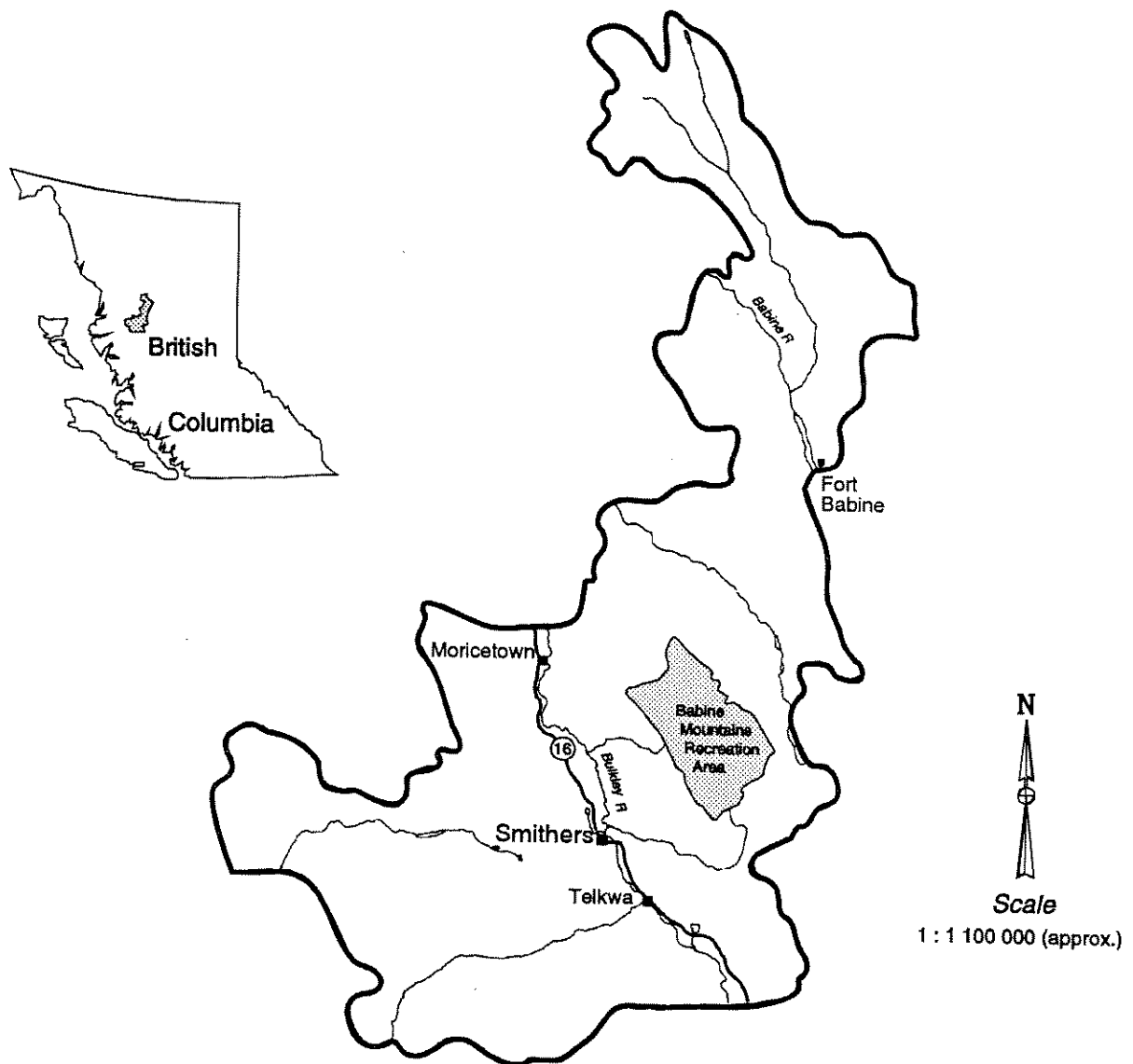




MINISTRY OF FORESTS

Bulkley Timber Supply Area

Timber Supply Review Discussion Paper
August 1994



Province of
British Columbia
Ministry
of Forests

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Timber Supply Review Highlights

- The British Columbia Forest Service is reviewing the timber supply for all timber supply areas* and tree farm licence* areas in the province. The review examines the impacts of current integrated resource management* practices on the timber supply, economy and environment of the local area and the province. Based on the results of this review, the chief forester may decide to adjust the allowable annual cut* for the Bulkley Timber Supply Area.
- Since 1991, a 12-person Community Resources Board representing different sectors of the community has been working on a Land and Resource Management Plan* in the Bulkley Forest District. Approximately 10 per cent of the timber management land base in the Bulkley Timber Supply Area is being considered in the Protected Areas Strategy and is currently unavailable for harvesting until land-use decisions are made in the Land and Resource Management Plan. However, these areas have been included in the timber supply for this review. (page 11)
- The Land and Resource Management Plan will recommend new resource management objectives and strategies which balance social, economic and environmental goals. The allowable annual cut may be reviewed if the plan indicates a significant change from the Timber Supply Review. (page 11)
- One of the Community Resources Board's primary responsibilities is to consult with the public and represent the various perspectives of the community to define broadly supported community goals and objectives. In this way, communities in the Bulkley Timber Supply Area are preparing to deal with possible future timber supply reductions.
- The current allowable annual cut for the Bulkley Timber Supply Area is 895,000 cubic metres per year. Within the timber supply area, this harvest creates 645 person-years of direct employment in harvesting and processing the wood, and 437 person-years of indirect employment in service industries. An additional 922 person-years of employment are created provincially from the current harvest. (page 4)
- Under current integrated resource management practices it is estimated that the present allowable annual cut can be maintained for 20 years. However, the amount of high-quality sawlogs that is harvested is projected to decline immediately. This will require increased harvesting of lower-quality sawlogs and pulplogs to maintain the current allowable annual cut. (page 7)
- Beginning 20 years from now, the total timber supply is projected to decline over a 70-year period to a long-term sustainable level of 424,000 cubic metres per year. (page 7)
- Short-term reductions in the timber supply may be partially offset by salvaging blowdown trees around the edges of cutblocks and by harvesting tree species that are currently not being harvested. (page 9)
- There are concerns locally that the timber productivity estimates used in the timber supply analysis have led to an underestimation of the long-term timber supply. Projects are under way to improve these estimates for future analysis. If these estimates result in a decrease in minimum harvest ages, they may also minimize the projected short-term reductions in the timber supply. (page 10)
- Several alternatives exist for the chief forester to adjust the short-term allowable annual cut as part of a strategy to achieve a reduction in the timber supply over the long-term:
 - the allowable annual cut could be maintained at the present level beyond 20 years, possibly 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.

