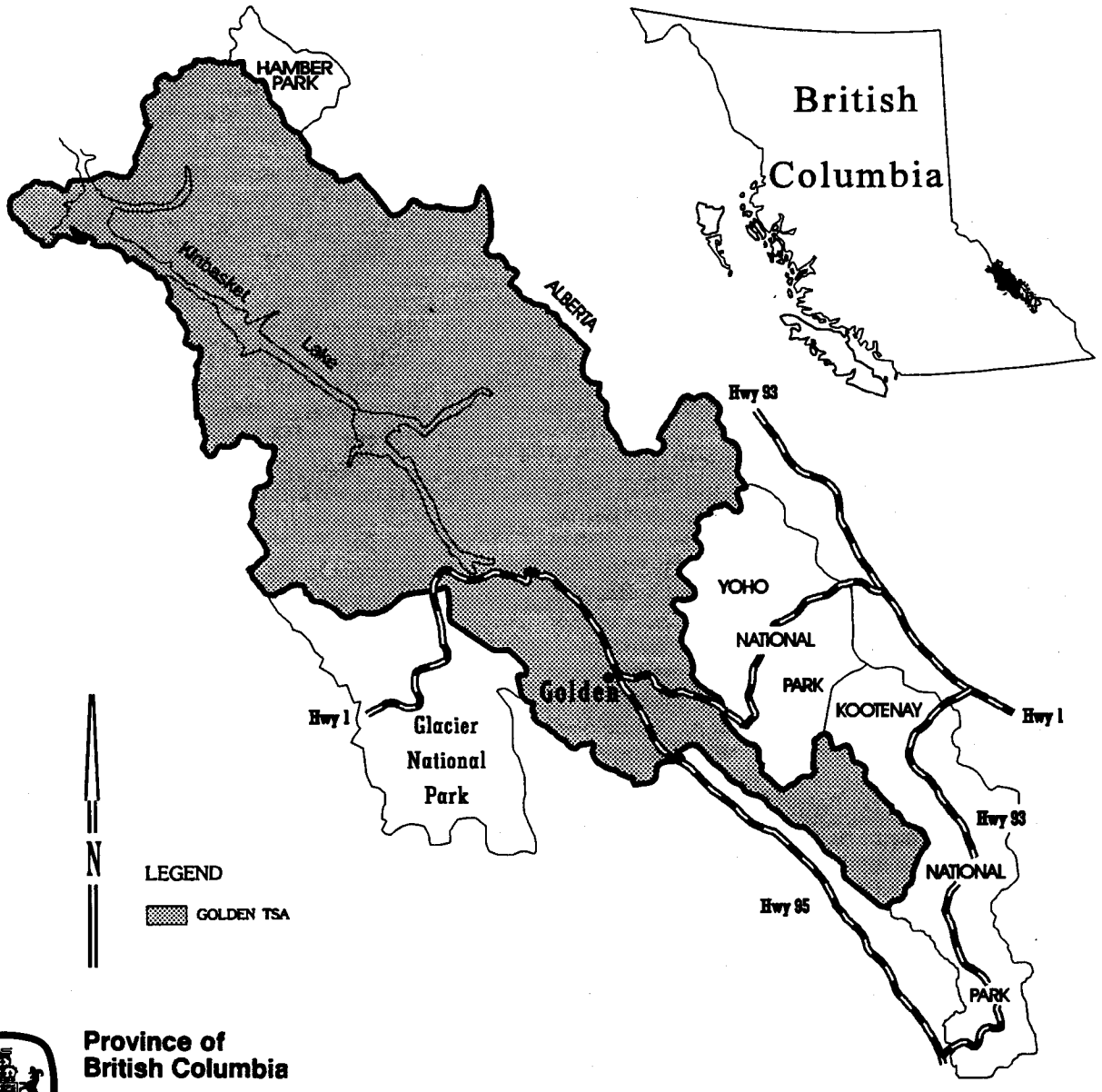
MINISTRY OF FORESTS

Golden Timber Supply Area

Timber Supply Review Discussion Paper
April 1994



Province of British Columbia
Ministry of Forests

Golden Timber Supply Area

Highlights

- This review examines the impacts of current forest management* practices on the timber supply in the Golden Timber Supply Area (TSA)* and the impacts of different future harvest levels on the economy, environment and social conditions in the Golden area. The Timber Supply Review will provide the chief forester with information to determine harvesting levels that are environmentally sound and that ensure the sustainability of the forest sector throughout BC.

  A Land and Resource Management Planning (LRMP)* process involving the public, interest groups and government agencies will begin sometime after this review is completed. Social and environmental goals for the Golden TSA may be changed through the LRMP process, resulting in new integrated resource management objectives. Current practices* will be revised to be consistent with these objectives. Another review of the timber supply will be completed in the Golden TSA within five years to incorporate the impacts of changes in practices.

- It is estimated that 50 per cent of the total income from employment in the Golden area is generated by the forest sector. This includes employment generated by timber obtained from non-Golden TSA sources (p. 3).

- The present allowable annual cut of 650,000 cubic metres per year in the Golden TSA provides the major portion of the wood supply for two local mills that are both operated by the same company. This allowable annual cut (AAC)* supports a total of approximately 1,100 person-years* of local employment, about 29 per cent of the local labour force (p. 3).

- A total of 624 additional person-years of employment are created provincially from the current harvest, illustrating the linkages between the forestry sector in the Golden TSA and the rest of the provincial economy (p. 3).

- As predicted in previous timber supply analyses, the present AAC cannot be maintained in the long term. Over the next 70 years, the timber supply is projected to decline to a sustainable level of 309,000 cubic metres per year (p. 5).

- There are several ways to reduce the AAC to the sustainable level:
  - the AAC could be maintained at the present level for as long as possible, requiring severe declines in the future;
  - small reductions could be implemented now, with larger declines in the future;
  - a consistent level of decline could occur throughout the transition period; or,
  - large reductions could occur now, with smaller declines in the future.

