



FOREST ANALYSIS AND INVENTORY BRANCH

Kalum TSA Timber Supply Analysis Public Discussion Paper

Forest Analysis and Inventory Branch
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Cover photograph by Ralph Ottens
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Introduction

The British Columbia Ministry of Forests and Range regularly reviews the timber supply^a for all timber supply areas^b (TSA) and tree farm licences^c (TFL) in the province. This review, the third for the Kalum TSA, examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province. Based on this review the chief forester will determine a new allowable annual cut^d (AAC) for the Kalum TSA.

According to Section 8 of the *Forest Act* the chief forester must regularly review and set new AACs for all 37 TSAs and 33 TFLs in the Province of British Columbia.

The objectives of the timber supply review are to:

- examine relevant forest management practices, environmental and social factors, and input from First Nations, forest licensees and the public;
- set a new AAC; and
- identify information to be improved for future timber supply reviews.

This public discussion paper provides a summary of the results of the timber supply analysis for the timber supply review of the Kalum TSA. Details about the information used in the analysis are provided in a May 2009 data package (updated in March 2010) and the technical details of the analysis are available on request from the Ministry of Forests and Range, Forest Analysis and Inventory Branch. The timber supply analysis should be viewed as a “work in progress”. Prior to the chief forester’s AAC determination for the TSA, further analysis may need to be completed and existing analysis reassessed as a result of inputs received during this review process.

Timber supply review in the Kalum TSA

The current AAC for the Kalum TSA, effective May 12, 2000, is 436 884 cubic metres. This AAC was set after the assignment of lands under the Nisga’a Final Agreement. Since 2000, a number of changes have occurred in the TSA that may affect the AAC. These changes include the introduction of the *Forest and Range Practices Act*, the completion and implementation of land use plans, a new community forest, and updated mapping and inventories.

^a **Timber supply**

The amount of timber that is forecast to be available for harvesting over a specified time period, under a particular management regime.

^b **Timber supply areas (TSAs)**

An integrated resource management unit established in accordance with Section 7 of the Forest Act.

^c **Tree farm licences (TFLs)**

Provides rights to harvest timber and outlines responsibilities for forest management in a particular area.

^d **Allowable annual cut (AAC)**

The rate of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood per year.

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In May 2009, a data package documenting information requirements and assumptions for the timber supply analysis was released for public review and to assist with First Nations consultation. This public discussion paper is being released to provide an overview of the timber supply review process and to highlight the results of the timber supply analysis, including harvest forecasts for the Kalum TSA.

Before setting a new AAC, the chief forester will review all relevant information, including the results of the timber supply analysis, socio-economic analysis, and input from government agencies, the public, licensees and First Nations. Following this review, the chief forester's determination will be outlined in a rationale statement that will be publicly available. The actual allowable annual cut that is determined by the chief forester during this timber supply review may differ from the harvest projections presented in this analysis, as the chief forester must consider a wide range of information including the social, economic and environmental implications associated with a given harvest level. His considerations are ultimately a professional judgement based on the legal requirements set out in Section 8(8) of the *Forest Act*.

Once the chief forester has determined the new AAC, the Minister of Forests and Range will apportion the AAC to the various licence types and programs. Based on the minister's apportionment, the regional executive director will establish a disposition plan that identifies how the available timber volume is assigned to the existing forest licences and, where possible, to new opportunities.

Description of the Kalum TSA

The Kalum TSA in north-western British Columbia covers approximately 2.3 million hectares of the Northern Interior Forest Region. It ranges from the Kitlope River in the south to the lower Nass River in the north. The TSA boundary encompasses TFLs 1 and 41, part of the Nisga'a private land under the Nisga'a Final Agreement, and several large protected areas along the outer boundary of the TSA. These areas do not contribute to the TSA's timber supply. The core area of the TSA without these areas is about 522 700 hectares.