* Throughout this document, an asterisk at the end of a phrase indicates the phrase is defined in the definitions on the back of this page.

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Definitions

Allowable annual cut

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

Base case forecast

The timber supply harvest forecast that illustrates the effects of current forest management practices on the timber supply using the best information that was available when the data package was prepared.

Current management practices

Forest practices that were being approved and implemented in the timber supply area when this review was initiated. (These practices are described in this paper starting on page 5.)

Forest licence

A licence which grants the licensee the right to harvest a specific volume of wood each year from Crown land within a timber supply area.

Forest Practices Code

The *Forest Practices Code for British Columbia Act* was recently passed in the British Columbia legislature. The final Code will be proclaimed into law 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

A consensus-building process involving a cross-section of the public, interest groups and government agencies to establish resource management objectives and strategies for a management area (usually a timber supply area).

Local Resource Use Plan

A resource management plan for a particular geographical area (usually 5,000 to 15,000 hectares in size) which defines management objectives and strategies for all major resources within the planning area.

Person-year

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

A provincial government initiative to protect representative areas within each ecological region of the province. This may result in some areas in the Bulkley Timber Supply Area being protected from timber harvesting.

Riparian area

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

Timber management land base

Crown forest land which is economically and environmentally feasible to access and harvest.

Timber supply

The volume of timber available for harvesting over time, under a particular management regime.

Timber supply area

An area of Crown land defined by an established pattern of wood flow from the forest to the primary timber-using industries.

Tree farm licence

An agreement entered into with the provincial government which provides for the establishment, management and harvesting of timber by a private interest on a described area of Crown land.

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Introduction

The British Columbia Forest Service is conducting a Timber Supply Review in the 36 timber supply areas and 35 tree farm licence areas throughout the province. The objectives of this three-year review are:

- identifying the economic, environmental and social consequences of existing forest management practices—including their impacts on the short- and long-term timber supply;
- identifying areas where improved information is required to make reliable forecasts; and,
- providing the chief forester with information to make necessary adjustments to the allowable annual cut for the next five years.

This discussion paper summarizes the technical reports from the Timber Supply Review in the Bulkley Timber Supply Area. We encourage British Columbians to comment on these findings. Public comments will be accepted until November 12, 1994. You will find a response form at the end of this paper to help you provide input.

Background to the Timber Supply Review

For at least 20 years, governments have known that, based on current practices, British Columbia's timber supply would decline in the future—we could not keep cutting at the rate we've been going. The Timber Supply Review responds to the urgent need for up-to-date information to determine allowable annual cuts that fully reflect current practices.

A 1991 study completed by the Forest Service, *A Review of the Timber Supply Analysis Process for British Columbia*, examined the procedures which led to the determination of allowable annual cuts and confirmed the need for change. The study found that:

- existing allowable annual cuts were based on

- outdated information and management practices;
- procedures failed to take into account integrated resource management practices and protection of non-timber values;
- procedures were far too time consuming; and,
- analytical techniques had to be strengthened.

The study also showed that because of these procedural weaknesses, very few timber supply analyses had been completed since the early 1980s, with few allowable annual cut adjustments.

The Forest Service acted quickly on the study's recommendations. The Timber Supply Review was initiated to assess short- and long-term timber supplies in light of current forest practices and integrated resource management goals.

The chief forester's responsibility

Determining the allowable annual cuts for Crown forest lands in British Columbia is the responsibility of the province's chief forester. It is one of his most important responsibilities since it affects the local and provincial economy and environment—now and in the future. Section 7 of the *Forest Act* requires the chief forester to consider the following factors to determine allowable annual cuts for timber supply areas and tree farm licence areas:

- a) the rate of timber production that may be sustained from the area taking into account:
 - the composition of the forest;
 - the time in which the forest will become re-established;
 - silvicultural treatments, including reforestation;
 - standards of timber utilization;
 - constraints on the amount of timber produced from the area by use for purposes other than timber production; and,
 - any other information which relates to the capability of the area to produce timber;

Towards a sustainable future

British Columbians agree there is a need for sustainable resource management to ensure a strong economy, viable communities and a healthy environment—today and always. The Timber Supply Review is one of several government initiatives to achieve sustainability:

- The *Forest Renewal Plan* is a partnership of all the forest interests, working together to invest in increasing the value of the forest and strengthening the forest sector economy.
- The *Forest Practices Code* creates a single enforceable law to require better forest practices, with heavy penalties for violators.
- The *Timber Supply Review* is providing the information needed to adjust allowable annual cuts to ensure the sustainability of British Columbia's forests.
- The *Commission on Resources and Environment*, *Land and Resource Management Plans*, the *Forest Land Reserve* and the *Protected Areas Strategy* and are moving to integrate all values into land-use planning in an effort to achieve land-use stability.
- The *B.C. Treaty Commission* is moving towards fair and equitable settlement of treaties which can create long-term social and economic stability for aboriginal and non-aboriginal British Columbians.

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- b) the short and long-term implications to the province of alternative rates of timber harvesting from the area;
- c) the nature, production capabilities, and timber requirements of established and proposed processing facilities;
- d) the economic and social objectives of the Crown, for the area, the region and the province, as expressed by the minister of forests; and,
- e) abnormal insect or disease infestations and major salvage programs planned for the timber on the area.

Some of these factors can be measured and analyzed—others cannot. Ultimately, the chief forester's determination is an independent judgment.

Timber Supply Review process

The Timber Supply Review is an improvement over past methods, with better information and superior analytical techniques. The process was designed to stimulate public discussion through the release of reports and this discussion paper, and to accommodate new information, techniques and ideas.

