEA) First Nations

Engagement under the SEA, led by FLNRO district staff and coordinated by the Nanwakolas Referrals Office, involved the K'ómoks, Kwiakah, Tlowitsis, Wei Wai Kum and We Wai Kai First Nations.

Wei Wai Kum, K'ómoks and Tlowitsis individually responded to WFP regarding the Information Package, in letters sent in August 2012. All three nations indicated that Block 2 is within their traditional territory, and all raised concern over a lack of explicit reductions for cultural heritage resources in the timber supply analysis. Wei Wai Kum, and K'ómoks also expressed concern over further development within the H'kusam Forest near Sayward where there are significant cultural and archaeological values. In addition to the response from WFP under 'resources and features important to First Nations', I have addressed these concerns in the appropriate sections of the rationale document and have issued instruction in '**Implementation**' regarding culturally important resources.

In their response to Draft MP #9, sent through the Nanwakolas referral office on November 4, 2013, K'ómoks advised that Block 2 is within the K'ómoks Statement of Intent and asserted traditional territory, within which they expressed an interest in maintaining their rights and access to resources. In the letter, K'ómoks acknowledged that WFP had shown increased effort in working to quantify and assist in the development of a large cultural cedar (LCC) Strategy. K'ómoks also advised that their most important request was to secure the 'second phase' of the H'Kusam Forest Area as I discussed under 'cultural resources and features important to First Nations'.

Thlowitsis Nation provided FLNRO with its response to the consultation on Draft MP #9, in a letter sent through the Nanwakolas referral office, dated November 1, 2013. They advised that Block 2 is within their traditional territory and reiterated their concern that there were no explicit reductions for cultural heritage resources and that harvesting of old growth cedar would impact the long term sustainable availability of LCC. They expressed a lack of confidence that the protection of features such as culturally modified trees (CMTs) would be adequately protected through existing reserves. In a follow-up letter, WFP provided additional information about the base case projection that showed a significant volume of old cedar will be maintained on the land base over time. WFP also indicated that their staff and contractors involved with operations in TFL 39 Block 2 had undergone training on LCC surveys. They advised that information on LCC collected during planning would be shared in accordance with the Nanwakolas/WFP Info Sharing Protocol.

In a letter dated November 18, 2013, sent through the Nanwakolas referrals office, We Wai Kai provided FLNRO with its response to the consultation on Draft MP #9. As with other participating Nanwakolas First Nations, We Wai Kai emphasized the need for a better planning and management tool for the preservation of LCC. They also expressed their view that the chief forester has the capacity, under Section 8 of the *Forest Act*, to improve the situation concerning the stable supply of LCC in TFL 39 and suggested that past inattention to LCC was a direct infringement upon their Aboriginal Rights. We Wai Kai also acknowledged that substantial progress on the concept of a LCC Strategy had been made since October 2012, with government and industry involvement while also requesting that until such time that the LCC Strategy is completed that all rare LCC be preserved. On May 7, 2014, WFP replied to We Wai Kai in a manner similar to their reply to the Thlowitsis; they provided information about the projection for old cedar volume in Block 2 and outlined the company's commitment to collecting and sharing information about LCC. I addressed LCC under 'resources and features important to First Nations'.

Kwiakah First Nation provided a response to Draft MP #9 in a letter November 8, 2013. Citing earlier letters submitted from the nation and their legal counsel during a period between March 8th, 2013, and August 26th, 2013, Kwiakah made clear their broad concerns about the impacts of an AAC determination on their Aboriginal rights, as well as specific concerns about the impacts of future logging activities in the Phillips Arm area. They advised that the Phillips Arm area was the site of a traditional Kwiakah village, Maytsayno, as well as the location of their successful eco-tourism business. In their response, Kwiakah suggested that, given the obvious strength of their asserted claims in the area, consultation respecting the proposed decisions be in accordance with Engagement Level 5, or deep, under the SEA.

The November 8, 2013, letter from Kwiakah outlined a number of concerns about Draft MP #9, each of which I have addressed in earlier sections of the rationale document. They expressed concern with WFP's projection for old growth logging in Block 5, which they believe is inconsistent with the SCCO objective for monumental cedar. They expressed concern related to slope stability and debris and the impacts of recent landslides on and near their reserve lands. They questioned WFP grouping of Blocks 3 and 5 in the analysis. They expressed concern about

WFP projections for logging using non-conventional harvesting methods that may pose landslide and safety concerns. They expressed concern that WFP may have a specific objective to log mid-elevation cedar from within Block 5 which would cause additional adverse impacts upon grizzly bear and grizzly habitat. Finally, Kwiakah requested information on how the current AAC was set for Block 5 as well as information about the analysis assumption regarding SCCO objectives First Nation forest resources and features.

On March 24, 2016, legal counsel for Kwiakah sent a letter to the ministry responding to Addendum #2 of the MP #9 stating that the proposed harvest level for Block 5 in the addendum gives no consideration to the Aboriginal rights and title, or the traditional land use patterns of Kwiakah First Nation. The letter describes information obtained by Kwiakah about the impacts of commercial logging in the Phillips Arm area on two important aspects of Kwiakah Aboriginal rights and title: Kwiakah's bear-viewing business, a primary economic activity within its traditional territories and is an expression of the economic component of Kwiakah Aboriginal title; and Kwiakah's domestic and commercial rights to fish salmon that is dependent on the well-being of the salmon populations.