  B.C.'s chief forester must decide what the short-term AAC should be as part of a strategy to achieve this long-term reduction.

- Additional factors suggest that the short-term timber supply may be even lower than initially predicted because:
  - there may be less merchantable wood in the older forests than has been estimated (p. 7); and,
  - the impact of additional practices to conserve wildlife habitats have not been fully considered (p. 7).

- There may be opportunities to partially offset reductions in the short-term timber supply by:
  - increasing the timber management land base by harvesting forest types that are not currently considered merchantable, such as very high-elevation sites, old hemlock and balsam stands, and deciduous forests (p. 8); and,
  - reducing the minimum harvest age (p. 8).

- Silviculture treatments (i.e. juvenile spacing, fertilization, etc.) in the Golden TSA will not likely increase the short-term timber supply. A test completed during the review indicated that an increase in the timber supply could be expected over the long term, but that the short-term supply was not projected to change (p. 8).

- In the past, timber harvesting has been concentrated in the southern portion of the TSA and on gentler slopes. Recently, operations have shifted to better cover the range of sites in the timber management land base and plans for future harvesting indicate that this practice is expected to continue. There are concerns that market downturns may force compromises in the current plans to better distribute harvesting over the range of sites in the timber management land base. It may be necessary to reassess the AAC if this occurs (p. 9).

- The impact of adjustments in the timber supply on the local community is an important consideration in this review. The Golden community has recognized that continued heavy reliance on one industry may lead to instability, particularly given the declines in timber harvesting that are expected to occur (p. 9).

* **Throughout this document, an asterisk at the end of a phrase indicates that the phrase is defined in the definitions at the end of this paper.**

Golden Timber Supply Area

Introduction

The B.C. Forest Service is completing a three-year Timber Supply Review (TSR) to examine the current allowable annual cut (AAC)* in all timber supply areas (TSAs)* in the province, including the Golden TSA. This Timber Supply Review will assess the effects of current management practices* on the timber supply to determine the degree to which the present AAC is sustainable and to provide information to make adjustments if necessary.

The province's chief forester determines the AAC for each public forest management unit based on the best available information at the time of the decision. Public input is an important factor in the chief forester's decisions.

This discussion paper has been prepared to summarize the technical reports prepared for the Timber Supply Review in the Golden TSA and to encourage the public to comment on the review's findings.

Public comments will be accepted until July 25, 1994. Input will be compiled, sent to the chief forester and the minister of forests, and made available in a public document.

The chief forester's decision on the AAC is expected during the summer of 1994 and will be explained in a public AAC rationale report.

The AACs for public forest land in B.C. are not determined through mathematical calculations. These decisions are based on the best available information about the condition of the forest and the impacts of different harvest levels on the economy, environment and social conditions in the local area.

Well-informed, thoughtful input from the public is required to make these decisions. You are encouraged to read this discussion paper and provide your comments; you will find questions at the end of the paper to assist you to provide input.

Background to the Timber Supply Review

In recent years, British Columbians have voiced their wishes for sustainable forest resource management on public forest lands in B.C. Determining the level of the AAC is an important decision that effects the sustainability of forest management. The AAC impacts the economy and the environment of the local area and the province, now and in the future.

In 1981, the timber supply for each TSA was assessed and an AAC was determined. At that time it was clear that a future reduction in the AAC would be required because of the eventual transition from harvesting the existing mature forests with high timber volumes to harvesting younger, second-growth forests with lower volumes.

A study completed by the B.C. Forest Service in 1991 found that existing harvest levels were outdated. Current AACs failed to take into account recent changes in forest management objectives and practices, such as integrated resource management and protection of non-timber values.

To provide a clearer picture of the current timber supply situation, the B.C. Forest Service implemented the Timber Supply Review. Its purpose was to:

- define how current management practices affect the short- and long-term timber supply and the impacts of changes in timber supply on the economic, environmental and social conditions in the local area;
- identify where improved information is required to make reliable forecasts; and,
- adjust the AAC if necessary.

The Timber Supply Review was designed to ensure that the chief forester has the information he needs to review the AAC for each management unit. Section 7 of the *Forest Act* requires that this review be completed by December, 1995 for all TSAs and tree farm licences (TFLs). Following this review, the AAC for each TSA and TFL must be reassessed at least every five years.

Factors the chief forester will consider when determining the AAC (as prescribed in the *Forest Act*) include:

- the rate of timber production that may be sustained;
- the short and long-term implications to the province;
- the nature, production capabilities and timber requirements of timber processing facilities;
- the economic and social objectives of the Crown; and,
- abnormal insect or disease infestations or damage of timber in the area.

As part of the Timber Supply Review for the Golden TSA, two technical background reports have been prepared to assist the chief forester with this AAC determination. The B.C. Forest Service conducted a short- and long-term timber supply analysis (*Golden Timber Supply Analysis*, July, 1993) which

included timber supply forecasts. A consultant then completed a socio-economic assessment of these timber supply forecasts (*Golden TSA Socio-Economic Assessment*, January, 1994).

This discussion paper summarizes these reports and highlights critical factors that require your input. Page numbers from the reports are provided so that you can refer to them for additional information (*TSAR* is the *Timber Supply Analysis Report; SEA* is the *Socio-Economic Assessment*). Both reports are available from the Golden Forest District office.

Other government initiatives on forest management such as the Protected Area Strategy*, Commission on Resources and Environment (C.O.R.E.)*, and the Forest Practices Code* are currently underway. A Land and Resource Management Plan* will also be initiated in the Golden TSA sometime after the TSR is completed.

The Timber Supply Review does not conflict with these initiatives. It provides a much needed snapshot in time illustrating the impacts on timber supply of continuing with current land-use and management practices and the economic, environmental, and social impacts of changes in the timber supply.

