

Dawson Creek TSA Timber Supply Analysis Public Discussion Paper

**Forest Analysis and Inventory Branch
Ministry of Forests, Lands and
Natural Resource Operations
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Ministry of
Forests, Lands and
Natural Resource Operations

Cover photograph courtesy of Wade Chmelyk
Peace Natural Resource District
Ministry of Forests, Lands and Natural Resource Operations

Introduction

The British Columbia Ministry of Forests, Lands and Natural Resource Operations (FLNR) 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 Dawson Creek 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 Dawson Creek TSA.

According to Section 8 of the *Forest Act* the chief forester must regularly review and set new AACs for all 38 TSAs and 34 TFLs in the Province of British Columbia (BC).

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 Dawson Creek TSA. Details about the information used in the analysis are provided in a data package (September 2011) and the technical details of the analysis is available on request from the Ministry of Forests, Lands and Natural Resource Operations, 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 input received during this review process.

Timber supply reviews undertaken in support of AAC determinations are based on current forest management objectives and management. For the purposes of the Dawson Creek TSA timber supply review, resource management objectives are provided by the Dawson Creek Land and Resource Management Plan (LRMP) described in more detail under ‘Land Use Plans’. Information to support public discussion of resource management objectives, such as the land base associated with each of the legally-established land use objectives or requirements for non-timber resource values have been provided in this discussion paper (Table 1). This information, as well as other products of the timber supply review, can be made available to support land-use planning activities, as required. In the event that resource management objectives and practices change, these changes can be reflected in future timber supply reviews.

^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 maximum amount of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood.

Timber supply review in the Dawson Creek TSA

The AAC for the Dawson Creek TSA, effective May 1, 2003 is 1 860 000 cubic metres with 978 000 cubic metres attributable to coniferous-leading stands of which at least 100 000 cubic metres annually to be taken from stands classified as small pine, and 882 000 cubic metres attributable to deciduous-leading stands.

Since 2002, a number of changes have occurred in the TSA that may affect the AAC. These changes include: introduction of the *Forest and Range Practices Act*, issuance of two new community forest agreements, completion of a new forest inventory, including improved site productivity information, and infestations of mountain pine beetle.

Before setting a new AAC, the chief forester will review all relevant information, including the results of the timber supply 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 AAC that is determined by the chief forester during this timber supply review may differ from the harvest projections, including the base case, presented in this public discussion paper as the chief forester must consider a wide range of information, some of which cannot be quantified. Ultimately, the chief forester's AAC determination is an independent, 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, Lands and Natural Resources Operations 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 Dawson Creek TSA

The Dawson Creek TSA (Figure 1) covers about 2.3 million hectares in north-eastern BC of which 758 335 hectares are available for timber harvesting; approximately 462 504 hectares are stands of predominantly coniferous species and 295 831 hectares are stands of predominantly deciduous species. The TSA is bounded by the Peace River to the north and the Alberta border to the east. To the west are the Hart Ranges and to the far south lie the Front Ranges, both of which are characterized by the mountainous terrain and steep valleys of the Rocky Mountains. The Dawson Creek TSA is administered by the FLNR, Peace Natural Resource District office located in Dawson Creek.