The information described in the March 2016 letter was drawn from two reports provided by Kwiakah. The first of these, which is titled, '*A Cumulative Effects Review & Sufficiency Analysis of Ecosystem-Based Management (EBM) In The Phillips Grizzly Bear-Salmon Ecosystem On The BC South Coast*', assesses how land use practices, including logging, may have impacted – and may continue to impact – grizzly bears and salmon, and Kwiakah's grizzly bear-viewing business in the Phillips River watershed. The report places a particular focus on the potential disruptions of high-quality habitat within roaded areas. The report also assessed impacts from logging to the edge of critical riparian areas and the loss of secure habitat for female grizzlies with young. The report conclusion is that 'logging in the Phillips watershed by WFP and its predecessors have surpassed all measurable thresholds by which grizzly bears are known to be able to maintain a viable population.' The report author recommends 'implementing a moratorium on any further logging in the Phillips until a grizzly bear recovery plan is in place that goes well beyond the insufficient EBM guidelines under the South Central Coast Order'.

The MOE's Large Carnivore Specialist also provided me with his opinion regarding the potential impact of commercial harvesting, as projected in the Addendum #2 analyses, on grizzly bears in the Phillips River watershed. This opinion recognized that there is some evidence, particularly for the short term, that logging traffic may displace bears away from active roads, although such displacement is influenced by seasonal food abundance and the degree to which bears are habituated to logging traffic. It noted that a primary factor regarding roads and grizzly bears centres on the "interaction of roads and guns and grizzly bears, not just roads" and noted an important distinction between roads connected to human population centres and not connected roads (such as in the Phillips River watershed) that are isolated from human population centres. The specialist noted that the current stand age class distribution and the projected harvest level, suggests that the landscape-level forage supply risk for grizzly bears in the Phillips River watershed is moderate. A conclusion of the specialist's opinion is that it is possible to have timber harvesting in the Phillips River watershed and meet strong, explicit objectives for the conservation of grizzlies in the valley and a sustainably managed commercial viewing operation as practiced by Kwiakah, provided that commitments are made to implement mitigating provisions that reduce human bear mortality.

The density of active roads and volume of commercial traffic is a factor with respect to the impact of commercial forestry operations on grizzly bear in the Phillips River watershed. The cumulative effects study assessed road density based on a total of 306 kilometers of open and closed roads which includes roads in many upper reaches of the Phillips that have been blocked since about 2008. Information from WFP is that there are less open roads in Block 5, about

260 kilometers. WFP indicated that they anticipate using approximately 85 kilometers of road in operations within Block 5 over the first decade of MP #9.

Based on information that has been provided to me in reports and opinions, I reasonably conclude that operations at the harvest levels projected in the base case, which are lower than the levels in the Addendum 2 projection without elevated non-conventional harvest, would not represent a significant risk to grizzly bear in the Phillips River watershed if WFP and FLNRO were to implement mitigating provisions to minimize human bear conflicts. However, I accept that logging traffic in the vicinity of the Kwiakah bear-viewing operation has the potential to impact Kwiakahs operations by displacing bears, recognizing the degree of displacement is influenced by seasonal food abundance and the degree to which bears are habituated to logging traffic, and that such displacement is likely temporary.

The second document provided by Kwiakah is a 2015 memo titled, '*Phillips Arm Salmon Data Analysis*' that describes the results of an analysis testing the hypothesis that Phillips River salmon productivity has declined as a result of historical forestry. The analysis applied a modelling approach to quantify the influence of forestry, as measured by equivalent clearcut area (ECA), on salmon survival in the Phillips River watershed. An initial review of this report by the FLNRO Research Geomorphologist questioned the utility of ECA style indicators in assessing the effects of forestry on watershed or channel conditions. Relevant specialists at the Conservation Science Section, Ecosystems Branch, of the MOE advised that ECA is not a useful or reliable indicator to explain inter-annual trends in salmonid populations or the condition of their freshwater habitats.

Based on the information, reports and opinions that have been provided to me, including the Phillips Arm Salmon Data Analysis and opinion from MOE specialists, I reasonably conclude that further harvesting done in compliance with legally-established objectives for the GBR will not have a significant and unacceptable impact on salmon in the Phillips River watershed. As such, I cannot accept Kwiakah's position, stated in the March 2016 letter, that the AAC for Block 5 should be reduced to zero.

Kwiakah asserted their belief of a very strong prima facie claim of Aboriginal Rights and Title in Block 5 of TFL 39. They advise that the proposed decisions will significantly and negatively impact the meaningful practice of their Aboriginal Rights and will impact their Aboriginal Title interests, that include their economic interests in the lands and the right to manage those lands. As such, they suggested the following potential accommodations: MP #9 only be approved with all activities on Block 5 withdrawn until appropriate planning steps are completed and it is demonstrated that slope stability above Maytsayno is demonstrably safe from further forestry related instability; impacts on streams in Phillips Arm from past logging has been assessed and quantified and a plan proposed to avoid future damage; an agreement has been reached respecting appropriate area based protection of monumental cedar and appropriate protections are in place for mid-elevation cedar as potential bear habitat. Kwiakah also suggested that a multi-year study to analyse the potential impacts of the proposed harvest on grizzly bear, salmon and crab populations be completed prior to any approvals.