The timber supply review and this document are focussed on the core area of the Kalum TSA. The Kalum TSA is administered from the Kalum Forest District office in Terrace.

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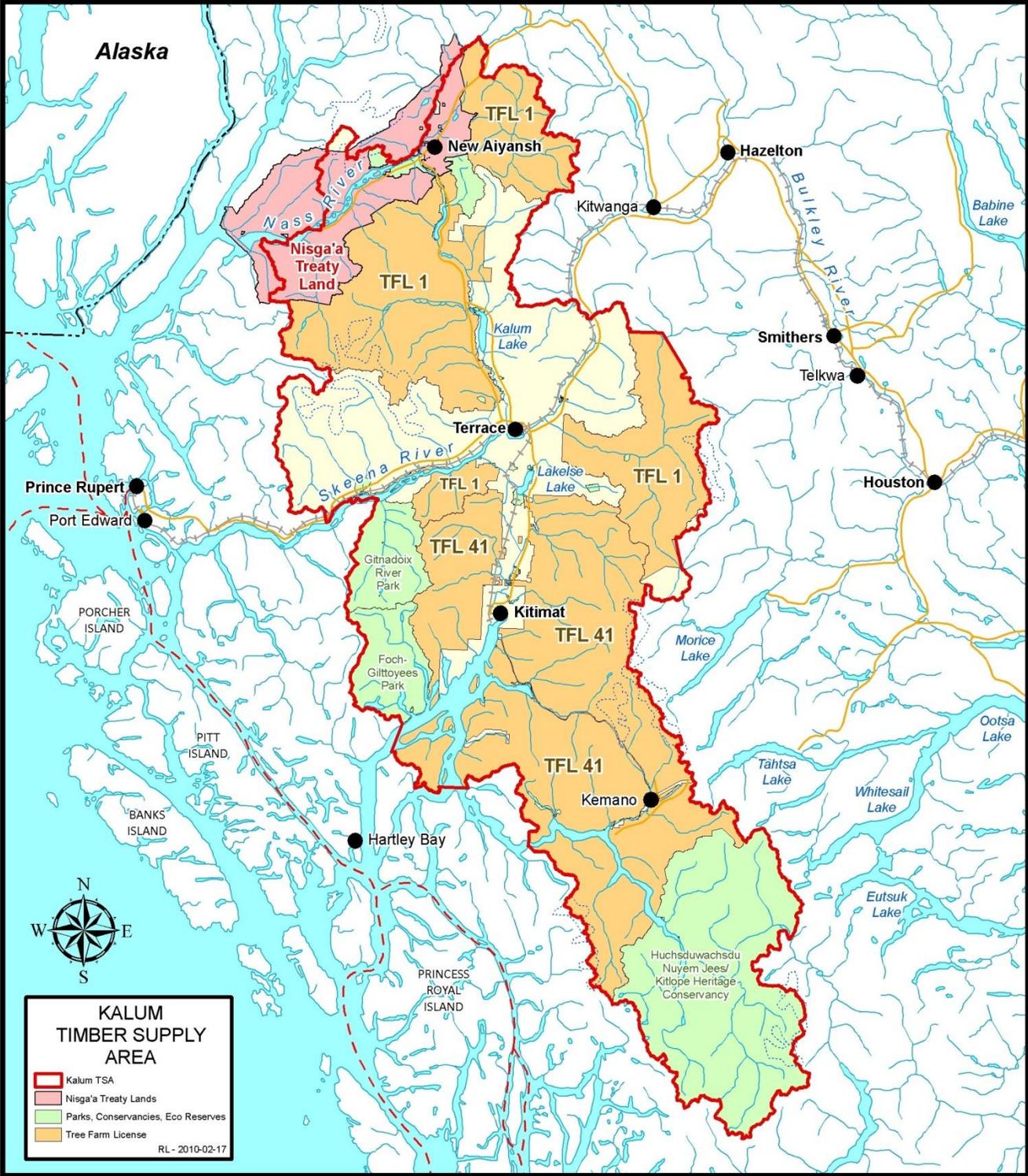


Figure 1. Map of the Kalum TSA.