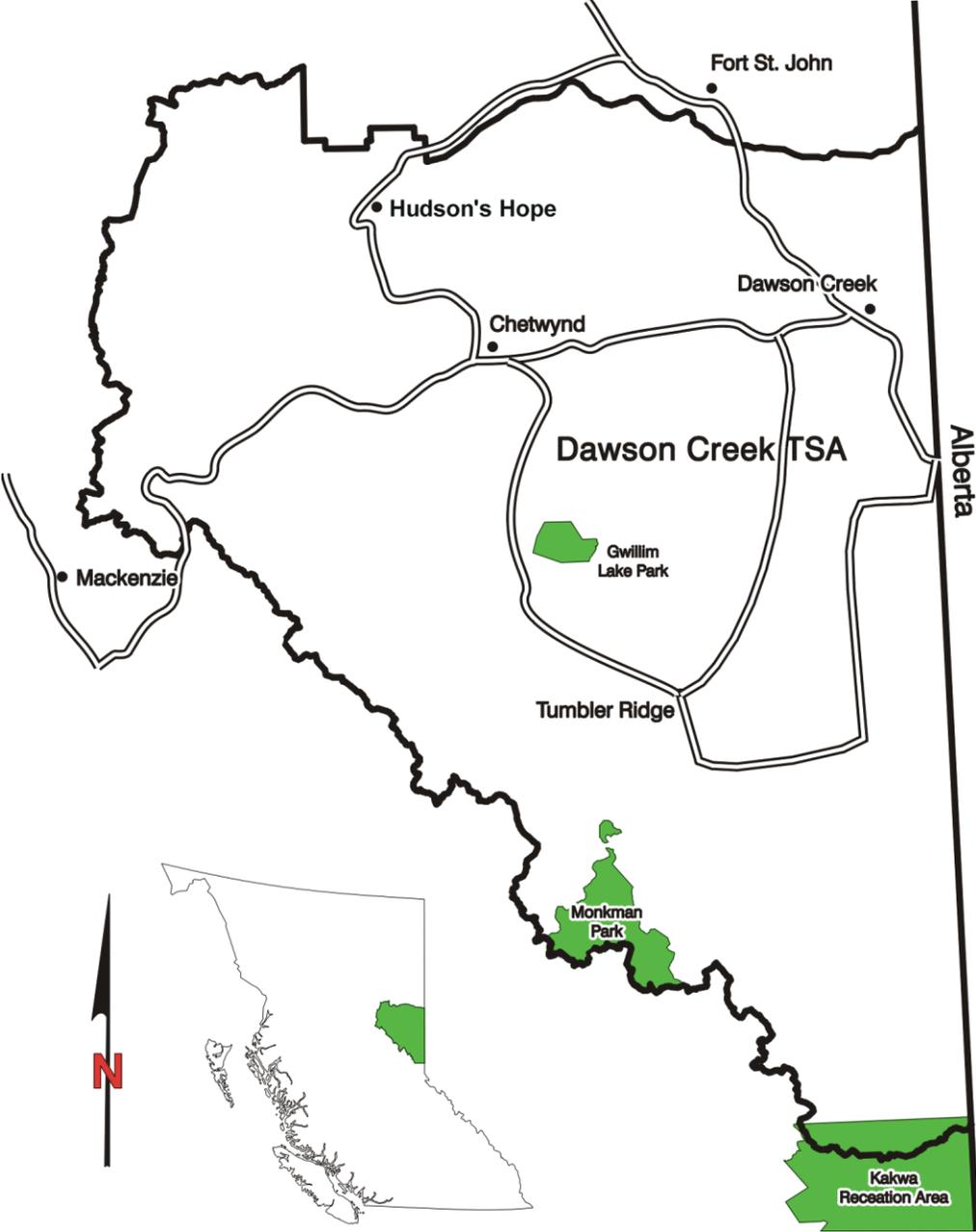


Figure 1. Map of the Dawson Creek TSA.

Natural resources

The TSA lies primarily within two ecoregions: the Boreal Plains in the east, and the Central Canadian Rocky Mountains in the west. Climate is characterized by cold prolonged winters and warm short summers. Four biogeoclimatic zones are represented in the TSA: Boreal White and Black Spruce (BWBS); Engelmann Spruce-Subalpine Fir (ESSF); Sub Boreal Spruce (SBS); and, Alpine Tundra (AT). White spruce, lodgepole pine, trembling aspen, balsam poplar, black spruce and subalpine fir are the main tree species occurring in the TSA and frequently grow together as mixed-wood stands.

Figure 2 shows that the dominant tree species in the TSA are white spruce, lodgepole pine, aspen, subalpine fir (balsam) and balsam poplar.

Figure 3 shows the current age class distribution of the Crown forest land base^e. Natural stands are mostly older than 80 years, while managed stands are under 25 years. Stands between ages 45 and 80 years occupy only a small area of the TSA.