I note that through the Strategic Land Use Planning Agreement (SLUPA) between the province and Kwiakah, government has provided Kwiakah funding to support the implementation of the Coast Land Use Decision and the human well-being aspect of EBM. In signing the SLUPA, the parties have committed to working collaboratively, in an open and transparent manner, to seek solutions mutually agreeable to the Parties. I am mindful that the provisions of this agreement do not reduce or replace my obligations to consult with, and accommodate as necessary, Kwiakah for aboriginal interests that may be impacted by my AAC determination.

I recognize that active logging operations in the Phillips River watershed would result in commercial traffic on roads in proximity to Kwiakah's bear-viewing business, creating a level of disturbance that may affect the presence of bears in the area. I also place weight on the opinion of the MOE Large Carnivore Specialist that it is possible to have timber harvesting in the Phillips River watershed and meet strong, explicit objectives for the conservation of grizzlies in the valley and a sustainably managed commercial viewing operation as practiced by Kwiakah, provided that commitments are made to implement mitigating provisions that reduce human-bear conflict.

I am aware that in a letter to the Coast Region Executive Director sent on October 1, 2014, WFP and Kwiakah described a cooperative solution for operations in Block 5 which recognized both Kwiakah's interests in an eco-tourism business and a viable timber harvesting operation by WFP. This solution, although not yet established in a final agreement, suggests that timber harvesting operations in the Phillips Arm area may be structured in a manner that is agreeable to both parties and would allow for the continuance of Kwiakah's bear-viewing business. As summarized under '**Implementation**' I expect the TFL holder to continue to engage Kwiakah with the intent of developing an approach for viable timber harvesting operations in Block 5 that would minimize impacts on Kwiakah's bear-viewing business.

I also recognize that Kwiakah rely on the well-being of salmon populations in the Phillips River watershed and that, if not undertaken carefully, commercial logging has the potential to have an impact on Kwiakah's asserted Aboriginal Right to fish salmon in the Phillips Arm area. I note that all timber harvesting in Block 5 must not only comply with the FRPA Forest Planning and Practices Regulation, including Section 57 that requires WFP to conduct the primary forest activity at a time and in a manner that is unlikely to harm fish or destroy, damage or harmfully alter fish habitat, and that the TFL holder must achieve the objectives for aquatic habitat set out under Division 3 of the GBRO. These practices and objectives have been designed, in part, to reduce the risk to fish habitat from timber harvesting and other primary forestry activities. As indicated under '**Implementation**', I encourage further research and monitoring regarding the health of the salmon populations in the Phillips River watershed and I understand that government has indicated that it is willing to extend advisory support to Kwiakah in defining future research needs on this topic.

- Nanwakolas First Nations carbon project

Nanwakolas First Nations carbon project (the Carbon Project) is an Improved Forest Management Project aimed at reducing green-house gas emissions by protecting forest that were previously designated, sanctioned or approved for commercial harvest. The Nanwakolas First Nations are the proponents of the project. The project area includes the portion of the GBR that is within the traditional territories of the Nanwakolas Council Society which include TFL 39 Block 3 and Block 5.

The objective of the project is to convert forest that were previously designated for commercial harvest to protected forests in order to protect carbon stocks, reduce emissions caused by primary forestry operations and increase carbon stocks from re-growing forests. The project will also achieve other social and economic benefits for Aboriginal communities and other groups that are dependent on the plan area.

Since April 2006, the project proponents and the Province have engaged in a variety of processes, principally the SCCO in 2007, SCCO amendment in 2009, SCCO amendment in 2013 and the GBRO in 2016 that resulted in the establishment of Conservancies and Biodiversity, Mining and Tourism Areas (BMTAs), and implementation of Ecosystem Based Management (EBM) in areas outside of protected areas. I accept that these management practices and objectives, except where I have noted otherwise through this AAC determination rationale, are appropriately reflected in the base case analysis.

The Nanwakolas Council indicate an expectation that I will determine the AAC at a level that minimizes any impact on Nanwakolas First Nations carbon project.

I have been provided the information necessary to consider the implications of my AAC determination on the Nanwakolas First Nations carbon project. From this, I am satisfied that my AAC determination considers management practices and objectives for TFL 39 Block 3 and Block 5 that are consistent with government legislation and the current land use decisions that have resulted from the processes in which Nanwakolas First Nations were engaged. I note that credit for carbon sequestration is based on changes in management enacted through legislation and legal objectives and that my AAC determination is consistent with legislation and legal objectives applicable to TFL 39. I also note that the harvest flow policy applied in the MP #9 base case forecast for Blocks 3 and 5 is consistent with timber supply analysis previously conducted for the Nanwakolas Carbon Project and that my determination has considered all legally applicable legislation and management objectives for the GBR. For these reasons I am confident my AAC determination minimizes any impact on the Nanwakolas First Nations carbon project.