A five-step process has been developed for the Timber Supply Review:

1. Timber Supply Analysis Report
2. Socio-economic Assessment
3. Public Discussion Paper
4. Public review and input
5. Allowable annual cut determination and Rationale Statement

Each of the documents prepared during the process is released to the public.

The review process for existing tree farm licence contracts is similar, but these contracts require less emphasis on socio-economic impacts. When tree farm licence contracts are replaced, the process will conform with the Timber Supply Review format.

Bulkley Timber Supply Area Timber Supply Review

The data package used for the Timber Supply Review in the Bulkley Timber Supply Area was finalized by Forest Service staff in February 1993, and made available for public review. The Forest Service then conducted and released a short- and long-term timber supply analysis (*Bulkley Timber Supply Analysis*, August 1993), and completed a socio-economic assessment of the timber supply forecasts (*Bulkley Timber Supply Area Socio-Economic Assessment*, June 1994). Both reports are available from the Bulkley Forest District office.

In conjunction with the release of this discussion paper and the socio-economic assessment, Forest Service staff will actively solicit public input to ensure the information in the Timber Supply Review for the Bulkley Timber Supply Area is correct. Input will be accepted until November 12, 1994. Public input will be summarized in a report to the chief forester and the minister of forests.

After weighing all of the available information, the chief forester will, during the winter of 1994, determine the allowable annual cut for the Bulkley Timber Supply Area. This determination and a *Rationale Statement* for the determination will be released to the public along with a *Summary of Public Input*.

A commitment to incorporate change

The *Forest Act* requires the chief forester to reassess the allowable annual cut for each timber supply area and tree farm licence at least every five years after this review is completed. This review process is designed to be responsive to new information, new practices and new government policies.

Implementation of major government initiatives such as the Forest Practices Code and the Protected Areas Strategy, and land-use recommendations from the Commission on Resources and Environment, and Land and Resource Management Plans may have significant impacts on the timber supply in specific timber supply areas and tree farm licence areas. In these cases, the allowable annual cut may be reviewed in less than five years.

A process to develop a Land and Resource Management Plan has been under way in the Bulkley Forest District since 1991. A Community Resources Board of 12 local people representing various community perspectives was formed to assist with planning. This process will lead to recommendations on new resource management objectives and strategies which balance social, economic and environmental values. Current practices will be revised so that they are consistent with these objectives.

The Bulkley Timber Supply Area is scheduled for an allowable annual cut determination in the winter of 1994. The chief forester has made a commitment to review the allowable annual cut for the timber supply area once the Land and Resource Management Plan has been approved by government, if its results show important change or variation from the results of the Timber Supply Review.

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Throughout this discussion paper the page numbers from the technical reports are provided so 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 Bulkley Forest District Office in Smithers.

Description of the Bulkley Timber Supply Area

Forest resources

The Bulkley Timber Supply Area is located on the eastern drainage of the Skeena River in the interior portion of the Prince Rupert Forest Region. It covers approximately 736 000 hectares. Lying between interior and coastal climates, the Bulkley Timber Supply Area is ecologically diverse, having five biogeoclimatic zones.

Mountainous terrain and high elevations limit the amount of land considered suitable for timber production. Currently more than half the timber supply area is either treeless or not economical or feasible to harvest due to sensitive soils, steep terrain, poor-quality timber or unmerchantable species (*TSAR* page 5).

Figure 1 shows that 36 per cent or 267,000 hectares is presently suitable for harvesting using current methods. This is 28 per cent smaller than the timber management land base that was estimated in the 1981 timber supply analysis. This is due to many factors including changes in the provincial forest boundary and removal of areas from the timber management land base for the proposed Babine River Wilderness and the proposed Telkwa Wildlife Management Area.

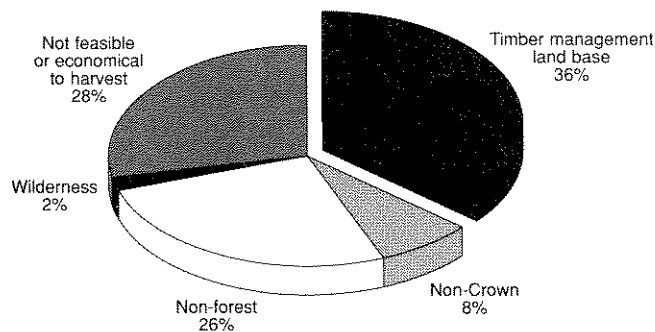


Figure 1. Area summary for the Bulkley Timber Supply Area

Notes: Total area - 736 000 hectares

The Babine River Wilderness (5 286 hectares) was removed from the database for the TSA based on the consensus decision in the Local Resource Use Plan* to preserve this area.

The Telkwa Wildlife Management Area (4 711 hectares) was removed from the database in accordance with an agreement between the Forest Service and BC Environment.

Study areas for the Protected Areas Strategy were not removed from the database as they are currently being reviewed in the Land and Resource Management Plan process.

Timber resources

Mixed balsam stands are the most common forest type in this timber supply area, comprising 48 per cent of the total and occurring mainly at higher elevations. Spruce comprises 20 per cent and lodgepole pine 26 per cent. Both occur in valleys and on the Interior plateau. Hemlock comprises the remaining six per cent and occurs in areas subject to coastal climatic influence. Approximately half of the timber management land base consists of slow-growing, high-volume stands more than 200 years old. The other half is reasonably well-distributed across the younger age classes (*TSAR* page 9).

In the Bulkley Timber Supply Area, sawlogs have traditionally been the major portion of the harvest. This includes spruce, lodgepole pine and the taller one-third of the balsam timber. However, there are also large volumes of balsam and hemlock timber classified as marginal sawlog or pulplog timber (Figure 2).