The forests of the Dawson Creek TSA provide a wide range of natural resources, including forest products, forage, minerals, recreation and tourism amenities, oil and gas reserves, and fish and wildlife habitats. Parks, recreation sites and trails, and roaded and non-roaded areas provide opportunities for numerous outdoor activities including mountain-biking, all-terrain-vehicle use, horseback riding, hiking, spelunking, hunting, camping, boating, cross-country skiing and snowmobiling. Parks within the TSA include Monkman, Gwillim and Kakwa provincial parks. Recreation areas include Kinuseo Falls, Moberly Lake, Stewart Lake, Wapiti-Onion Lake, One Island Lake and Williston Lake.

^eCrown 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.

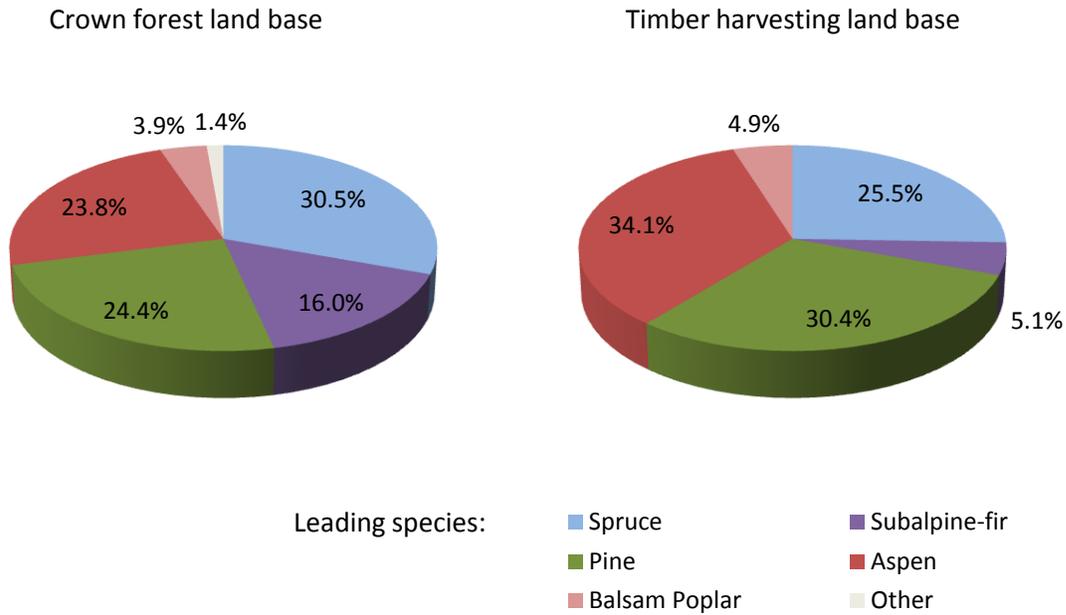


Figure 2. Proportion of leading species for the Crown forest land base and timber harvesting land base^f of the Dawson Creek TSA.

^f**Timber harvesting land base (THLB)**
 The portion of the CFLB that is managed for timber supply by the Ministry of Forests, Lands, and Natural Resource Operations where timber harvesting is considered both acceptable and economically feasible, while meeting objectives for all relevant forest values, existing timber quality, market values and applicable technology.