- Nanwakolas First Nations shared decision-making

First Nations consultation for the AAC determination process was in progress when the Memorandum of Understanding (MOU) was signed on April 16, 2013, to give effect to the shared decision making process pursuant to the Nanwakolas Reconciliation Protocol (RP). For the TFL 39 TSR, the shared decision making process applies to the First Nations who are signatories to both the SEA and the RP: K'ómoks, Tlowitsis and Wei Wai Kum. It does not apply to all the First Nations who signed only the SEA. The RP relates to economic opportunities and does not address rights and title.

Appendix 2 Schedule B (Forestry Schedule) of the Nanwakolas RP, the 'Shared Decision Making Process for Allowable Annual Cut and Land Use Objective Decisions', was finalized in May, 2013. In keeping with the intent of the RP representatives of the Nanwakolas RP First Nations and the Province of British Columbia (the parties) met on June 12, 2013, to discuss how the shared decision making process would affect the timber supply review processes that were already underway. For TFL 39, the parties accepted that the next step in the process was Section 1.6 of the shared decision making process, that is, the submission of the timber supply analysis. On June 24, 2013, Dallas Smith, President of the Nanwakolas Council, sent the chief forester a letter in preparation for a meeting to be held on June 28, 2013, to discuss more thoroughly with the deputy chief foresters and FLNRO staff, the Nanwakolas' expectations regarding the 2013 minister's letter and the shared decision making process.

To fulfill the requirement of Section 1.3 of the shared decision making process, which requires the Nanwakolas First Nations senior representatives to provide to the Provincial decision-maker (or their representative) any initial issues to be considered in an AAC determination, and in preparation of the data and analysis used to support the determination, the president of the Nanwakolas Council provided the chief forester, in a letter dated March 31, 2014, with initial issues they wish to be considered in the upcoming TFL 39 AAC determination. These included provision of an explicit sustainable supply of LCC, minimizing impact on the Nanwakolas Carbon Project, and fulfilling the socio-economic objectives outlined in the Minister's April 12, 2013 letter to the chief forester.

The Manager of the Forest Analysis and Data Management Section of FAIB wrote to the Nanwakolas on August 1, 2014, to address the requirements of Section 1.6 of the shared decision making process. The correspondence provided the timber supply analysis, described the geographic location of TFL 39 and commented on where the other relevant and available documents could be found. He also provided a summary of how Nanwakolas initial issues were

or will be addressed. Further discussions between the parties regarding the shared decision recommendations of TFL 39 occurred between August 2014 and August 2016.

Pursuant to Section 1.7 of the Shared Decision Making Process, the parties provided me with common recommendations regarding the AAC determination for TFL 39. They recommend an overall AAC for TFL 39 of 1 416 300 cubic metres with a partition of 1 375 000 cubic metres of the AAC attributable to Blocks 1 and 2, and a partition of 41 300 cubic metres of the AAC is attributable to Blocks 3 and 5. Of the AAC attributable to Blocks 1 and 2, a partition of no more than 1 203 000 cubic metres of the AAC is attributable to areas classified as conventional harvest area. The parties' further recommendations are as follows:

- The chief forester should encourage the TFL holder and district staff to continue working with First Nations to identify and manage culturally important resources and features at both operational and strategic scales.
- The chief forester should instruct the TFL holder and district staff to continue improving the processes for information sharing with First Nations and First Nation engagement, and to monitor the actual outcomes and impacts of forest practices on these culturally important resources and features and on the associated assumptions used in timber supply modelling.
- The chief forester's AAC determination for TFL 39 should be based on a harvest flow that minimizes any impacts on Nānwākolas First Nations carbon project.

Regarding the recommendations concerning culturally important resources and features, I note that Nānwākolas Council is working with the Campbell River Natural Resource District to implement a Western Redcedar LCC inventory project aimed at improving information about LCC and WFP has initiated training of planning staff and contractors within the company's Mid Island Operation on identifying LCC. In addition, on June 24, 2014, the Chief Forester of Western Forest Products Inc. sent a letter to Nānwākolas Council in which she expressed the company's commitment to working with Nānwākolas on the identification of LCC trees that may contribute to the development and implementation of a cedar strategy. I encourage this work, and as noted under '**Implementation**', I expect that the TFL holder and district staff will continue working with First Nations to identify and manage culturally important resources and features at both operational and strategic scales. I have also made implementation instructions for the TFL holder and district staff to continue improving the processes in which they engage First Nations and undertake information sharing about these important resources and features, and to monitor the actual outcomes and impacts of forest practices on these important resources and features with the intent of improving associated assumptions in future timber supply modelling.

I have addressed the recommendation regarding the 'Nānwākolas First Nations carbon project', and for the reasons that I have described, I am confident my AAC determination minimizes any impact on this project.

In consideration of the input provided by the Nānwākolas First Nations, I am aware of the recommendations provided and have considered them in this determination for the TFL 39. I will discuss my considerations of all the information provided to me, including these recommendations and other First Nations input, further in my '**Reasons for Decision**'.