Decisions from these other processes are not expected until after the TSR for the Golden TSA is completed. If these decisions require changes to land-use or forest management practices that significantly impact the timber supply in the Golden TSA, these impacts will be considered in the next AAC review.

Description of the Golden Timber Supply Area

Forest resources

The Golden TSA is located in the southeastern portion of B.C. (see map on the cover) within the Rocky Mountain Trench and the Columbia River Valley. The climate and ecology of the area are very diverse because of the mountainous terrain and high rainfall common in the interior wet belt. These conditions create diverse forests with a variety of tree species. Spruce, lodgepole pine and western red cedar are the most common mature species, with lesser amounts of hemlock, balsam and Douglas-fir.

Mountainous terrain in much of the TSA limits the size of the timber management land base*. Figure 1 illustrates that most of the land base is not available for timber harvesting either due to lack of forest cover (64 per cent) or unsuitability for timber harvesting (due to factors such as environmental sensitivity, rough terrain, difficult access or unmerchantable timber). Nineteen per cent of the total land base (174,599 hectares) is suitable for timber harvesting using current methods. (*TSAR* pp. 4–7 and 32–34)

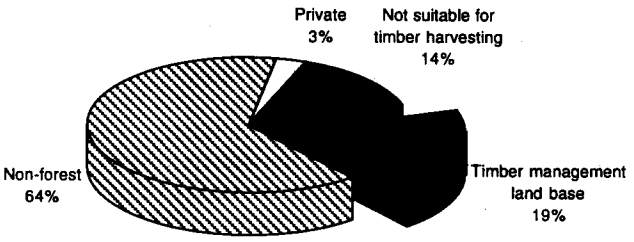


Figure 1: Area summary for the Golden TSA

Notes: Total area: 921,321 hectares

Buffer zones along minor riparian areas (1,015 hectares), a designated old-growth area (407 hectares) and buffers along recreational and heritage trails (545 hectares) were subtracted from the timber management land base for this analysis.

Study areas for the Protected Area Strategy have not been subtracted from the timber management land base for this analysis.

The 19 per cent of the area that is within the timber management land base contains the majority of the important wildlife habitats in the Golden TSA. A wide variety of wildlife species inhabit these diverse forests including moose, elk, deer, grizzly bear, small mammals and many bird species. Among the more recognized species that are threatened are the peregrine falcon, bald eagle, great blue heron, grizzly bear, caribou and fisher (a small mammal). (*SEA* pp.17–19)

The Golden TSA shares its border with five national parks and three provincial parks, illustrating the spectacular mountain scenery and recreational opportunities in the area. Boating, camping, hunting, fishing, hiking, mountain biking, kayaking, hang-gliding, para-gliding, bird watching and wildlife viewing are common activities. In the winter, snowmobiling and cross-country skiing are popular. Wilderness/adventure tourism operations have expanded recently and offer a range of backcountry experiences. (*SEA* pp. 12–15 and 20–21)

Current AAC

The AAC for the Golden TSA is presently 650,000 cubic metres per year. Approximately 83 per cent of the harvest is allocated to licensees (73 per cent

is allocated to one licensee), 15 per cent is harvested through the Small Business Forest Enterprise Program administered by the B.C. Forest Service, and two per cent is held in a Forest Service Reserve.

Socio-economic profile

The total population within the Golden TSA is 6,845 (based on 1991 data), with the town of Golden being the only sizeable centre. Golden is highly reliant on the timber industry to sustain its economy. It is estimated that 50 per cent of the total income from employment in the area is generated by the forest sector. (*SEA* p. 9)

The timber industry is dominated by one company with a plywood mill and sawmill. The primary source of timber supply for these mills has been the long-term forest licence held by this company within the TSA. Over the last five years, approximately 74 per cent of mill input has come from this licence; during 1992, approximately 54 per cent of input came from this licence. The remaining timber supply has been obtained from a portion of the Small Business Forest Enterprise Program in the Golden TSA, as well as from timber licences (most of which will expire in the next decade) and private land both within and outside the TSA. Reductions in the availability of timber from timber licences and private land have implications on the viability of these mills beyond the impacts examined in this review. (*SEA* pp. 9–10)

In this assessment it has been estimated that harvesting the current AAC in the Golden TSA generates 618 person-years (PYs)* of direct employment in the Golden area. An additional 488 PYs of indirect employment are estimated to be created through forest company and employee spending, based on the assumption that for every direct job in the local forest industry, an additional 0.8 jobs are created elsewhere in the Golden economy. In total, the present AAC generates approximately 1,106 jobs in the local area, accounting for 29 per cent of the local labour force.

Tourism is the second largest and fastest growing industry in Golden. The proximity of national and provincial parks, outstanding and varied landscapes and the junctures of two major river systems and two major highways create outstanding tourism opportunities. Presently, between 85 and 100 businesses in the Golden area cater to tourism visitors. Total tourism employment is believed to be approximately 562 PYs. The growth potential for tourism is excellent in the Golden area. (*SEA* pp.12–15)

Transportation (rail and highway) and service industries are also significant economic sectors in the Golden area. (*SEA* pp. 15–16)

In recent years, the Golden community has been examining options to diversify the local economy. Although the community has historically been relatively stable and employment transitions have been smooth, the lack of economic diversity may cause problems in the future. The community has launched economic development projects to address this potential weakness. (*SEA* pp. 32–36)

Provincial economy and revenues

Processing of timber, chips and lumber shipped outside the Golden TSA and employment generated by spending outside the area is estimated to create a total of 624 PYs of additional employment in the province, illustrating the high level of interdependence between the forestry sector in the Golden TSA and the provincial economy.