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Natural resources

The Kalum TSA lies in a transitional area between the coastal and interior forests. The climate is transitional and ecosystems of the area are diverse because of the mountainous terrain and high rainfall; however ecosystems tend to be more coastal than interior. The lower elevation forests are predominantly in the Coastal Western Hemlock biogeoclimatic zone, with some forests occurring in the Interior Cedar Hemlock zone at the northern and north-eastern edges of the TSA. Upper elevations are predominantly in the Mountain Hemlock biogeoclimatic zone, with some forests occurring in the Englemann Spruce – Subalpine Fir zone in the upper Clore River drainage on the east edge of the TSA.

Forests of the Kalum TSA are dominated by western hemlock (Figure 2). Other major tree species include amabilis fir, mountain hemlock, sitka spruce, western red cedar, lodgepole pine, cottonwood, aspen and birch. Natural stands are mostly older than 200 years of age, while managed stands are under 45 years of age (Figure 3). There is relatively little area covered with forests between the ages of 45 and 200 years.

The varied environment of the Kalum TSA ranges from estuaries and flat valley bottoms, to rugged mountainous upper slopes. This creates a diverse forested environment which provides habitat for a wide variety of wildlife species including grizzly bear, black bear, kermode bear, deer, fisher, northern goshawk, moose, marten, raptors and owls. The rivers and ocean support significant fishery resources, including salmon species, Dolly Varden char, cutthroat trout, eulachons, and steelhead. Estuaries, floodplains and islands provide habitat for a wide variety of birds and other species.

The diversity of land forms, topography, and climate supports a variety of recreation activities. The Kitimat and Skeena rivers provide some of the best angling opportunities in British Columbia. Camping, nature study, hiking, swimming, boating, motoring, skiing, hunting and canoeing are activities enjoyed by local residents and tourists.

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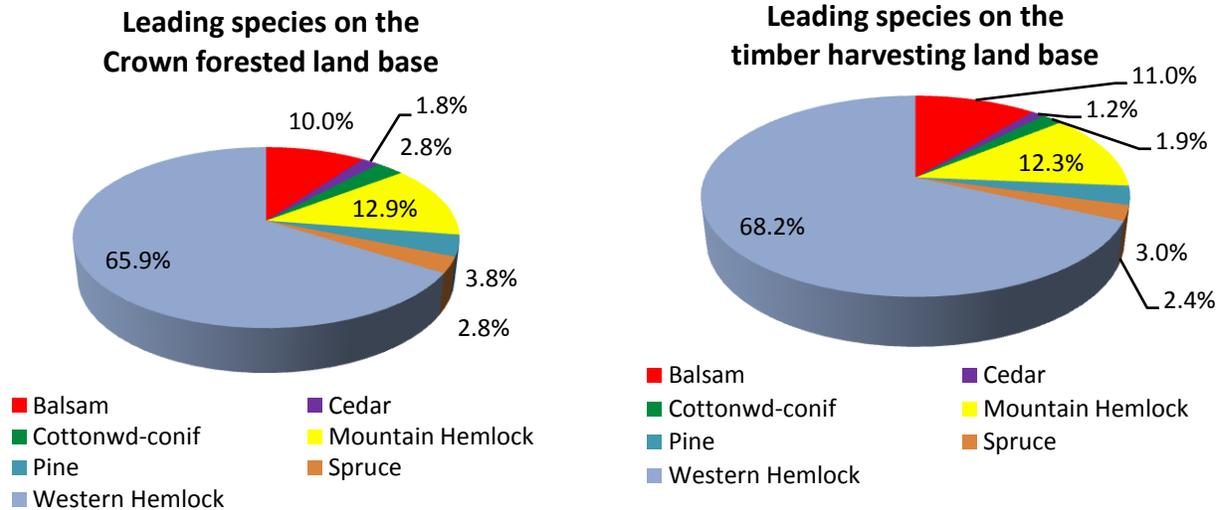


Figure 2. Proportion of leading species for the Crown forested land base^e and timber harvesting land base^f of the core area of the Kalum TSA.