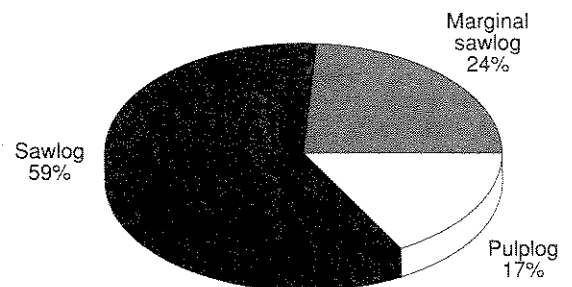


Figure 2. Proportion of timber-quality classes in the timber management land base

Fisheries

The Bulkley Timber Supply Area contains high-quality recreational fishing sites. Two of the province's five Class 1 angling rivers are situated here: the Babine River, especially the area within the timber supply area, and the Zymoetz (Copper) River. Both are considered internationally significant. As well, the Bulkley River is a provincially significant Class 2 angling river.

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The timber supply area borders on the west arm of Babine Lake, which has the largest recreational sports fishery in the region. One area of the lake near Fort Babine, referred to as Rainbow Alley, is of international significance. In addition, there is angling in smaller lakes in the timber supply area.

The most important areas for fish habitat, especially for spawning and rearing, are the tributaries of the rivers mentioned above. The decline of coho and steelhead stocks is a concern (SEA page 12).

Wildlife

The Bulkley Timber Supply Area supports a wide range of wildlife species (SEA page 12). The Babine River watershed supports a provincially significant population of grizzly bears. In the Telkwa, Hudson Bay and Bait Ranges and the Babine Mountains, there is a high density of goat populations. As timber harvesting shifts into these higher elevations, increased hunter and predator access to this goat habitat could threaten or stress goat populations.

The Bulkley River Valley has mule deer populations and there is a concern about the loss of mature forest on winter range, especially in the area around Coffin Lake in the southern part of the timber supply area. However, most mule deer winter range is located on private land. The only remaining herd of local caribou inhabit the Telkwa Range, and it is evident the herd is in decline. The proposed Telkwa Wildlife Management Area was removed from the timber management land base for this analysis.

Recreation and tourism

The greatest landscape assets of the Bulkley Timber Supply Area are its mountains, lakes and rivers. The mountains, and the well-established trails leading into them, provide a variety of opportunities for fishing, hunting, wildlife viewing, hiking, camping, kayaking, canoeing, rafting, cross-country and downhill skiing, snowmobiling, horseback trail riding, and mountaineering. These activities are enjoyed by residents of the timber supply area and by visitors from outside the area (SEA page 14).

Several areas in the timber supply area possess high-quality wilderness recreation opportunities and attract visitors from the United States and overseas. In addition to provincial parks, there are nine Forest Service recreation sites, 35 kilometres of groomed cross-country ski trails and many hiking trails. Bulkley Timber Supply Area residents place a great deal of importance on maintaining the quality of the area's natural resources (SEA page 14).

Current allowable annual cut

The allowable annual cut for the Bulkley Timber Supply Area is currently 895,000 cubic metres per year. Approximately 50 per cent of the harvest is apportioned among major timber tenure holders, 27 per cent is harvested through temporary licences, 21 per cent is harvested through the Small Business Forest Enterprise Program, and the remainder is allocated to woodlot licensees and Forest Service reserve.

In 1981, a timber supply analysis indicated that a harvest level of 650,000 cubic metres per year of sawlog-quality timber could be maintained and an additional 245,000 cubic metres of poorer-quality stands (now termed marginal sawlog and pulplog) could be harvested. In 1985, two temporary licences were awarded to harvest the poorer-quality balsam stands. These licences are scheduled to expire in 1994 and 1995 (SEA page 27).

One of the factors to be considered in this Timber Supply Review is whether an allowable annual cut should be determined for marginal sawlogs and pulplogs separate from the cut for sawlog-quality timber.

Socio-economic profile

The Bulkley Timber Supply Area, with a population of 10,900 residents, has four communities: Smithers, Telkwa, Moricetown and Fort Babine (SEA page 3). Economic development has been driven by natural resources. Forestry-based activities have long been a major component of the economy in the Smithers area and, as Figure 3 shows, they contribute 44 per cent of the income generated by the industrial and non-industrial economy in the local area. Tourism contributes 10 per cent, investment income 10 per cent and mining eight per cent (SEA page 15).

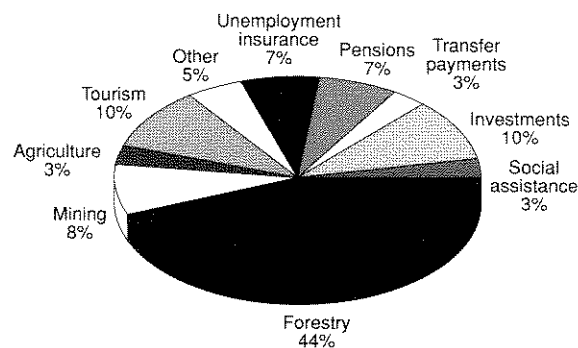


Figure 3. Income generated by the industrial and non-industrial economic sectors in the local area

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Tourism and mining both play a more important role in the local area than in adjacent areas. Although there are no mines operating in the Bulkley Timber Supply Area, Smithers is one of the main supply and service points for mineral exploration and development in northern British Columbia (SEA page 18).

Additional employment is created in the service sector (food, retail, equipment sales and repair, etc.) when income from the industrial and non-industrial sectors is spent in the community.

Timber industry

The largest wood processor in the Bulkley Timber Supply Area operates a sawmill and whole log chipper in Smithers. A second sawmill produces finished wood products, largely for Japanese, European and Australian markets. These mills obtain about 70 per cent of their timber requirements from their timber tenures within the timber supply area. The remainder is obtained through the purchase of logs from private landowners, other timber tenure holders and operators under the Small Business Forest Enterprise Program in two other timber supply areas (SEA page 16).

Kyah Forest Products Ltd., a small, aboriginally owned and operated sawmill in Moricetown exports rough, green lumber to Europe. The mill is supplied with wood from licences held by the Moricetown Band Council, but it has a chronic shortage of large, good-quality logs. This sawmill represents the main local source of employment in Moricetown (SEA page 17). Four other small mills operate throughout the timber supply area.

In addition to wood processors, a large forestry service sector is based in the Smithers area. This includes various companies and consultants providing services such as logging, engineering, timber cruising, silviculture and log hauling. As well, the Ministry of Forests' district and regional offices are located in Smithers (SEA page 17).