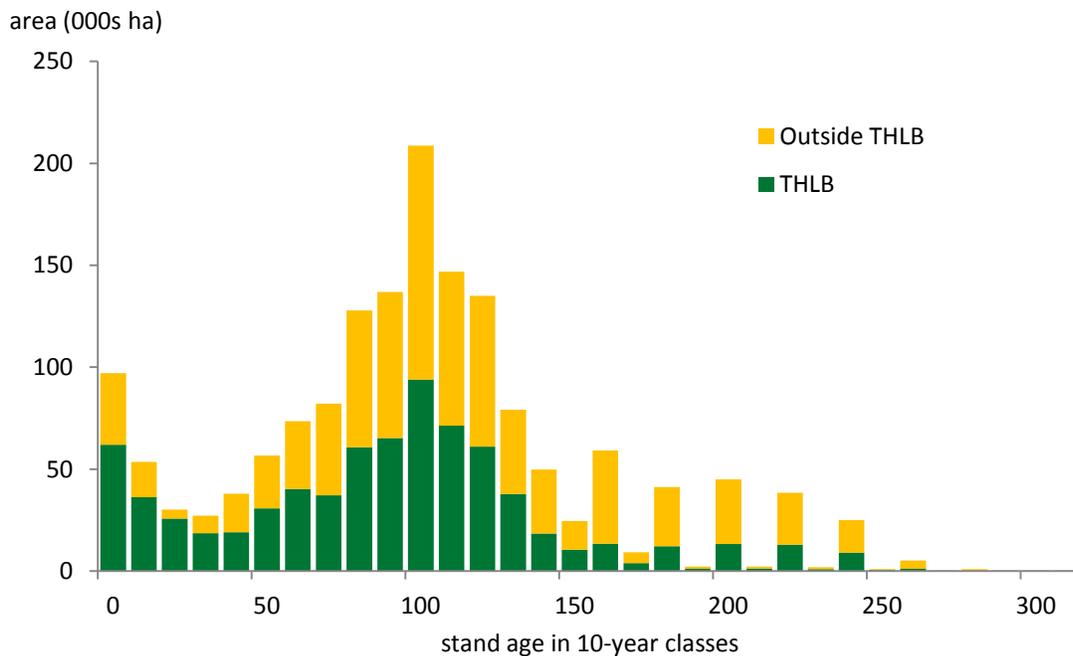


Figure 3. Age class distribution for the Crown forest land base of the Dawson Creek TSA.

Socio-economic information

The Dawson Creek TSA lies within the Peace River Regional District, and includes mining, forestry, oil and gas, tourism, and agriculture and food as the major economic sectors.

The six main communities of the Dawson Creek TSA are: Dawson Creek, Chetwynd, Tumbler Ridge, Taylor, Hudson’s Hope and Pouce Coupe. Of these communities, Dawson Creek, with a population of about 12,257 (2011 BC Stats) is the largest community in the TSA.

Louisiana-Pacific Canada Ltd. operates an oriented strand-board (OSB) mill in Dawson Creek, currently employing 72 staff operating on one shift; with an anticipated rise in demand for OSB, LP expects to increase to three shifts by the end of 2013. Tembec Inc. owns a high yield pulp mill in Chetwynd, however this operation is currently shuttered, with no anticipated start-up date known at this time. Canadian Forest Products Ltd. operates a saw mill in Chetwynd, employing 2,943 (2011 Annual Report) and producing 230 million board feet per year. Chetwynd Forest Industries, a Division of West Fraser Mills Ltd. also operates a saw mill in Chetwynd, currently expanding to accommodate two shifts and production of 1.365 million board feet per day. West Fraser is also building a 13 MW biomass heat recovery power plant, expected to be completed in June, 2014.

Since the last AAC determination in 2003, the average volume harvested has been about 1 294 006 cubic metres per year or about 76 percent of the 1 707 922 cubic metres per year apportioned to replaceable and non-replaceable forest licences and BC Timber Sales.

First Nations

Five First Nations have traditional territories that overlap the Dawson Creek TSA. Two of these, the West Moberly First Nations and the Saulteau First Nation, have reserves within the TSA. Three others, the Halfway River First Nation, the McLeod Lake Indian Band, and the Lheidli T’enneh Band, do not have reserves in the TSA.

The Ministry of Forests, Lands and Natural Resource Operations 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 Dawson Creek Land and Resource Management Plan (LRMP) received final approval in 1999, with no portions having been declared as a higher level plan. The Dunlevy Creek Special Management Zone was outlined in the LRMP, with the Dunlevy Creek Management Plan being signed on January 24, 2002. No other special management plans are being considered at this time.

If there are new or revised legal objectives that differ significantly from those used in the base case prior to the AAC determination, sensitivity analyses can be used to assess the potential impacts. Any changes in legal objectives that occur following the determination can be addressed in subsequent timber supply reviews.

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, recreation features, riparian management and protection of environmentally sensitive areas. These requirements are applied to the Crown forest land base (CFLB).

The Crown forest land base in the Dawson Creek TSA is about 1.6 million hectares. However, not all of this area is available for timber harvesting. Areas excluded from harvest include:

- parks and ecological reserves (12 percent);
- parts of various reserves or areas of unstable terrain (22 percent); and
- uneconomic stands or areas otherwise unsuitable for timber harvesting (19 percent).