^e **Crown Forested Land Base (CFLB)**

The forested area of the TSA that the provincial government manages for a variety of natural resource values. This excludes non-forested areas (e.g., water, rock and ice), non-productive forest (e.g., alpine areas, areas with very low productivity), and non-commercial forest (e.g., brush areas). The CFLB does include federal protected areas because of their contribution to biodiversity.

^f **Timber Harvesting Land Base (THLB)**

The portion of the forest management land base (FMLB) that is managed for timber supply by the Ministry of Forests and Range where timber harvesting is considered both acceptable and economically feasible, given objectives for all relevant forest values, existing timber quality, market values and applicable technology.

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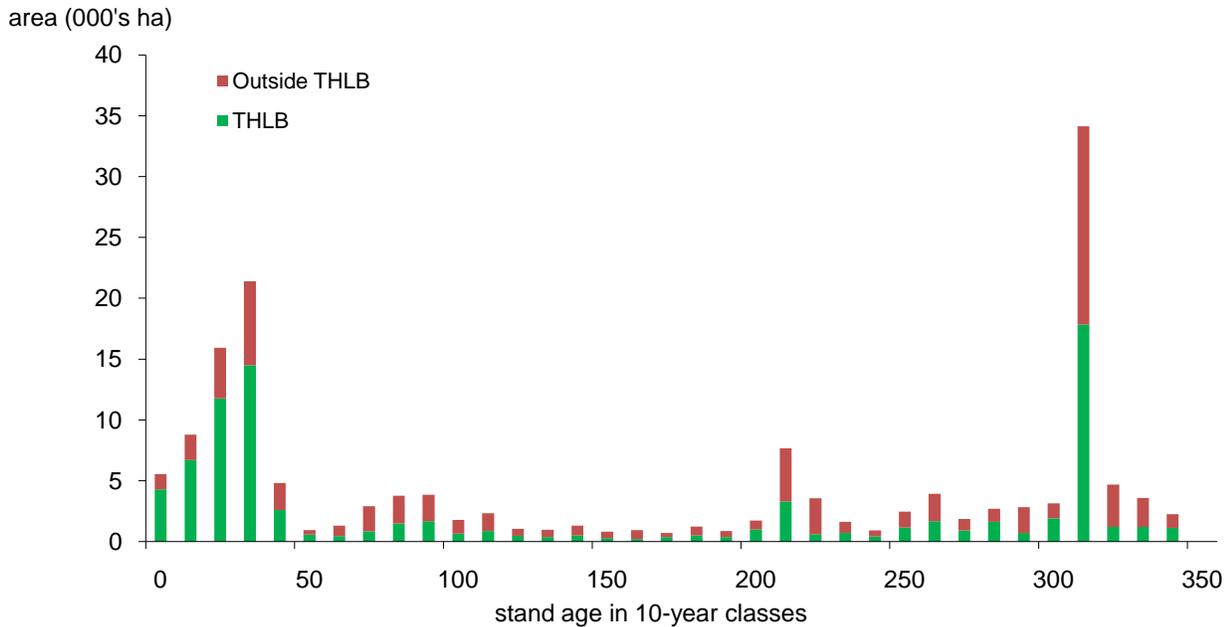


Figure 3. Age class distribution for the Crown forested land base.