In the Bulkley Timber Supply Area, approximately 645 person-years of direct employment are created by the forest industry. A further 437 person-years of indirect employment are generated in the service industries, based on the estimate that for every direct forestry job an additional 0.68 jobs are created elsewhere in the Bulkley's economy (SEA page 31).

Agriculture

The main agricultural enterprise is cattle production, with beef and dairy herds using Crown range land and locally produced forage. A high percentage of farmers in the timber supply area

supplement their farm income by working in the forest industry (SEA page 18).

Tourism

The tourism industry in the Smithers area has become a significant and growing component of the local economy. Skiing, both downhill and cross country, attracts many visitors to the area. Traffic volumes continue to grow as travelers stop on their way to Prince Rupert, Alaska and the Yukon. Recently, the tourism industry in the Smithers area has expanded into the outdoor/adventure tourism market, as the area is well endowed with scenic attractions and abundant wildlife populations (SEA page 19).

Provincial economy and revenues

In the past five years, virtually all of the timber harvested in the Bulkley Timber Supply Area has been processed by local mills; only wood chips are shipped out to pulp and paper operations. It is estimated that a total of 2,004 person-years of employment are created within the province, including employment within the timber supply area (SEA page 34).

Approximately \$20 million in provincial revenue is generated annually by timber harvesting in the Bulkley Timber Supply Area, based on 1992 data. This figure comes from a per-cubic-metre rate of \$10.62 for stumpage and rent, \$6.40 for personal income tax, and \$5.80 for other taxes (SEA page 36). These estimates were developed before the new Forest Renewal Plan was announced and do not include the increased stumpage revenues that will be generated through this plan. While stumpage revenues are expected to increase by as much as 80 per cent, it will not be possible to accurately estimate the impact of this change until the new policy has been in place for a period of time.

Current management practices

Public forest lands in British Columbia provide recreational enjoyment, fish and wildlife habitat, water supplies, timber resources and many other benefits. The Forest Service manages the forest, range and recreation resources on public lands. BC Environment is responsible for the management of fish, wildlife and water resources. Both agencies subscribe to the principle of integrated resource management, where all resources are considered before management decisions are made.

The timber supply analysis was based on existing land-use designations and current management practices—the practices that were actually being approved and implemented in the timber supply area

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when the data package was created (February 1993). Future changes in management practices resulting from initiatives such as the Forest Practices Code*, or changes in land-use designations resulting from the Land and Resource Management Plan, will be considered following implementation.

The current forest management practices that are approved and implemented throughout the Bulkley Timber Supply Area are briefly described below. Readers are encouraged to read the *Bulkley Timber Supply Analysis Report* (pages 11-13 and Appendix A) or review the data package for more detailed information.

- **Basic silviculture** - By law, all harvested areas in British Columbia that are expected to produce timber in the future must be reforested with ecologically acceptable species within a specified time frame. Most areas in the Bulkley Timber Supply Area are managed using a clearcut harvest system followed by planting. However, clearcutting with reserves, selection management and diameter-limit harvesting are being practised in some forest stands.
- **Unsalvaged losses** - Timber losses due to fire, pests (insects, animals, disease) and wind are estimated to be 32,000 cubic metres per year for the Bulkley Timber Supply Area. This volume is currently not salvaged or utilized.
- **Minimum harvest ages** - The youngest age at which a forest may be harvested ranges from 70 to 160 years, depending on the tree species and the quality of the growing site. The average age is about 95 years.
- **Timber utilization** - Within areas being harvested, all coniferous trees with diameters greater than 15 centimetres at chest height must be used.
- **Soil conservation** - Seven and a half per cent of the timber management land base has been removed from the database for roads, trails and landings that cannot be reforested or become non-productive through harvesting.

Twenty-one per cent of the timber management land base was identified in the timber supply analysis as special management zones with resource values of particular importance other than timber (see Figure 4). In these zones, special practices are required to achieve the defined management objectives. Integrated resource management is practiced on the remaining 79 per cent of the timber

management land base. The management zones and the practices for each zone are described below.

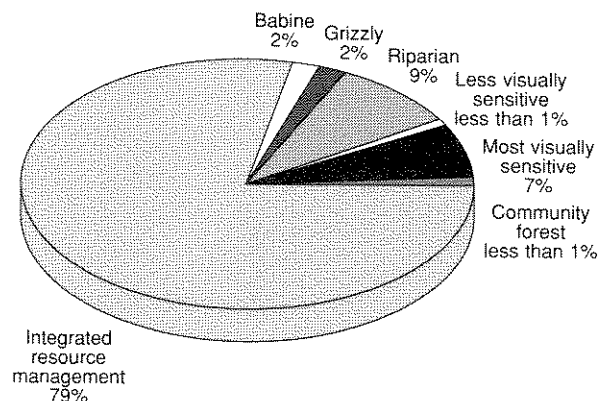


Figure 4. Proportion of management zones within the timber management land base

- **Riparian* zone** - This zone, which was mapped in 1992, is a connected network of lands adjacent to streams and rivers throughout the timber supply area. These corridors, which range from 200 to 400 metres wide, are valuable for habitat and travel routes for wildlife. In these areas, currently approved harvesting guidelines require that 70 per cent of the forest be 80 years of age or older.
- **Grizzly zone** - This zone includes high-quality grizzly bear habitats that were mapped in 1992. These habitats are usually a complex of many high-value forested patches surrounded by less desirable forested areas which provide hiding and thermal shelter. At least 50 per cent of this area must have forests that are 140 years or older.
- **Babine River special management zone** - This zone buffers the wilderness area surrounding the Babine River. No more than 30 per cent of the forest area may contain trees smaller than 10 metres tall, and at least 30 per cent of the area must have forests that are 140 years of age or older.
- **Community forest zone** - The Smithers Community Forest was established to demonstrate various timber harvesting practices, as well as to provide educational and recreational opportunities and trails, including cross country ski trails. The area is also visible from Highway 16. Timber harvesting will take place in the community forest, but not at the same rate as in other areas. No more than 15 per cent of the area may contain trees smaller than five metres tall, and at least 40 per cent of the area must have trees older than 100 years.