Although these areas are not assumed to contribute to timber supply, they continue to provide for other important natural resource values.

The timber harvesting land base (THLB) is estimated to be about 758 335 hectares or about four percent larger than in 2003. The increase is attributable to changes in the area of forest management land base as defined by the forest inventory, the method for determining operability and area removed for non-timber objectives.

Over time, 123 620 hectares of forested THLB within the agricultural reserve is harvested once and then reverts to agricultural use thereby reducing the THLB. The future THLB of 634 715 hectares is about nine percent smaller than reported in the previous timber supply review.

Land base and forest management changes since 2003

The current AAC determination came into effect in May 2003. Several changes have occurred to the land base and forest management information since then and these changes are reflected in the timber supply analysis. The major changes are:

- the new *Forest and Range Practices Act*;
- the spatially established (June 2008) old growth management areas;
- the new ungulate winter ranges and wildlife habitat areas;
- the visual quality objectives established under GAR in 2005;
- the new Chetwynd and Tumbler Ridge Community Forest Agreement (CFA) areas;
- updated mapping estimates for oil and gas seismic lines, roads, riparian areas and timber harvesting operability;
- the new vegetation resources inventory; and
- the mountain pine beetle infestation.

Mountain pine beetle

The BC Mountain Pine Beetle model (BCMPB) was developed by FLNR to project the annual volume of mature pine killed by mountain pine beetle (MPB).

The 2012 BCMPB projection indicates that the TSA experienced the peak of its MPB attack in 2008 and that by 2023 approximately 49 percent of the mature pine volume in the TSA may be killed. However, it is believed that the Dawson Creek TSA with its marginal climatic suitability, mixed-species forests, topographic barriers and prevailing wind patterns may not experience the mortality projected by BCMPB. As such, the actual pine mortality may be greater than the current mortality of 41 percent and less than the 49 percent projected mortality. With pine representing 28.7 percent of the timber harvesting land base volume, a projected pine mortality of 49 percent indicates 14 percent of the volume on the timber harvesting land base will be harvested or lost because of the MPB infestation. Modelling at the current AAC suggests the stability of the timber supply is not significantly affected by the MPB infestation as it is possible to increase the harvest of other species such as spruce, subalpine-fir and balsam poplar through the mid term.

Timber supply analysis

In order to determine an AAC, 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 FLNR staff believe reflects the best available data and current forest management practices and requirements. 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 harvest forecast (Figure 4) shows a harvest level of 1 860 000 cubic metres per year, the current AAC, for the next six decades. Afterwards, the harvest level declines by 10 percent per decade until the long-term harvest level is reached in decade nine. Between decades 9 and 25 the harvest level remains at 1 233 000 cubic metres per year, a level 34 percent below the current AAC. An average of 882 000 cubic metres per year comes from deciduous-leading stands for the first five decades. This is as a consequence of deciduous-leading stands being given first priority for harvest in order to achieve the partition established in the AAC. Afterwards the harvest from deciduous stands declines to a long-term sustainable level of 421 000 cubic

metres per year. Another condition of the current AAC is that 100 000 cubic metres per year of the 978 000 cubic metres year attributable to coniferous-leading stands comes from harvesting and rehabilitating stands with small pine. Small pine stands contribute just over 100 000 cubic metres to the annual harvest for the first five decades, after which the harvest declines as most of the area of small pine has been rehabilitated.

Losses due to the mountain pine beetle infestation as well as losses due to other catastrophic events such as fire and wind damage are accounted for in the base case timber supply forecast.