Socio-economic conditions

According to the 2006 Census, the population of the Kalum Forest District (which includes the Kalum and Nass TSAs, TFLs 1 and 41, and the Nisga'a lands) is approximately 30,400 persons. The major population centres are Terrace, Thornhill, and Kitimat, which account for about 85 percent of the population. Smaller communities include Kitimaat Village, Kitsumkalum, Gitaus, Gitwinksihlkw, New Aiyansh, Rosswood, Usk and rural areas around Terrace.

The total population remained stable between 2001 and 2006, but the population of Terrace-Thornhill declined by eight percent, while the population of Kitimat increased by 14 percent over that timeframe.

The forest sector constitutes approximately 14 percent of the basic sector^g economy for the Kalum Forest District. Employment in the forest sector for the Kalum Forest District has declined by about 37 percent between 2001 and 2009. Two large sawmills have closed in Terrace since 2006 (one permanently and one indefinitely) and the pulpmill in Kitimat closed in 2010.

Forest licensees have not harvested the full AAC of 436 884 cubic metres in recent years. The actual volume harvested in 2008 was about 110 000 cubic metres, or about 25 percent of the AAC. The average annual volume harvested between 2004 and 2008 was about 145 000 cubic metres, or about 33 percent of the AAC. Up to 30 percent of the volume harvested in the Kalum Forest District between 2005 and 2008 has been exported as raw logs to Japan, China, Korea and USA. In the absence of any large mills, forest licensees sell logs directly to a variety of customers to meet specific market opportunities.

^g Basic sector

An economy can be divided into two components: basic and non-basic. The basic sector is supported by income flowing into the region and includes direct activity associated with a particular sector (forestry, agriculture for example) and the resulting indirect activity supported by company purchases of goods and services. The non-basic sector is supported by employees in the basic sector spending their incomes, at local stores for example. The basic sector is considered the driver of economic activity and growth in a region.

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Timber harvest operations in the Kalum TSA are highly sensitive to market prices for logs. When log prices are low, the forest stands in many areas within the TSA become uneconomic to harvest because the cost of road development, logging, hauling, silviculture and administration exceed the revenue from selling the logs. To minimize costs, current harvest operations focus on the harvest of forest stands in areas requiring little or no road development, in areas that can be harvested using ground-based logging, and in areas close to Terrace. The harvested forest stands produce a mix of sawlogs and pulplogs. Sawlogs are more valuable and their harvest helps to offset the cost of harvesting the pulplogs in a stand. The economic viability of harvest operations is particularly sensitive to sawlog prices. Prices for both sawlogs and pulplogs have been low since 2005, which is a contributing factor to the full AAC not having been harvested in recent years.

Other important basic sectors of the economy are public sector (39 percent), mining and mineral processing (19 percent), tourism (12 percent), construction (8 percent), and fishing and trapping (3 percent).

First Nations

Seven First Nations have asserted territories in the core area of the Kalum TSA: Gitga'at, Gitksan, Haisla, Kitselas, Kitsumkalum, Lax Kw'alaams and Metlakatla. Of these, Haisla, Kitselas, and Kitsumkalum have communities within, or very close to, the core area of the Kalum TSA.

Under the Nisga'a Final Agreement, the Nisga'a have rights to the Nass Wildlife Area, which includes part of the core area of the Kalum TSA. None of the Nisga'a communities lie within the core area of the Kalum TSA.

The Ministry of Forests and Range has been communicating with First Nations about this timber supply review and intends to continue to fulfill its legal obligations to consult with First Nations in conjunction with the release of this public discussion paper.

Land use plans

The Kalum Land and Resource Management Plan (LRMP) received final approval in May 2002. It covers the core area of the Kalum TSA, TFL 1 and TFL 41. The Kalum LRMP recommended new protected areas, which were legally established in May 2004. The Kalum LRMP also recommended land use zones, management objectives and targets. These were legally established in the Kalum Sustainable Resource Management Plan (SRMP) in April 2006 as orders under the *Land Act* or the *Forest and Range Practices Act*.