- conclusion

I am satisfied that the consultation process on the two decisions (approval of Management Plan 9 and the AAC determination for TFL 39) has been appropriate and in accordance with current Provincial consultation guidance.

I am aware of Nanwakolas First Nations' concerns that cultural heritage resources were not adequately accounted for in the base case. I encourage Nanwakolas First Nations to continue ongoing engagement with WFP at the operational planning phase to ensure that their interests are considered. I expect WFP and district staff to continue improving their processes for information sharing with First Nations and First Nation engagement and I expect WFP will monitor outcomes and impacts of forest practices on cultural heritage resources and features with the intent of improving associated assumptions in future timber supply modelling.

I am aware of concerns raised by Kwiakah about timber harvesting in Block 5, particularly in old non-conventional harvesting areas, as well as information provided by the WFP biologist and the advice of the MOE Large Carnivore Specialist. As indicated under 'non-conventional harvest areas', I have concluded that harvest levels indicated by the base case, without the elevated contribution from non-conventional areas proposed by WFP, provides a reasonable balance between harvest opportunity in this block and the concerns raised by Kwiakah.

I have considered the concerns raised by Kwiakah about the impact of commercial logging on its bear-viewing operation in the Phillips Arm area. As indicated above, I have agreed that it is possible to have timber harvesting in this area and a sustainably managed commercial viewing operation, as practiced by Kwiakah, provided that commitments are made to implement mitigating provisions that reduce human-bear mortality. I also believe meaningful engagement between the TFL holder and Kwiakah is critical to the achievement of a cooperative solution in Block 5 which recognized both Kwiakah's interests in an eco-tourism business and a viable timber harvesting operation by WFP. As such, I have indicated my expectation that the TFL holder will continue to engage Kwiakah with the intent of developing an approach for viable timber harvesting operations that would minimize impacts on Kwiakah's sustainable bear-viewing operation.

I have addressed the recommendations from the representative of the signatories to the Nanwakolas RP and the government representative pursuant to Section 1.7 of the Shared Decision Making Process.

District staff leading consultation with First Nations that have traditional territory overlapping Blocks 1 and 3 concluded that the AAC determination is unlikely to have a significant adverse effect on the interests of the First Nations in the areas of Blocks 1 and 3. District staff leading consultation with First Nations that have traditional territory overlapping Blocks 2 and 5 concluded that accommodation by FLNRO to K'ómoks' and Kwiakah's concerns and specific to the AAC determination for TFL 39 or the approval of MP 9 is either completed or in process. For all First Nations, staff believe access to harvest opportunities and/or the potential for accommodation as a result of future governmental decisions or treaty-related events should not be negatively impacted by this administrative decision. Districts will continue to consult with First Nations on subsequent administrative and operational decisions and applications associated with TFL 39, where First Nations will be provided an additional opportunity to share information regarding their Aboriginal interests and to seek accommodation as may be required.

Based on my review of the information sharing and consultation process followed, the Aboriginal interest information available to FLNRO staff, and the potential impact my decision may have on these interests, I believe that the Ministry has engaged in consultation in accordance with current Provincial guidance and applicable case law. I conclude that no additional accommodation

beyond that which I have described in this rationale document is required as part of this decision. I expect that any adverse impacts upon any Section 35 rights within the area of TFL 39, stemming from forest development activities that occur subsequent to the AAC determination, can be appropriately mitigated or minimized through existing legislation, regulation, and most importantly through engagement with First Nations at the operational level.

As noted in Table 1, I accept that the factors related to this section of the *Forest Act* were appropriately addressed in the analysis, and I will not discuss them further in this document.

Section 8 (8) (b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area

No factors considered under this section require additional comment.

Section 8 (8) (c) repealed [2003-31-2 (B.C. Reg. 401/2003)]carbon

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

Section 8 (8) (d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia

Economic and Social Objectives

- *Minister's letter*

Section 8 of the *Forest Act* requires the chief forester to consider the government's social and economic objectives, as expressed by the Minister, as well as the other items listed in Section 8. As Chief Forester I am guided by three Minister's letters, July 4, 2006 (Appendix 3), October 27, 2010 (Appendix 4) and April 12, 2013 (Appendix 5).

In the first letter, dated July 4, 2006, the Minister asks for consideration during AAC determinations of the importance of a stable timber supply in maintaining a competitive and sustainable forest industry while giving consideration to other non-timber forest values. As well, the Minister suggests that the chief forester should consider the local social and economic objectives expressed by the public, and relevant information received from First Nations.

During my consideration of the factors required under Section 8 of the *Forest Act*, I have been mindful of the 2006 Minister's objectives. I note that in the base case analysis and with my considerations described above, a primary objective has been to attain a reasonably stable supply of timber where the growing stock is also stable. I note WFP is aware of municipal plans and objectives, and in addition to doing everything that is legally required, WFP is voluntarily working with municipal governments to achieve the municipal government's local objectives. I also note changes in management and legislative objectives have been made to protect and maintain First Nations values. I have reviewed the consultation process undertaken by the district and considered the input received in making my determination.