In addition, approximately $14 million in provincial revenues are generated annually by timber harvesting in the Golden TSA. This figure is based on the average total fees for harvesting public timber in the area ($7.95 per cubic metre based on 1989–1991 information), estimated personal income taxes, plus other tax revenues of $5.80 per cubic metre. (*SEA* pp. 37–39, Appendices 4 and 10)

Note: Similar estimates for the other industries were not prepared during the *SEA*.

Current management practices

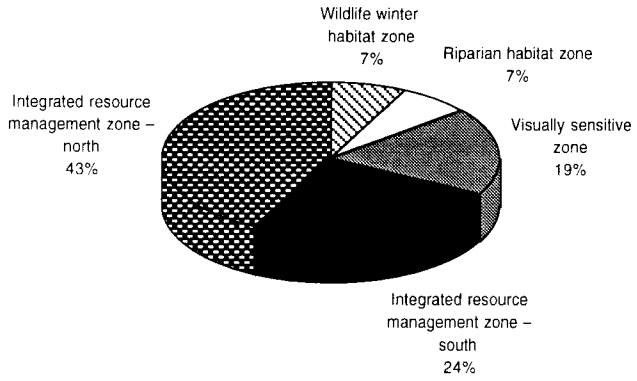
Public forest lands in B.C. provide recreational enjoyment, wildlife habitat, water supplies, timber resources and many other benefits. B.C. laws require the Forest Service to manage the timber, range and recreation resources on public lands through integrated resource management, taking all resources into account.

The timber supply analysis was based on current management practices – the practices that were actually being approved and implemented in the TSA in 1991, when this analysis was initiated. Changes in practices resulting from initiatives such as C.O.R.E., the Protected Area Strategy, the Forest Practices Code or Land and Resource Management Plans will be included in the next reassessment of the timber supply.

Management zones

The timber management land base was divided into five management zones to assess the timber supply impacts of current practices. Each zone has a unique

set of forestry practices. The area of the timber management land base in each zone is shown in Figure 2.



Note: In the *TSAR* visually sensitive areas were further subdivided into two zones.

Figure 2: Area in each management zone

Wildlife winter habitat zone – Valley bottom areas that provide shelter for wildlife during the winter (seven per cent or 12,998 hectares). The management objective is to maintain adequate forest cover to protect the characteristics that are important for winter habitat use.

Riparian habitat zone – Rich, diverse areas found mainly along waterways that provide food and shelter for many wildlife species (seven per cent or 11,870 hectares). The management objective is to maintain the wildlife habitats and biodiversity in these areas.

Visually sensitive zones – Includes areas that can be seen from major centres and highway corridors as well as selected backcountry areas where the scenic landscape is considered to be particularly important. (19 per cent or 32,797 hectares)

Integrated resource management zones – The remaining timber management land base not assigned to another zone (South – 24 per cent or 42,735 hectares; North – 43 per cent or 74,197 hectares). This zone is split into north and south because of different access and management guidelines.

Note: In the *TSAR*, the integrated management zone is called the timber pass system zone as this is where most of the timber harvesting occurs.

Current practices

The current forest management practices that are approved and implemented in each zone are briefly described below. Readers are encouraged to review the *Timber Supply Analysis Report* (p. 9 and Appendix A.3), and the *Socio-economic Impact Assessment* (Appendix 9) for more detailed information.

All zones

- **Wildlife/biodiversity** – Management practices on some cutblocks are designed to promote biodiversity and development of a range of habitats. Wetlands and streams have buffers on each side where timber is permitted to be harvested only by special practices.

- **Basic silviculture** – By law, harvested areas in B.C. must be reforested with ecologically acceptable species within a specified time frame. The most common silviculture regime is to clearcut harvest, broadcast burn if needed, plant, and brush if needed.

- **Harvest ages** – Minimum harvest ages range from 100 to 130 years based on long-term timber production rates and insect and disease risks.

- **Cutblock layout** – Maximum cutblock size is 80 hectares. As much as possible, wildlife movement corridors are maintained.

- **Avalanche paths** – Forests over 20 metres tall are retained along at least one side of avalanche paths. The area that is retained must be large enough to form a viable cutblock.

- **Timber utilization** Within cutblocks, all timber that meets or exceeds the following size limits and is suitable for the manufacture of lumber must be utilized:
  - diameter at stump height (30 centimetres): lodgepole pine – 15 centimetres; other species – 20 centimetres; and,
  - top diameter: cedar older than 141 years – 15 centimetres; others – 10 centimetres

- **Soil conservation** – Harvesting layout follows provincial guidelines. For the timber supply analysis, 6,130 hectares of the timber management land base was deducted from the database for roads, trails and landings that have become non-productive through harvesting. During the analysis, 10.4 per cent of the area remaining in the database was deducted to account for future roads, trails and landings.

- **Viewscapes** – Buffers are normally maintained adjacent to recreational and heritage trails.

Winter habitat zone

- To minimize snow depths, at least 45 per cent of each 250 hectare area of winter habitat must have trees greater than 20 metres tall (estimated to be 80 years old) at any time. An additional 27.5 per cent of the area must have trees greater than three metres tall (estimated to be 20 years old) at any time to provide cover. Cutblocks must be a range of sizes smaller than 15 hectares.

Riparian habitat zone

- At least 80 per cent of the area must have trees at least 10 metres tall (estimated to be 40 years old) at any time. Based on this practice, the area would be harvested over 200 years. Small group cuts and individual tree selection are permitted.

Visual quality zone

- In the majority of this zone at least 84 per cent of the area must have trees at least six metres tall (estimated to be 30 years old) at any time. In the remainder of the zone, where the scenic landscape is less important, at least 70 per cent of the area must have trees at least six metres tall at any time.

Integrated management zone – North

- Areas in this zone are scheduled to be harvested in three separate entries, with at least 15 years between each entry. Seventy per cent of the area can be harvested over 30 years during the first two entries. The remaining 30 per cent can be harvested in the third entry. Within this zone the timber harvesting land base within a single drainage could be completely harvested in about 40 years. Within most drainages this time period is expected to be longer.