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- **Visual quality zones** - Two visual quality zones were identified:
 - most visually sensitive zone (retention): a maximum of five per cent of the area may be less than five metres tall; and,
 - less visually sensitive zone (partial retention): a maximum of 15 per cent of the area may be less than five metres tall.
- **Integrated resource management zone** - The remainder of the timber management land base lies within this zone. No more than 33 per cent of the land base in any watershed may have forests less than three metres tall at any time.

Timber supply forecast and impacts

Timber supply forecast

To complete a timber supply analysis for the Bulkley Timber Supply Area, a computer model was used to attempt to generate a base case* timber supply forecast which met each of the following conditions:

- it maintained the current allowable annual cut as long as possible, or if this was not possible, it found the maximum harvest rate;
- it reduced the harvest within a defined range, usually eight to 12 per cent per decade, until the long-run level was reached; and,
- it maintained harvest levels at or above the predicted long-run timber harvesting level at all times.

If a timber supply forecast could not be generated to meet all these conditions, the analyst adjusted the conditions until a feasible forecast could be produced. These conditions were all met to create a base case forecast for the Bulkley Timber Supply Area, given current management practices and the best available information at the time (February 1993).

It is important to note that the timber supply forecasts presented in the analysis report and in this paper do not represent either a short-term allowable annual cut determination or a long-term strategy to adjust harvests to sustainable levels. These forecasts are part of the information that will be used by the chief forester to determine the allowable annual cut for the next five years.

Two important forecasts emerged from the timber supply analysis. One is that the present allowable annual cut of 895,000 cubic metres per year cannot be maintained in the long term and must be reduced to 424,000 cubic metres within 90 to 100 years. The

second is that the sawlog portion of the allowable annual cut must be reduced both in the short and long term (TSAR pages 15 and 20).

As the sawlog forecast in Figure 5 indicates, an immediate reduction of 52,000 cubic metres per year is indicated for the sawlog allowable annual cut, to 598,000 cubic metres per year. This would represent 67 per cent of the total harvest, as compared to the current rate of 87 per cent of the total harvest. This level can be maintained for 10 years and then must drop by nine per cent per decade for the following 60 years to achieve the long-run timber supply of 296,000 cubic metres.

Marginal sawlog and pulplog volumes make up the difference between the sawlog harvest and the total allowable annual cut, as Figure 5 shows. Two approaches to adjusting the harvest level for this portion of the timber supply are possible.

If the current rate of harvesting marginal sawlogs and pulplogs increases to compensate for the reduced sawlog timber supply, the present allowable annual cut of 895,000 can be maintained for 20 years. This harvest level is then projected to decline to a long-run level of 424,000 cubic metres over the subsequent 70 years. This is illustrated by the base case harvest forecast in Figure 5.

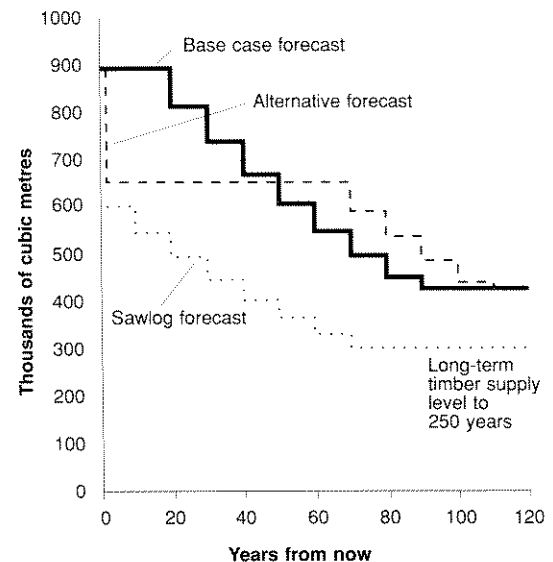


Figure 5. Timber supply forecasts

Alternatively, it is possible to reduce the harvest level from all stands immediately and maintain that level for a relatively long period before declining to the long-term level. As an example, by not renewing the temporary licences, which expire in 1994 and 1995, the total allowable annual cut would be reduced to the current level of the sawlog harvest (650,000 cubic metres per year). Of this total, 598,000 cubic metres would be sawlogs and 52,000 cubic

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metres marginal sawlogs and pulplogs. This level could be maintained for 70 years before declining over the subsequent 30 years to the long-term level.

Whichever of the two approaches described above is chosen, in the long term, the sawlog portion is projected to make up 70 per cent of the total timber supply, or 296,000 cubic metres.

Environmental impacts

BC Environment staff helped define the current management practices used in the Bulkley Timber Supply Area to protect fish and wildlife habitats. However, the following factors were not completely reflected in the base case analysis:

- since the original data package was prepared for the Timber Supply Review, information on the location of wildlife habitat and its management has been refined as part of the Land and Resource Management Plan process. As well, new forest cover requirements have been suggested; and,
- sufficient old growth may not be maintained in the long term. Based on the current analysis, some old-growth habitats would be maintained in the short term because 28 per cent of the land base is not economically or environmentally feasible to harvest. Current management practices also protect some old-growth habitats. However, with changes in knowledge and harvesting technology, sufficient old growth to protect ecological values might not be protected as more areas become feasible to harvest.

Partly for this reason, ecosystem networks have been designed to protect old growth in representative ecosystems across the landscape, and to provide connections between these habitats. These networks were based on the riparian corridors originally mapped for the Timber Supply Review, but now encompass additional areas. Whether these become designated special management zones will be addressed through the Land and Resource Management Plan process.

The impact of timber harvesting on recreation areas is somewhat lessened because sensitive lakes, trails and visual landscapes are incorporated into special management zones. The Bulkley Timber Supply Area currently has a good balance of recreation opportunities. However, if harvesting continues for two decades at current levels, associated road building activity may lead to an increase in road access to recreation opportunities and a reduction in primitive, wilderness opportunities (SEA pages 36-37).

Community impacts

If the chief forester sets the allowable annual cut to conform to the base case forecast, harvest levels would remain the same and no job losses would occur as a result of changes in timber supply. If the base case forecast is followed in the future, a nine per cent reduction in timber supply in 20 years is projected to result in a loss of 60 direct and 40 indirect person-years of employment locally. This estimate is based on an assumption of 0.72 person-years of direct jobs lost for each thousand cubic metre decline in the harvest (SEA page 32). This level of job loss would be unlikely to have severe consequences at the community level. However, individuals who lose their jobs are placed under stress.