While the second letter, dated October 27, 2010, is focused to areas impacted by the mountain pine beetle, it does highlight that the Government of British Columbia is working closely with municipalities and the private sector to diversify economies. I am aware of the importance of forestry activities to both the local and provincial economies. I am also aware of the local and provincial interest in ensuring forest activities, especially activities in close proximity to the communities, facilitate a diversity of economic activities. I have considered this in my determination.

The third letter, dated April 12, 2013, is focused on the Nānwakolas Reconciliation Protocol, and in particular reminds me of the Shared Decision Making Process that is part of the protocol. In addition, the Minister requests that when making determinations of AAC within the traditional territories of Nānwakolas First Nations that I consider the government objective:

- to share in economic development initiatives within the Traditional Territories of the Nānwakolas First Nations that facilitate, over time, the individual members of the Nānwakolas First Nations obtaining a quality of life that is equal to or better than the national Canadian average;
- to become full partners with the Province (i.e., to the fullest or maximum extent possible) in the forest sector within the Nānwakolas Traditional Territories including, but not limited to, opportunities for shared decision-making, forest tenures and revenue sharing;
- to develop significant involvement with the forest industry operating within their Traditional Territories, through the development of measures that will facilitate new relationships with industry;
- to significantly increase employment opportunities in the forest industry, over time, for Nānwakolas First Nations members, within their Traditional Territories; and
- to consider the value of forest resource development in the Traditional Territories of Nānwakolas First Nations when developing appropriate strategies for full Nānwakolas First Nations participation in the management and operation of the forest resource sector in the Traditional Territories.

During my consideration of the factors, I have been mindful of the 2013 Minister's objectives. I have been mindful that TFL 39 Block 1 includes Nānwakolas Traditional Territory, and that TFL 39 Block 3 and Block 5 include Nānwakolas interests with respect to their Carbon Project. I have also been mindful of the Appendix 2 Schedule B (Forestry Schedule) Shared Decision Making Process in the April 16, 2013 Nānwakolas Reconciliation Protocol. I have been mindful of the December 3, 2012 Renewal of the Nānwakolas/British Columbia Framework Agreement.

I am satisfied that the timber supply analysis for TFL 39 in combination with information from, and discussions with, Ministry and licensee staff has provided me with the information necessary to make a determination for TFL 39 that meets the objectives expressed in these letters. I have also considered the comments and information received from First Nations during consultation on this determination. On this basis, I am satisfied that this determination accords with the objectives of province as expressed by the Minister.

I have considered the objectives expressed by the Minister in my determination for TFL 39. Where appropriate, I have discussed the input from the public and First Nations in the relevant sections of this rationale document.

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

As noted in Table 1, I accept that the factors related to this section of the *Forest Act* were appropriately addressed in the analysis, and I will not discuss them further in this document.

Reasons for Decision

In reaching my AAC determination for TFL 39 I have considered all of the factors required under Section 8 of the *Forest Act*. I have made the considerations documented above, all of which are integral to the reasons for my decision, and from which I have reasoned further as follows.

I am satisfied that the assumptions applied in the base case for the majority of the factors applicable to TFL 39 were appropriate. In this section, I have summarized my considerations related to factors for which there is uncertainty, or the need for some adjustment, with respect to the analysis inputs, which in turn affect the base case timber supply.

The base case timber supply projection showed an initial harvest of 1 340 900 cubic metres per year could be maintained for 10 years, followed by declines to 1 182 700 cubic metres per year prior to increasing to the long-term level of 1 314 000 cubic metres per year.

In determining AACs, my considerations will typically identify factors which, considered separately, indicate reasons why the timber supply may be either greater or less than the harvest levels projected for various periods throughout the base case. Some of these factors can be quantified and their implications assessed with reliability. Others may influence the assessment of the timber supply by introducing risk or uncertainty, but cannot be quantified reliably at the time of the determination and must be accounted for in more general terms.

The following one factor discussed in this document suggests that the timber supply projected in the base case might be underestimated:

Non-conventional harvest – analysis of the short-term timber supply in non-conventional operating areas within Block 1 and Block 2, which is available to improve economics and to facilitate efficiencies with the mobilization of specialized harvest equipment, indicates the base case projection for Block 1 and Block 2 is underestimated by 82 000 cubic metres per year.

The following two factors suggest that the timber supply projected in the base case might be overestimated:

Tla'amin Treaty Lands – the transfer of Tla'min Indian reserve and former provincial Crown land to Tla'amin First Nation ownership results in a 3900 cubic metres per year overestimation of timber supply.

Research installation areas – the inclusion of government research installation areas in the THLB results in a timber supply overestimation of 2700 cubic metres per year in the short term.

In addition, I am aware the uncertainty with respect to the maintenance and protection of known and unknown resources and features important to First Nations, including large cultural cedar (LCC), may result in an unknown overestimation of timber supply. I am also mindful that implementation of the GBRO *Objective for First Nations Information Sharing and Engagement* may lead to changes in management practices with Block 3 and Block 5 that were not accounted for in the base case projection, although the impact of such changes on the projected timber supply cannot be quantified at this time. In other parts of the TFL 39, it is my expectation that the TFL holder will continue to work with First Nations to identify and operationally manage culturally important resources and features. I have issued an instruction in **'Implementation'** for the TFL holder and district staff to continue information sharing, and to monitor the actual outcomes and impacts of forest practices on these important resources and features so they may be considered in the next AAC determination.