- Within the Cummins River area, 10 per cent of the old-growth forest sites within each ecological zone must be maintained in patches at least 200 hectares in size and a minimum width of 350 metres.

Integrated management zone – South

- Areas in this zone are scheduled to be harvested during three entries with at least 20 years between each entry. Sixty per cent of the area can be harvested over 40 years during the first two entries. The remaining 40 per cent of the area can be harvested in the third entry. Within this zone the timber harvesting landbase within a single drainage could be completely harvested in about 50 years. Within most drainages this time period is expected to be longer.

Timber supply outlook and impacts

Timber supply outlook

To complete the timber supply analysis for the Golden TSA the analyst used a computer program to produce a base case timber supply forecast that would meet each of the following conditions:

- maintain the current AAC for as long as possible; then
- reduce the AAC by a maximum of 10 per cent per decade, until the long-run sustainable level was reached; and then,
- maintain harvest levels at or above the predicted long-run sustainable level.

If a timber supply forecast could not be generated that would meet all these conditions, the analyst then adjusted the conditions until a feasible outlook could be produced.

The base case forecast for the Golden TSA, which was produced using the best information that was available when the analysis was conducted (in 1991) and which meets the conditions described above, indicates that the present AAC cannot be maintained in the Golden TSA over the long term. Within 70 years, the timber supply from the Golden TSA is projected to decline by 52 per cent to the long-term sustainable level of 309,000 cubic metres per year.

There are many ways to phase in this long-term reduction in timber supply in the Golden TSA. Figure 3 illustrates the base case* analysis which requires a seven per cent reduction in AAC now, to 605,000 cubic metres per year, with a further 10 per cent decline every 10 years for 60 years until the long-term sustainable level is reached. (*TSAR* p. 12)

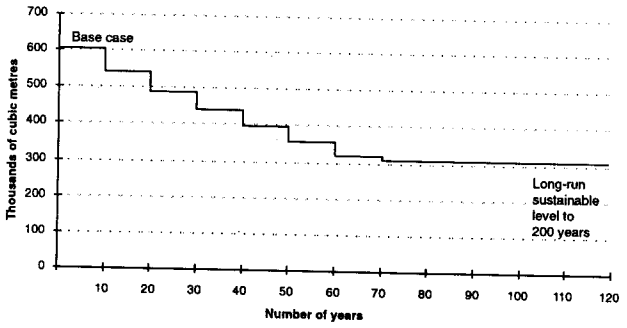


Figure 3. Base case timber supply forecast

Note: This forecast was created using information collected during 1991. The implications of harvesting at the current AAC since 1991 may be a factor that influences the AAC decision.

This is not the only pattern that could be chosen to reduce the timber supply in the Golden TSA. Another forecast in this analysis indicates that it may be possible to maintain the present AAC for 10 years, with 12 to 13 per cent declines every 10 years for 60 years afterwards. Alternatively, a more severe reduction could be chosen now, with lesser reductions in the future.

What the short-term AAC should be as part of the strategy to phase in the long-term adjustment is the difficult decision the chief forester must make.

Impacts of the base case timber supply forecast

- **Environmental impacts**
  BC Environment staff support many of the current management practices used in the Golden TSA to protect wildlife habitat. However, current practices do not adequately address the habitat needs of the full range of wildlife species that occur in the TSA.

  The base case timber supply forecast indicates that, within 40 years, most of the old-growth and mature forests in the timber management land base will have been harvested and converted to young forests. As the most productive forests within the TSA, from a biodiversity standpoint, are in the timber management land base, this will lead to an overall reduction in the natural diversity of the forests in the Golden TSA.

  Widespread conversion of old-growth and mature forests to young forests would affect many wildlife species. Species that use only young forests would increase in abundance, but species which use mature forests would decline. The greatest declines are expected to occur in those species which are dependent on old-growth forests, and many old-growth species, such as mountain caribou and some cavity nesting birds, may disappear altogether. (*SEA* pp. 30–32)

- **Community impacts**
  If the chief forester adjusted the AAC to conform to the base case analysis, with its initial seven per cent reduction, it is estimated that a total of 77 PYs of employment would be lost in the Golden area in the next decade. This reduction is not expected to cause significant community impacts.

  While it is very difficult to forecast how employment might change far into the future, it is estimated that a total of 580 PYs of employment would gradually be lost as the harvest level declined to the projected long-term sustainable level, regardless of which reduction strategy is chosen. These estimates of employment reductions are based on the assumption that the decline in the timber supply from the Golden TSA cannot be buffered by acquiring timber from other sources. (*SEA* pp. 28–29 and 32–36)

  The impact of these job losses on the community would depend to a large degree on the alternative economic strategies that were adopted. Promising options include expanding the wilderness/adventure tourism industry and increasing the number of jobs created in processing each cubic metre of wood through value-added manufacturing.

  The impact of the base case forecast on local recreation is expected to be minimal. The impacts on the tourism industry in Golden are more difficult to gauge. Golden's tourism and recreation markets rely on natural features. It is important to recognize the need to preserve the natural qualities that continue to attract key markets. To date there is little information about the relationship between timber harvesting activities and tourism activities in the Golden TSA. (*SEA* pp. 29–30 and Appendix 8)

- **Provincial impacts**
  It is estimated that, in total, an additional 43 PYs of employment would be lost provincially in the first decade if an AAC adjustment were made consistent with the base case. A total of 328 PYs of employment are estimated to be lost as the harvest level further declined to the projected long-run sustainable level.

  If the AAC were reduced and current taxation procedures were maintained, provincial government revenues would decline by $1 million each year during the first decade, and $7.3 million annually in the long term.

Note: The impacts of the alternative harvest schedules are discussed in the *SEA*.