Ungulate Winter Ranges for mountain goat and Wildlife Habitat Areas for tailed frog have been established under the *Forest and Range Practices Act* as recommended by the Kalum LRMP.

Forest management

Current forest management must be consistent with the requirements of the *Forest and Range Practices Act* (FRPA) and associated regulations, which are designed to maintain a range of biodiversity and wildlife values. All forested lands, whether they contribute to timber supply or not, help to maintain critical habitats for many species. Therefore, the timber supply analysis includes constraints or forest cover requirements for biodiversity, visual quality, wildlife habitat, community watersheds, recreation features, riparian management and protection of environmentally sensitive areas. These requirements are applied to the Crown forested land base (CFLB).

The Crown forested land base in the core area of the Kalum TSA is approximately 158 000 hectares. Approximately 27 percent of this area is excluded from harvesting because it occurs in parks, reserves, or on unstable terrain. Another 19 percent of the area is excluded from harvesting because it is uneconomic or otherwise unsuitable for timber harvesting. This land continues to provide for other values. The timber harvesting land base (THLB) is estimated to be about 85 000 hectares. This is about nine percent smaller than in 2000.

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Land base and forest management changes since 2000

The last AAC determination occurred in November 1999 and was made effective in January 2000. The AAC was reduced in May 2000 to account for the removal of Crown land from the core area of the Kalum TSA under the Nisga'a Final Agreement. Since then, several changes have occurred to the land base and forest management information and these changes are reflected in the timber supply analysis. The major changes are:

- New protected areas resulting from the Kalum LRMP.
- New Ungulate Winter Ranges for mountain goats and Wildlife Habitat Areas for tailed frogs.
- New or refined management requirements under the Kalum SRMP, including objectives and targets for seral stage distribution, old forest retention, wildlife tree retention, species composition, temporal and spatial distribution of cutblocks, landscape connectivity, rare ecosystems on the Skeena Islands, grizzly bear habitat in specific watersheds, community watersheds, and the Lakelse River special resource management zone.
- A new community forest.
- Updated mapping for riparian stream classification, terrain stability and timber harvesting operability.
- Use of coastal timber yield curves, instead of a mix of coastal and interior yield curves.
- Adjustments to timber ages and heights in the forest inventory resulting from new ground sampling.

Timber supply analysis

For the AAC determination, the chief forester reviews many sources of information, including a timber supply analysis that models the development of the forest through time and its response to harvesting while respecting government's many timber and non-timber objectives. This section highlights some of the important findings from the timber supply analysis.

The base case

A timber supply analysis provides an assessment of the existing land base and forest management information. This assessment includes a timber supply forecast that Ministry of Forests and Range staff believe reflects the best available data and current forest management practices. This timber supply forecast is called the base case. The base case is not an AAC recommendation, but rather one of many sources of information the chief forester will consider when setting the AAC. The AAC determined by the chief forester may be greater or less than the initial level forecasted in the base case.

The base case forecast (Figure 4) shows that the current AAC of 436 884 cubic metres per year can be maintained for two decades, before falling at a rate of nine percent per decade for an additional two decades to a mid-term harvest level of 355 876 cubic metres per year. The long-term harvest level of 421 226 cubic metres per year, achieved after nine decades, is 3.5 percent below the current AAC. The changes in timber yield assumptions compensate for the reduced area available for timber harvesting, allowing the current AAC to be maintained for two decades.

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In the first two decades of the base case harvest forecast, the average area of forest stands harvested in the Kalum TSA is about 820 hectares per year, at an average age of 285 years and an average volume of 540 cubic metres per hectare. Approximately 21 percent of the harvest volume is forecasted to come from areas with established visual quality objectives, which cover 30 percent of the timber harvesting land base. Most of the rest of the harvest volume comes from stands in the integrated resource management zone, which accounts for 67 percent of the timber harvesting land base. A small portion of the harvest volume comes from stands in several smaller zones that cover 2.6 percent of the timber harvesting land base: the Lakelse River Special Management Zone, identified grizzly bear watersheds, and community watersheds.