I am also aware there is a level of uncertainty in our understanding of how climate change will affect the long-term timber supply on the TFL. While I make no account of an over- or underestimation of timber supply on account of this uncertainty, I have considered the uncertainty posed by climate change in making my decision.

In my considerations I noted that up to 25 percent of the harvesting in TFL 39 over the previous decade was in stands younger than culmination age. If a significant area continues to be harvested in the TFL at ages younger than assumed in the projection, the long-term timber supply for the TFL is likely to be less than what is projected in the base case. Given the importance of maintaining a stable local economy beyond the immediate future, I have directed staff to monitor the harvest of young stands annually and to report this information to me prior to the next AAC determination (see '**Implementation**'). If the practice persists, this information will be used to inform the next timber supply review and AAC determination.

In recognition of the existing differences in forest management between the GBR (Blocks 3 and 5) and the balance of the TFL (Blocks 1 and 2), I am establishing a partition in the AAC attributable to the two separate areas.

To ensure that volume projected to come from the non-conventional harvest area in Blocks 1 and 2 is not harvested from the conventional harvest area, I have specified an AAC partition attributable to conventional harvest area across Blocks 1 and 2.

Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next 10 years and that reflects current management practices as well as the socio economic objectives of the Crown can be best achieved by setting the AAC for the entire TFL 39 (Blocks 1, 2, 3 and 5) at 1 416 300 cubic metres.

I specify, under Section 8(5)(a) of the *Forest Act*, a partition of 1 375 000 cubic metres of the TFL 39 AAC is attributable to the combined area of Blocks 1 and 2, and a partition of 41 300 cubic metres of the AAC is attributable to the combined area of Blocks 3 and 5. Of the AAC attributable to Blocks 1 and 2, I further specify under Section 8(5)(a) of the *Forest Act*, a partition of no more than 1 203 000 cubic metres of the AAC is attributable to areas classified as conventional harvest area in Management Plan 9.

This determination is effective on August 29, 2016, and will remain in effect until a new AAC is determined, which must take place within 10 years after the date of this determination.

If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then a new timber supply review can be initiated leading to a determination sooner than in the 10 years allowed by legislation.

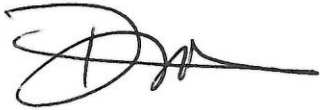
Implementation

In the period following this determination and leading to the subsequent determination, I encourage FLNRO staff and the holder of TFL 39 ('TFL holder') to undertake the tasks and investigations noted below that I have also mentioned in the above sections of this document.

I recognize that the ability of staff to undertake these projects is dependent on available time and funding. These projects are, however, important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in TFL 39:

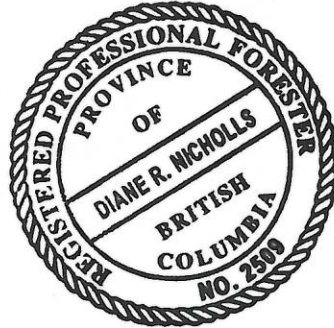
- *Transmission line right-of-way* – I expect the TFL and district staff to monitor and quantify any impact on harvesting operations related to the Toba Montrose hydroelectric project transmission line, particularly in the areas upslope of the right-of-way.
- *Unstable terrain* – I expect the TFL holder to improve the terrain stability mapping information for areas where currently only Environmentally Sensitive Areas (ESA) based terrain stability mapping is available.
- *Managed stand yields* – I expect the TFL holder to stay abreast of new developments in growth and yield regarding the effects of shading from stand-level retention, and to use the best available information in future timber supply review analyses.
- *Regeneration assumptions* – I expect the TFL holder and district staff to work with other licensees to collect forest regeneration for the entire TFL 39 and to incorporate this information into future timber supply reviews.
- *Climate change* – I direct FLNRO staff to continue in the collection of information, conduction of analysis and monitoring for changes so appropriate forest management adaptations can occur within TFL 39.
- *Objectives for visual resources* – I expect the TFL holder to ensure all VQOs are incorporated in future analysis for TFL 39.
- *Recreation resources* – I expect the TFL holder to continue to work with all interested groups to find the means of maintaining the recreational integrity of the Sunshine Coast Trail.
- *Resources and features important to First Nations* – I expect that the TFL holder and district staff will continue working with First Nations to identify and manage culturally important resources and features at both operational and strategic scales.
- *Resources and features important to First Nations* – I expect the TFL holder and district staff will continue improving the processes for information sharing with First Nations and First Nation engagement, and to monitor the actual outcomes and impacts of forest practices on these culturally important resources and features with the intent of improving associated assumptions in future timber supply modelling.
- *Great Bear Rainforest objectives for First Nations* – I expect the TFL holder and district staff to work with First Nations to collect locally applicable information about the management of First Nations resources and features in the TFL 39 in light of the new GBRO.
- *Non-conventional harvest areas* – I expect the TFL holder to continue to engage with First Nations with interests in Block 5 of TFL 39 to ensure that First Nations' interests, both known and yet undiscovered, are appropriately considered during operational planning in areas of steep slope or unstable terrain in Block 5.
- *Avoidable harvest waste* – I expect the TFL holder to monitor and report the levels of waste by block to district staff to improve the information available for the next timber supply review and AAC determination.
- *Health of salmon populations in the Phillips River watershed* – I encourage government research staff to extend advisory support in defining future research and monitoring regarding the health of salmon populations in the Phillips River watershed.