While it is very difficult to forecast how employment would change far into the future, using the same estimate, a total of 569 person-years is estimated to be lost as the timber supply declines to the projected long-term timber level (SEA page 31). As this decline occurs, the impacts would become large enough to affect communities in the timber supply area. Signs of economic distress are declines in real wage and income levels, declines in retail sales and increases in the numbers of those collecting unemployment insurance and social assistance (SEA page 33).

Communities in the timber supply area have time to plan for future job losses and can decrease some of the negative impacts. Recent trends in the Bulkley Timber Supply Area, such as a growing population and an increasing emphasis on diversification, may enable forestry job losses to be partly offset by increased employment in other sectors. This would reduce the severity of the impacts (SEA page 32).

Aboriginal community impacts

Aboriginal people in the timber supply area have benefited from sustenance and cultural values associated with the forest environment. Certain areas have particular importance and efforts are being made to ensure that the traditional values aboriginal people derive from the forest are not diminished. Forest industry activity is also an important source of employment income for aboriginal people in the Bulkley Timber Supply Area. Kyah Forest Products Ltd. of Moricetown is currently experiencing difficulty in obtaining logs of suitable quality and size to operate their mill, which was originally designed for large-diameter sawlogs (SEA page 34).

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Provincial impacts

If an allowable annual cut determination is made consistent with the base case, it is estimated that during the first 20 years, annual provincial employment, employment income and government revenues associated with the Bulkley Timber Supply Area harvest would remain at current levels. However, they could begin to decline after 20 years. Ninety years from now, when the long-term timber supply is reached, government revenues could drop by about 50 per cent to \$9.6 million annually (SEA page 35). As stated earlier, these estimates do not include increased stumpage revenues from the recently announced Forest Renewal Plan.

Examining critical factors

This section identifies critical factors that require special consideration during the allowable annual cut determination for the Bulkley Timber Supply Area.

When the data package was created in February 1993, there were concerns that some of the information that was available at the time might not be accurate. Some of the potential impacts of inaccurate assumptions on the timber supply forecast were tested by changing the values for certain critical factors in the timber supply analysis. Since the analysis, local Forest Service staff have further investigated these assumptions, as well as other critical factors. Their perspectives are outlined in the following discussion. Other factors in the analysis were tested and are discussed in the *Timber Supply Analysis Report* (pages 26-37) but were not considered critical to this review and therefore are not included in this discussion paper.

The ability of communities within the timber supply area to adapt to reduced harvest levels, an important consideration in this review, is also included in this section. Factors that are best assessed during the Land and Resource Management Plan for the Bulkley Timber Supply Area are listed in the final section of this discussion paper.

The chief forester must carefully evaluate this information to determine the allowable annual cut and identify where improved information is needed for the next timber supply review. We encourage you to do the same.

A. Operational factors that may impact the short- and long-term timber supply

1. Proportion of sawlog harvest

As indicated in the *Timber Supply Analysis Report*, the Bulkley Timber Supply Area cannot sustain the present level of sawlog harvest. As Figure 6 shows, 87 per cent of the current harvest is sawlogs, whereas the sawlog proportion of the timber volume on the timber management land base is only 59 per cent. The analysis shows that the sawlog harvest declines from 778,000 cubic metres per year to 598,000 or less. Additional harvest must be from marginal sawlog and pulplog quality stands.

2. Reducing losses to fire, insects, disease and blowdown

In the base case analysis, 32,000 cubic metres per year are expected to be lost from the timber supply due to fire, insects, disease and blowdown (trees that are blown over by wind). While this is a small percentage of the current allowable annual cut, it is eight per cent of the long-term timber supply. Two-thirds of this loss is attributed to blowdown around the edges of cutblocks, which can be reduced by implementing a program to salvage these trees.

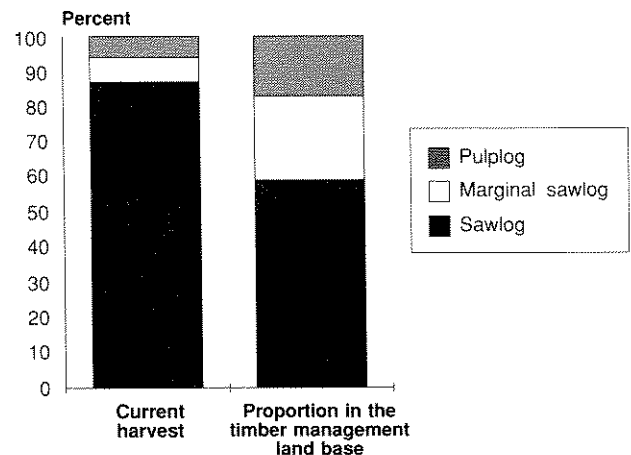


Figure 6. Percentage of timber quality classes currently harvested versus actual proportion in the timber management land base

3. Harvesting forest types that currently are not harvested

Under current management practices, deciduous and other forest types are not harvested because they are not considered to have economic value. Approximately 88,000 hectares of these types have been removed

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from the database for this analysis (TSAR page 8). An additional 32,000 hectares of marginal sawlogs and pulplogs on steep slopes and high elevations may become economical to log if markets improve.

As wood supplies are reduced, these stands may become more valuable and be included in the timber management land base, possibly leading to an increase in wood supply. A short-term alternative is to define a separate harvest level for these forest types in addition to the allowable annual cut for the timber supply area, to encourage operators to harvest these stands.

In the long term, it may also be possible to rehabilitate some areas to improve timber production so they can be added to the timber management land base. It should be noted that this type of expansion of the timber management land base may threaten protection of biodiversity.

B. Refinements to the data used in the timber supply analysis

1. Estimates of potential timber production

One of the important types of data in timber supply analyses are the estimates of potential timber production that are used for different types of forest stands. Because there are concerns that the long-term timber supply is underestimated in this review, Bulkley Forest District staff have closely examined the timber productivity estimates used in the timber supply analysis. Their observations are outlined below:

- **biological estimates of timber productivity**

The potential timber productivity of forest lands currently occupied by older forests appears to be underestimated. District staff believe the timber productivity of these areas may be as much as 25 per cent greater than estimated. Two projects are underway to improve these estimates.