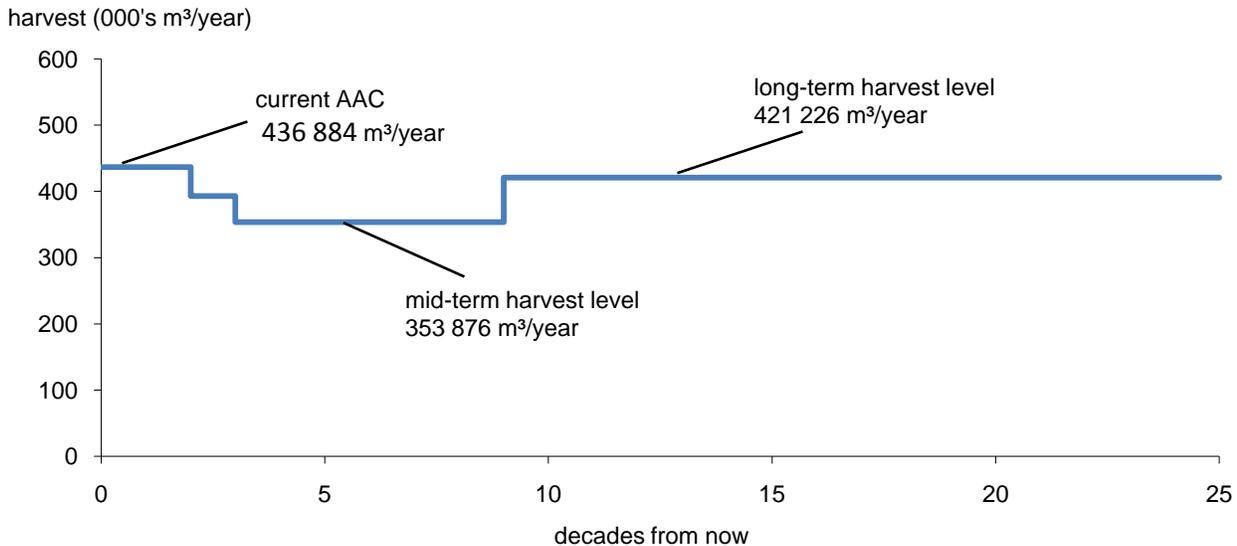


Figure 4. Base case timber supply forecast for the Kalum TSA, 2010.

Key sensitivity analyses

The base case uses a specific set of available data and forest management assumptions that attempts to capture current forest composition and management. Sensitivity analysis is used to examine the effect on timber supply of uncertainty or known differences in the assumptions used in the base case.

Table 1 provides a summary of two key issues that were explored in sensitivity analysis. It reports the percent change in the short-, mid- and long-term harvest levels compared to the base case harvest forecast.

Table 1. Select sensitivity analyses.
Short = decades 1-2, Mid = decades 3-10, Long = decades 11-25

What	Change	Percent Impact		
		Short	Mid	Long
Harvest priority	Highest priority placed on second growth stands	0	0	0
Managing for visual quality objectives	Use top of range of maximum allowable disturbance	0	+ 4	+ 2

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Licensees are showing an interest in moving some harvest into second-growth stands in the Kalum TSA. In the base case of the analysis, significant harvesting of second-growth stands does not begin until decade 5 because there are few second-growth stands that meet the minimum harvestable age criteria until that time. There is a gap in the age class distribution for stands between 50 and 200 years old and harvesting in old-growth stands continues to support the harvest forecast for the short term. Sensitivity analysis in which a high priority was set on harvesting second-growth stands showed little impact on timber supply. This occurs because very few second-growth stands are available for harvest. Harvest levels in decades 1 to 5 still depend almost exclusively on old-growth stands.