- *Young stand harvesting* - I expect district staff to annually monitor the extent to which stands are harvested before they reach culmination age and to report this information to me prior to the next AAC determination.
- *Block 5 harvesting operations* - I expect the TFL holder to continue to engage Kwiakah First Nation with the intent of developing an approach for viable timber harvesting operations in Block 5 that would minimize impacts on Kwiakah's sustainable bear-viewing operation.



Diane Nicholls, RPF
Chief Forester

August 29, 2016



Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, (consolidated to August 17, 2016), reads as follows:

Allowable annual cut

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

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

(2) If the minister

- (a) makes an order under section 7 (b) respecting a timber supply area, or
- (b) amends or enters into a tree farm licence to accomplish a result set out under section 39 (2) or (3),

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

- (c) within 10 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and
- (d) after the determination under paragraph (c), at least once every 10 years after the date of the last determination.

(3) If

- (a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and
- (b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,

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

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

- (a) by written order may postpone the next determination under subsection (1) to a date that is up to 15 years after the date of the relevant last determination, and
- (b) must give written reasons for the postponement.

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

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

(4) If the allowable annual cut for the tree farm licence area is reduced under section 9 (3), the chief forester is not required to make the determination under

subsection (1) of this section at the times set out in subsection (1) or (2) (c) or (d), but must make that determination within one year after the chief forester determines that the holder is in compliance with section 9 (2).

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

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

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

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

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

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

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

(a) the community forest agreement, and

(b) any directions of the chief forester.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(b) each tree farm licence area

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

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

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

Section 4 of the *Ministry of Forests and Range Act* (consolidated to August 17, 2016) reads as follows:

Purposes and functions of ministry

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

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



JUL 04 2006

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

Dear Jim:

Re: Economic and Social Objectives of the Crown

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

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

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

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Minister of
Forests and Range
and Minister Responsible
for Housing

Office of the
Minister

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

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

Jim Snetsinger

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

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

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

Sincerely yours,

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

Rich Coleman
Minister

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



File: 280-30/MPB
Ref: 126097

OCT 27 2010

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

Dear Mr. Snetsinger:

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

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

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

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

Minister's Office

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

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

Jim Snetsinger, Chief Forester

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

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

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

Sincerely,



Pat Bell
Minister

pc: Dana Hayden, Deputy Minister

Appendix 5: Minister's letter of April 12, 2013



Ref: 196701

April 12, 2013

Dave Peterson
Chief Forester and Assistant Deputy Minister
Ministry of Forests, Lands & Natural Resource Operations
Tenures, Competitiveness and Innovation Division
PO Box 9352 Stn Prov Govt
Victoria, British Columbia
V8W 9M1

Dear Dave Peterson:

The *Forest Act* gives you the responsibility and authority to make allowable annual cut determinations.

Section 8 of the *Forest Act* requires you to consider the government's social and economic objectives, as expressed by the Minister, as well as the other items listed in section 8.

As provided for in Section 1.1 of the Shared Decision Making Process agreed to as part of Schedule B, Appendix 2 (the Forestry Schedule) of the Nanwakolas Reconciliation Protocol, this letter provides government's social and economic objectives for signatory First Nations. In addition to government's social and economic objectives provided in other letters, please consider these objectives when making determinations of Allowable Annual Cut within the traditional territories of Nanwakolas First Nations:

- To share in economic development initiatives within the Traditional Territories of the Nanwakolas First Nations that facilitate, over time, the individual members of the Nanwakolas First Nations obtaining a quality of life that is equal to or better than the national Canadian average;
- To become full partners with the Province (i.e. to the fullest or maximum extent possible) in the forest sector within the Nanwakolas Traditional Territories including, but not limited to, opportunities for shared decision-making, forest tenures and revenue sharing;
- To develop significant involvement with the forest industry operating within their Traditional Territories, through the development of measures that will facilitate new relationships with industry;

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Ministry of Forests, Lands and
Natural Resource Operations

Office of the Minister

Mailing Address:
PO BOX 9049 Stn Prov Govt
Victoria, BC V8W 9E2

Tel: 250-387-6240
Fax: 250-387-1040
Website: www.gov.bc.ca/for

- To significantly increase employment opportunities in the forest industry, over time, for Nanwakolas First Nations members, within their Traditional Territories; and
- To consider the value of forest resource development in the Traditional Territories of Nanwakolas First Nations when developing appropriate strategies for full Nanwakolas First Nations participation in the management and operation of the forest resource sector in the Traditional Territories.

Sincerely,

A handwritten signature in black ink that reads "Steve Thomson". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Steve Thomson
Minister