Examining critical factors

This section identifies some critical factors that will require special consideration during the AAC determination. These factors include improved information that has been collected since the analysis was completed and changes in operations that could influence timber supply.

When reviewing these factors, readers are encouraged to note that in the *Socio-economic Assessment*, it was assumed that the economic impacts of a change in the timber supply would be directly related to the size of the reduction or increase in the timber supply.

Another critical factor that will need careful consideration is the community's ability to adapt to reduced harvest levels. This factor is also discussed in this section.

The chief forester must carefully evaluate this information when reassessing the AAC and identifying where improved information is needed. We encourage you to do the same.

A. Critical factors that indicate a reduction in the short-term timber supply from the base case

1. Amount of merchantable wood in the existing mature forest

Much of the mature, merchantable timber in the Golden TSA is in stands of cedar, hemlock and spruce that are over 200 years old. Many of the trees are decayed and unmerchantable.

Information from past logging indicates that, on average, there has been less timber in the areas that have been logged to date than is predicted to be harvested from similar areas in the base case analysis. Also, plans for logging over the next five years indicate that the amount of timber expected from the areas to be harvested may be less than that predicted in the base case analysis.

This information indicates that the merchantable volumes for existing mature forests used in the base case analysis may be overestimated.

This factor has a significant impact on short-term timber supply. As an example, Figure 4 illustrates that a 10 per cent decrease in merchantable wood from existing mature stands would result in a 26 per cent reduction in the timber supply in the first decade, in addition to the seven per cent decline already forecast in the base case. (*TSAR* p. 19)

Given this factor, it may not be possible to maintain the present AAC within the Golden TSA, or to implement the base case forecast, over the next decade, without causing severe declines in timber supply in the future.

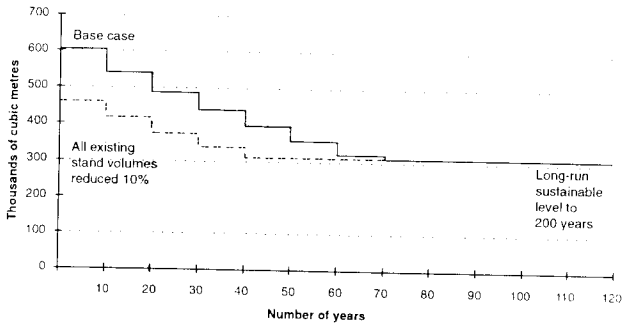


Figure 4: Impacts of changes in the estimate of merchantable timber in the existing mature forest

2. Additional information on practices to conserve wildlife habitats

- **Avalanche paths**
  In the Golden TSA, avalanche paths provide important food sources and movement corridors for many wildlife species including moose, elk and grizzly bears. Mature forests next to avalanche paths provide cover for these animals.

  At the request of BC Environment staff, current management practices have been designed to maintain these small but important habitats by ensuring that one side of each path is forested with trees greater than 20 metres tall. The area that is retained must be large enough to form a viable future cutblock.

  When the timber supply analysis was completed, accurate information was not available on the area of mature forest retained adjacent to avalanche paths within the TSA, so this practice was not included in the analysis. District staff now estimate that at least five per cent of the area of mature timber within the timber management land base will not be available for harvest in the short term due to its location next to avalanche paths. The impact on the timber supply of this management practice was not specifically analyzed.

- **Habitats within cutblocks**
  Special practices have been developed recently to attempt to maintain a range of wildlife habitats within cutover areas by leaving some immature, mature, dead and dying trees and patches of shrubs after harvesting. These practices are new, making it impossible to accurately estimate their impact on the timber supply at this time.

- **Following management guidelines**
  Current management practices for the integrated management zone are described on page 3, including the expectation that the entire area in this zone will be harvested in three entries. It is unclear if it will be possible to harvest all the mature timber within the timber management land base in this zone in three entries and fulfill the management guidelines for non-timber resources.

  If this timber cannot be harvested as scheduled, the predicted future timber supply may be reduced. This may make it necessary to reduce the short-term timber supply as well.

B. Possible opportunities to partially offset reductions in the short-term timber supply

1. Increasing the timber management land base

One of the first steps in a timber supply analysis is to define the area that is feasible and economical to harvest and reforest – the timber management land base. The limits of the timber management land base in the Golden TSA were defined by Forest Service and forest licensee staff during aerial reviews in 1989 as well as field reviews and discussions. To date, very little logging has occurred in areas outside of the timber management land base.

It has been suggested that, with alternative harvesting systems and a possible increase in the timber values as wood supplies become limited, more of the forested area of the TSA will be economical to harvest in the future. This may lead to an increase in the timber management land base and possibly an increase in short-term timber supply.

The following areas of mature forest were not included in the timber management land base for this analysis:

- **high-elevation forests** – approximately 60,000 hectares of high elevation area with severe climates where tree growth is very slow, resulting in low timber volumes and difficult reforestation conditions;
- **low productivity sites at lower elevations** (approximately 7,000 hectares);
- **highly erosion-prone areas** (approximately 6,000 hectares); and
- **deciduous and poor-quality hemlock and balsam types** – approximately 4,000 hectares of deciduous forest types and 7,000 hectares of very old hemlock and balsam forests are not harvested under current management practices because they are not merchantable. Timber from these stands is generally not suitable for processing in the local mills.

2. Increasing the growth rate of regenerated forests

Few regenerated stands have grown to maturity in the Golden TSA, or in the interior of BC, making it difficult to estimate the amount of merchantable wood we can expect to harvest from these stands. There are opinions that, with planting and stand tending practices (i.e. juvenile spacing, fertilization, etc.), the growth rate of these regenerated areas will be higher than the estimates used in the base case analysis, possibly resulting in an increase in the short- and long-term timber supply.