In the base case, it was assumed that the maximum allowable alteration to meet visual quality objectives considered the slope of the area and the ability of the landscape to absorb visual alteration. However, current management for visual quality may not be accounting for slope or visual absorption capacity. Sensitivity analysis tested the assumptions with the use of a fixed slope in conjunction with the upper limit of the range for maximum allowable alteration without adjustments for visual absorption capacity. In this case, the analysis showed short-term timber supply to be unaffected, although increases are possible in mid- and long-term timber supply.

Technical details of the complete set of sensitivity analyses are available on request from Forest Analysis and Inventory Branch, Ministry of Forests and Range.

Socio-economic impacts

In addition to the economic conditions described earlier in this discussion paper, a socio-economic analysis provides information on the employment implications of the base case timber supply forecast.

The Kalum TSA has undergone some significant changes in its forestry sector. Between 2001 and 2006, the forestry sector labour force declined by 28 percent. The recent closure of the two sawmills in Terrace is expected to further contribute to this decline by an additional nine percent. Further reductions in the labour force can be expected with the 2010 closure of the Eurocan facility in Kitimat. The population of the TSA remained relatively stable between 2001 and 2006, suggesting that the communities are responding to the changes. However much of the region's growth between 2001 and 2006 occurred in Kitimat.

The closure of the former Skeena Cellulose Inc. pulp mill in Prince Rupert in 2001 removed a major purchaser of pulp grade logs from the region. This has been a contributing factor to the undercut of the AAC in the Kalum TSA. Given the high proportion of pulp logs in the harvest profile, the closure of the Kitimat pulp mill may further affect the total harvest from the Kalum area.

The timber supply forecast suggests a stable timber supply for the next two decades. However, making use of the full timber supply has recently been a challenge in the Kalum TSA. The TSA's full AAC has not been harvested for over five years. An average of about 33 percent of the AAC was harvested from 2004 through 2008. This situation is not expected to change in the near future. Given that the full AAC has not been harvested for some time, there are not expected to be timber supply-related employment impacts in the TSA should the AAC decrease. However, the contribution of the forest sector to the region's economy may continue to decline.

Summary

The base case harvest forecast indicates that the current AAC of 436 884 cubic metres can be maintained for two decades before declining to the mid-term harvest level.

None of the key issues tested in sensitivity analysis had any effect on the short-term harvest level of the base case. Any effects were limited to the medium- and long-term harvest levels.

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The forest sector in the Kalum TSA has been greatly reduced since 2001. Although the base case harvest forecast indicates a stable timber supply for two decades, there has been significant undercutting of the current AAC since 2004. This reflects the sensitivity of harvesting operations to market prices for logs, which have been low in recent years. Since the base case harvest forecast is higher than the current harvest level, no impact on current employment levels is expected.

The provincial chief forester's AAC determination is a judgement based on his professional experience and his consideration of a wide range of information as required under Section 8 of the *Forest Act*. An AAC is neither the result of a calculation nor limited to the results of timber supply analysis; therefore, the new AAC may not be the same as harvest level in the base case.

Your input is needed

Public input is a vital part of establishing the allowable annual cut. Feedback is welcomed on any aspect of this public discussion paper or any other issues related to the timber supply review for the Kalum timber supply area. Ministry staff would be pleased to answer questions to help you prepare your response. Please send your comments to the forest district manager at the address below.

Your comments will be accepted until May 15, 2010.

You may identify yourself on the response if you wish. If you do, you are reminded that responses will be subject to the *Freedom of Information and Protection of Privacy Act* and may be made public. If the responses are made public, personal identifiers will be removed before the responses are released.

For more information or to send your comments, contact:

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Further information regarding the technical details of the timber supply analysis are available on request by contacting Forests.ForestAnalysisBranchOffice@gov.bc.ca

Visit the Forest Analysis and Inventory Branch web site at <http://www.for.gov.bc.ca/hts>.