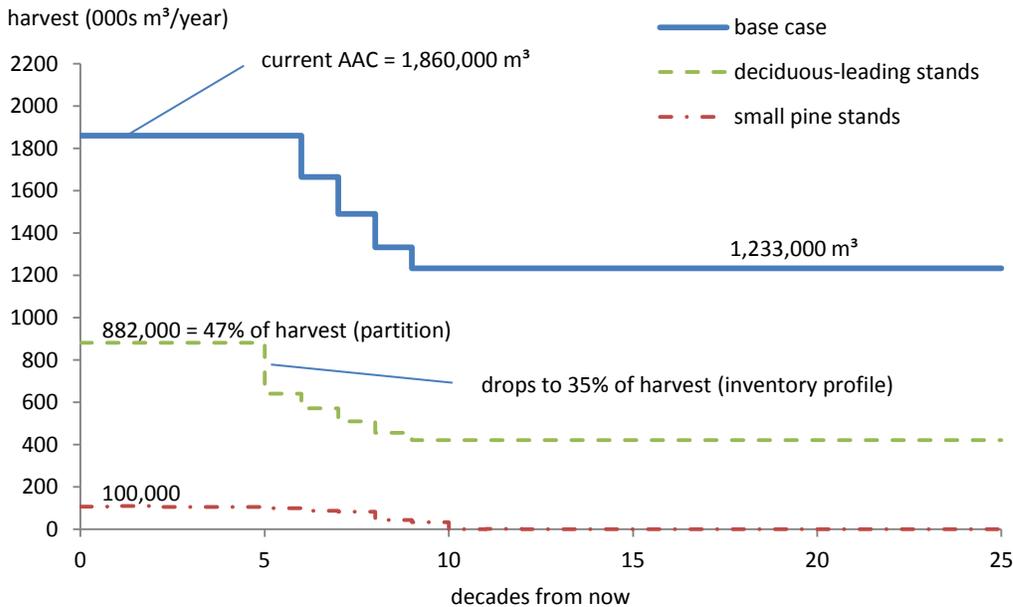


Figure 4. Base case timber supply forecast for the Dawson Creek TSA, 2013.

Key sensitivity analyses

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

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

- not harvesting mixed-wood stands;
- not harvesting balsam poplar stands;
- not harvesting subalpine fir stands;
- yield loss in stands damaged by grazing cattle;
- Kiskatinaw River watershed conserved for caribou habitat;
- timber harvesting land base in the agricultural land reserve not converted to agricultural use after initial harvest; and
- replacing inventory estimates of site productivity with provincial estimates of site productivity.

*Table 1. Select sensitivity analyses for the Dawson Creek TSA.
Short term = decade 1, Mid term = decades 2 to 5, Long term = decades 6 to 25*

What	Change	Percent Impact		
		Short term	Mid term	Long term
Mixed woods	Assume not utilized.	NIL	-7.2	- 20.5
Balsam poplar	Assume not utilized.	NIL	-2.5	- 8.1
Subalpine fir	Assume not utilized.	NIL	NIL	- 6.6
Domestic grazing	Assume 10% volume loss caused by cattle in areas under grazing tenures.	NIL	NIL	- 2.8
Caribou	No harvesting within the Kiskatinaw River watershed.	NIL	NIL	- 3.4
Agricultural Land Reserve	16% of THLB that overlaps the agricultural land reserve is reforested and does not convert to agricultural land.	NIL	NIL	+ 22.7
Managed stand growth rates	Replace inventory site productivity estimates with provincial estimates of site productivity.	NIL	NIL	+ 35.5

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

Summary

The base case harvest forecast indicates the current AAC of 1 860 00 cubic metres can be maintained for six decades. Afterwards, the harvest is projected to decline to 1 233 000 cubic metres per year, a level that is 34 percent lower than the current AAC. The base case forecast also indicates the current AAC partitions of 100 000 cubic metres per year of small pine and 882 000 cubic metres per year of deciduous-leading stands can be maintained over the short- and mid-term.

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 mid- and long-term harvest levels.

A few of the issues tested, such as not harvesting mixed-wood or balsam poplar stands and not harvesting in VQOs, affected the mid term by reducing the harvest level by as much as 7.4 percent. All issues tested affected the long-term harvest level. The most significant of these were not harvesting mixed-wood stands and the rate at which managed stands are estimated to grow. Not harvesting mixed-wood stands had the effect of decreasing the long-term harvest level by over 20 percent. Using the provincial estimates of site productivity for managed stand growth rates instead of inventory estimates had the effect of increasing the long-term harvest level by over 35 percent.

The provincial chief forester’s AAC determination is a judgment based on their professional experience and 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 the 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 issue related to the timber supply review for the Dawson Creek TSA. 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 November 26, 2013.

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 is 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>