A test of the possible impacts of a 10 per cent increase in the growth of regenerated stands in the Golden TSA did not show this result. The long-term supply did increase but the short-term timber supply did not. (*TSAR* p. 21)

The impacts of a larger increase in the growth rate of regenerated stands was not tested. Expecting a larger increase may not be realistic given the influence of factors such as root rots and the need to manage for biological diversity in plantations. Also, increased regenerated stand yields do not usually affect the short-term timber supply in areas where the short-term supply is substantially higher than the long-term sustainable level, as in the Golden TSA.

3. Reducing the minimum harvest age

One of the factors in the database for a timber supply analysis is the youngest age that forests are eligible for harvesting. This minimum harvest age is defined to ensure that, in general, harvesting does not occur before the forest has reached its maximum growth rate.

Reducing the minimum harvest age for forests that are scheduled to be harvested in the future (60 to 100 years from now) may increase short- and long-term timber supply.

Figure 5 illustrates that reducing the minimum harvest age by 10 years may increase short-term timber supply in the Golden TSA by five per cent in the first decade compared to the base case analysis. (*TSAR* p. 23)

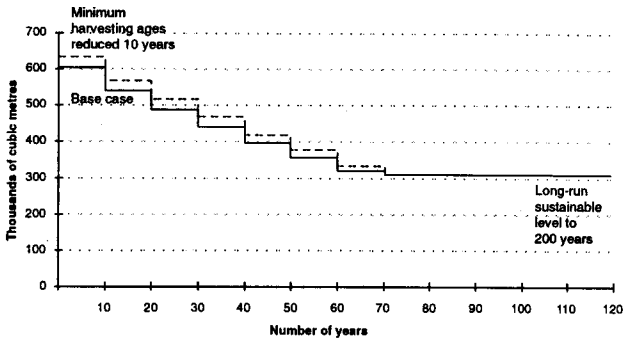


Figure 5. Impact of reduced minimum harvest ages

C. Ensuring harvesting is consistent with the base case assumptions

The base case timber supply analysis includes the assumption that harvesting will be distributed throughout the timber management land base, over the range of sites and forest conditions that exist. Areas with steep slopes (greater than 50 per cent) and locations with difficult access in the northern zone are generally much more expensive to harvest than gently sloped areas close to the mills in the southern zone. The difficulty of winter access to the northern area adds further cost and precludes harvesting during periods of the year.

In the past, timber harvesting has been concentrated in the southern portion of the TSA and on gentler slopes. Recently, operations have shifted to better cover the range of sites in the timber management land base, and plans for future harvesting indicate this practice is expected to continue. For example, harvesting methods have been diversified to include cable systems which allow timber to be removed from steep slopes with less soil disturbance.

Based on information from industry annual reports for 1992, approximately 40 per cent of the AAC is now harvested from steep slopes, an increase from the 31 per cent harvested in 1989. As it is estimated that at least 50 per cent of the timber management land base with mature timber is on steep slopes, this increase must continue until operations include an appropriate amount of steep-slope logging.

There are concerns that market downturns may force compromises in the current plans to better distribute harvesting over the range of sites in the timber management land base. It may be necessary to reassess the AAC if this occurs.

Another assumption made in the base case timber supply forecast is that the oldest forests in the timber harvesting land base will be harvested first. Since these older stands are estimated to contain more volume than younger stands, this assumption may result in a higher timber supply than if some younger stands were harvested first. This is of concern because plans for future harvesting indicate a desire to continue the practice of harvesting some younger stands first.

D. The community's ability to adapt

As in previous timber supply analyses, this analysis indicates that the current AAC for the Golden TSA cannot be maintained in the long term. The rate and timing of an AAC reduction is in part dependent on the ability of the community to adapt to this change.

Although the Golden region has a broad, stable community infrastructure, the local economy is highly dependent on the timber sector and in particular on one company with two mills. Within B.C., only two other communities are estimated to be as heavily dependent on this sector and neither of these rely as heavily on one company.

In communities where timber processing is distributed among many companies, it is assumed that a reduction in the local timber supply will result in a corresponding and approximately equal reduction in processing. In Golden this assumption may not be reasonable because of the concentration of production in two large mills.

While the reaction to small reductions in the local timber supply may follow the assumed pattern, it is unclear whether significant reductions in the local timber supply would force one or both mills to shut down. To further complicate this situation, it is difficult to define the timber supply reduction that would prompt a mill closure. (see *SEA* Appendix 7)

The lack of diversity in local timber manufacturing operations leaves the community highly susceptible to major events affecting the primary employer. The relatively young age of the workforce and the large component of unskilled workers may also make economic transitions difficult.

Even without the expected declines in timber harvesting levels, the community has recognized the need to diversify the economy. Local economic development initiatives have been encouraged, including the establishment of provincial and federal programs which focus on diversifica-

tion and assisting workers and entrepreneurs to adjust and adapt to the changing economy. Recent surveys indicate that a relatively stable and growing small business and entrepreneurial base is developing in the community.

In the past, Golden has enjoyed a reasonably stable social climate in spite of a changing economic climate. The community has already taken the first steps towards diversifying the economy, to increase the possibility of a smooth transition if expected declines in timber harvesting occur.

Factors to be examined in the LRMP process

The impact of current management practices on the timber supply in the Golden TSA is being assessed in the TSR, possibly leading to an adjustment of the AAC. A Land and Resource Management Planning (LRMP) process will be implemented in the Golden TSA sometime after the Timber Supply Review is completed.

The LRMP provides an opportunity for the public and interest groups to work with government agencies to make choices about future management objectives and practices for public forest land in B.C.

New management practices will be assessed and approved through the LRMP process. If these decisions require changes to land use or forest management practices that significantly impact the timber supply in the Golden TSA, these impacts will be included in the next AAC review.

For example, clearly defined and measurable management objectives are required for each resource as a foundation for integrated resource management. In the Golden TSA, specific concerns have been raised about management objectives for maintaining old-growth forests and biodiversity in the timber harvesting land base to protect wildlife and for maintaining scenic landscapes that are suitable for wilderness/adventure opportunities.