- **timber production from managed forests**

Few forests have been managed, with juvenile spacing and other silvicultural treatments, and grown to maturity in the Bulkley Forest District or in the Interior of the province, making it difficult to estimate how quickly these stands will grow and when they will be large enough to harvest. In this analysis, timber productivity for managed forests was estimated based on the development of

natural forests without silvicultural treatments. Growth estimates for managed stands will be used in future analysis.

2. Minimum harvest ages

The minimum ages at which stands can be harvested is based on the lowest volume stands being harvested today, which is a minimum of 150 cubic metres per hectare with an average minimum diameter of 25 centimetres. If, through the Land and Resource Management Plan and other planning processes, the criteria that define minimum harvest ages are changed, the short- and long-term timber supply may also change.

3. Alternatives to clearcut harvesting

Requirements to maintain a certain proportion of forests above or below a defined age are used to model forestry practices in the special management zones. The procedures for defining these requirements and how they were applied in the timber supply analysis assume a clearcut silvicultural system will be implemented. As it is intended that alternatives to clearcutting will be implemented in these areas, these approaches may predict more constraints to timber harvesting and the timber supply than will be experienced.

C. The ability of communities to adapt

The Bulkley Timber Supply Area has a moderately diversified economy compared to many rural communities of British Columbia. It must strive towards a greater level of diversity and stability.

Opportunities exist within the forestry sector to reduce employment losses by encouraging value-added manufacturing in high employment milling operations, a cornerstone of the Forest Renewal Plan.

As well, 21 per cent of the land base has been designated for some kind of special management which will likely be more labour intensive. The challenge for communities in the area is to develop a strategy to minimize the impacts of this transition to a sustainable timber supply.

Historical examples of economic resilience in the Bulkley Timber Supply Area have been documented. Many communities in northern British Columbia were hard hit by the economic recession of the early 1980s. Information on the Smithers area indicates the community was affected by this recession, but to a lesser degree than surrounding communities. Smithers was able to bounce back and in recent years both the population and number of jobs in the

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community have grown. Per capita income levels have remained at or near the provincial average.

An examination of communities that have responded effectively to job losses indicates that these communities have focused on consensus seeking, public involvement, goal definition and detailed identification of community objectives. The Bulkley Valley Community Resources Board was formed three years ago and is now involved in assisting with the development of a Land and Resource Management Plan for the Bulkley Timber Supply Area. One of the board's primary responsibilities is to consult with the public and represent the various value perspectives of the community. In this respect, communities in the Bulkley Timber Supply Area are preparing to deal with the complicated issues arising from possible timber supply reductions.

Factors to be examined in the Land and Resource Management Planning process

A Land and Resource Management Planning process has been proceeding in the Bulkley Forest District since 1991. This process will recommend new resource management objectives and strategies for the land which balance social, economic and environmental values. New management practices and land-use designations that may be quite different from the current practices presented in this analysis will be assessed and approved by government through this local planning process. The allowable annual cut may be re-evaluated, upon completion of the Land and Resource Management Plan, to reflect the impacts that changes in practices would have on the timber supply. This would include any changes as a result of the new Forest Practices Code.

The issues listed below were raised during the Timber Supply Review but they are best resolved during the Land and Resource Management Plan process. They are included here to provide a perspective on factors that may influence the timber supply in the future:

- Harvesting in several areas within the timber supply area is currently not permitted, awaiting land-use decisions from the Land and Resource Management Plan process. These areas, including the Howson study area and the Driftwood Reiser area, constitute about 10 per cent of the timber management land base. Although harvesting in these areas is not permitted, they still contribute to the projected timber supply. Until decisions are made on these areas, harvesting is being concentrated in other locations.

In addition, other areas have been proposed under the Protected Areas Strategy process. If some of these areas are approved as protected areas, there may be an impact on short- and long-term timber supply.

- The objectives and location of an ecosystem network that would protect representative ecosystems over time must be determined.
- Special and integrated management zones, the objectives for each zone, and the appropriate management practices must be designated.

Your input is needed

The allowable annual cut determination is an important decision requiring well-informed and thoughtful public input. We ask you to answer the questions on the response form at the back of this paper. We encourage you to add any additional comments you feel are relevant.

If you prefer, additional comments or a detailed submission may be written on separate pages. Feedback is welcomed on any aspect of this discussion paper, the *Timber Supply Analysis Report*, the *Socio-Economic Assessment* and other topics related to the timber supply in the Bulkley Timber Supply Area. Forest district staff would be pleased to discuss questions or concerns you may have that would help you prepare your response.

Please mail the completed questions and your comments to the forest district manager at the address below. Your comments will be accepted until November 12, 1994.

You may identify yourself on your 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 requested, personal identifiers will be removed before the responses are released. A summary of public comments will be available from the district manager.

Guenter Stahl
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Discussion Paper Response Form

- the rate of timber production that can be sustained from the area;
- the short and long-term implications to the province of alternative rates of timber harvesting from the area;
- the nature, production capabilities and timber requirements of established and proposed timber processing facilities;
- the economic and social objectives of the Crown for the area, the general region, and the province, as expressed by the minister of forests; and,
- abnormal insect or disease infestations and major salvage programs planned for the timber on the area.

A. Economic and social objectives

Please use the space below to provide comments regarding the economic and social objectives you believe should be considered in determining the allowable annual cut for the Bulkley Timber Supply Area.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Please use the space below to provide any information which you believe may assist the chief forester in considering the technical forestry factors and impacts of alternative rates of harvest that must be considered to determine the allowable annual cut for the Bulkley Timber Supply Area. Further information on the critical technical factors outlined on pages 9 to 11 in this paper would be most helpful.

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☐ local business ☐ timber industry
☐ outdoor tourism ☐ environmental conservation
☐ general public ☐ other (please define) _____
☐ First Nation ☐ government agency (please identify) _____

Address (optional) _____

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