Your input is needed

The AAC is an important decision requiring well-informed and thoughtful public input. We ask that you answer the questions on the response form by placing your answers in the space provided and adding any additional comments that you feel are relevant.

If you prefer, additional comments or a detailed submission can be written on separate pages, referring to each question by number. Feedback is welcomed on any aspects of this *Discussion Paper*, the *Timber Supply Analysis Report* , the *Socio-Economic Assessment* and other topics related to the timber supply in the Golden TSA. The district would be pleased to discuss questions or concerns that you may have that would help you prepare your response.

Please mail the completed questions and your comments to the district manager at the address below. Your comments will be accepted until July 25, 1994. Responses may be made public as required by the *Freedom of Information Act*. A summary of public comments will be available from the district manager.

Dave Parsons
District Manager
Golden Forest District
Box 1380
Golden, B.C. V0A 1H0

Phone: (604) 344–7500

Definitions

Allowable annual cut (AAC)
The allowable rate of timber harvest from a specified area of land

Base case
The timber supply forecast that illustrates the impact of current forest management practices using the best information that was available when the data package was prepared and which meets the following conditions:

- maintain the current AAC for as long as possible; then;
- reduce the AAC by a maximum of 10 per cent per decade, until the long-run sustainable level was reached; and then,
- maintain harvest levels at or above the predicted long-run sustainable level.

Commission on Resources and Environment (C.O.R.E.)
A regional and sub-regional land-use planning process has been implemented by C.O.R.E. in the Kootenay area of B.C. including the Golden TSA. The current target date for completion of this process is Spring, 1994, with the timing for implementation of decisions undefined.

Current management practices
Forest practices that were being approved and implemented in the TSA when this review was initiated. These practices are described in this paper starting on page 4.

Forest Practices Code
A draft Forest Practices Code for BC was recently released for discussion and review. The final code is currently planned for implementation in late 1994.

Integrated resource management
The identification and consideration of all resource values, including social, economic and environmental needs, in land use and development decision-making

Land and Resource Management Plan (LRMP)
A consensus-building process involving a cross section of the public, interest groups and government agencies over one or two years to establish resource management objectives and strategies for a management unit.

Person-Year (PY)
One person working the equivalent of one full year. If someone works full time for six months, he or she accounts for 0.50 person years.

Protected Areas Strategy
The Protected Areas Strategy is being coordinated with the C.O.R.E. process in the Kootenays to define areas that should be protected. Within the Golden area there are several candidate study areas to be considered for protection. Decisions on study areas are expected in 1994.

Riparian
The stream bank and flood plain adjacent to streams or water bodies

Timber management land base
The portion of the total area of the TSA currently considered to be feasible and economical for timber harvesting.

Timber Supply Area (TSA)
An integrated resource management unit established in accordance with Section 6 of the *Forest Act;* defined by an established pattern of wood flow from management units to the primary timber-using industries

Tree Farm License (TFL)
An agreement entered into under Part 3, Divison 5 of the Forest Act which provides for the establishment, management and harvesting of timber in a described area.

Timber Supply Review Discussion Paper
Response Form

Response form no.

1. With this information, what do you feel the allowable annual cut (AAC) decision should be?

   ☐ Increase the AAC ☐ Maintain the AAC at present level ☐ Reduce the AAC now

   Why? _____

2. If the AAC was to be reduced, how should the reduction be phased in over time?

   ☐ Larger reduction now, smaller reductions in the future

   ☐ Equal reductions now and in the future

   ☐ Smaller reduction now, larger reductions in the future

   Why? _____

3. Additional factors indicating a further reduction in the short-term timber supply from that outlined in the base case are discussed in this paper. As we are not certain about the exact individual or combined impacts of these factors, how should they be considered in determining the AAC? Please explain the reasons for your response.

   • amount of merchantable wood in the existing forest ☐ Not important in determining the AAC now ☐ Reduce the AAC now

   • additional information on practices to conserve wildlife habitats ☐ Not important in determining the AAC now ☐ Reduce the AAC now

   Please list and explain additional factors which you think indicate the short-term timber supply should be reduced further.

4. The timber management land base is the area within the Golden TSA that it is currently feasible and economical to harvest and reforest. The timber supply forecasts in this analysis are based on the assumption that harvesting will occur on the full range of sites and forest conditions within the timber management land base.

Golden Timber Supply Area

If licence holders do not regularly harvest the full range of sites and forest conditions, should the timber management land base, and the AAC be reduced?

☐ Yes ☐ No Why?

Possible opportunities to partially offset a reduction in short-term timber supply are discussed in this paper. How should they be considered in determining the AAC? Please explain the reasons for your response.

- increase the timber management land base
  - ☐ License holders should demonstrate their ability to harvest and reforest currently uneconomical timber before this potential source of wood supply is considered in determining the AAC
  - ☐ Partially offset reductions in AAC now

- reduce the minimum harvesting age
  - ☐ not important in determining the AAC now
  - ☐ Partially offset reduction s in AAC now

Please list and explain other opportunities that you think are important to offset reductions in the short-term timber supply.

5. The ability of the Golden community to adapt to changes in the timber supply and AAC is an important factor that must be considered in determining the AAC for the Golden TSA. How would you rate the community's ability to adapt to changes that will result from reductions in the AAC in the Golden TSA?

   ☐ Very adaptable ☐ Somewhat adaptable ☐ Not very adaptable

   Why?

6. Which community sector listed below best describes your interests?
   - ☐ local business
   - ☐ outdoor tourism
   - ☐ general public
   - ☐ timber industry
   - ☐ environmental conservation
   - ☐ other (please define)

7. Where do you reside?
   - ☐ Within the Golden TSA
   - ☐ Another area in BC
   - ☐ Outside of BC

Signature (optional) _____

Send completed response forms to:

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