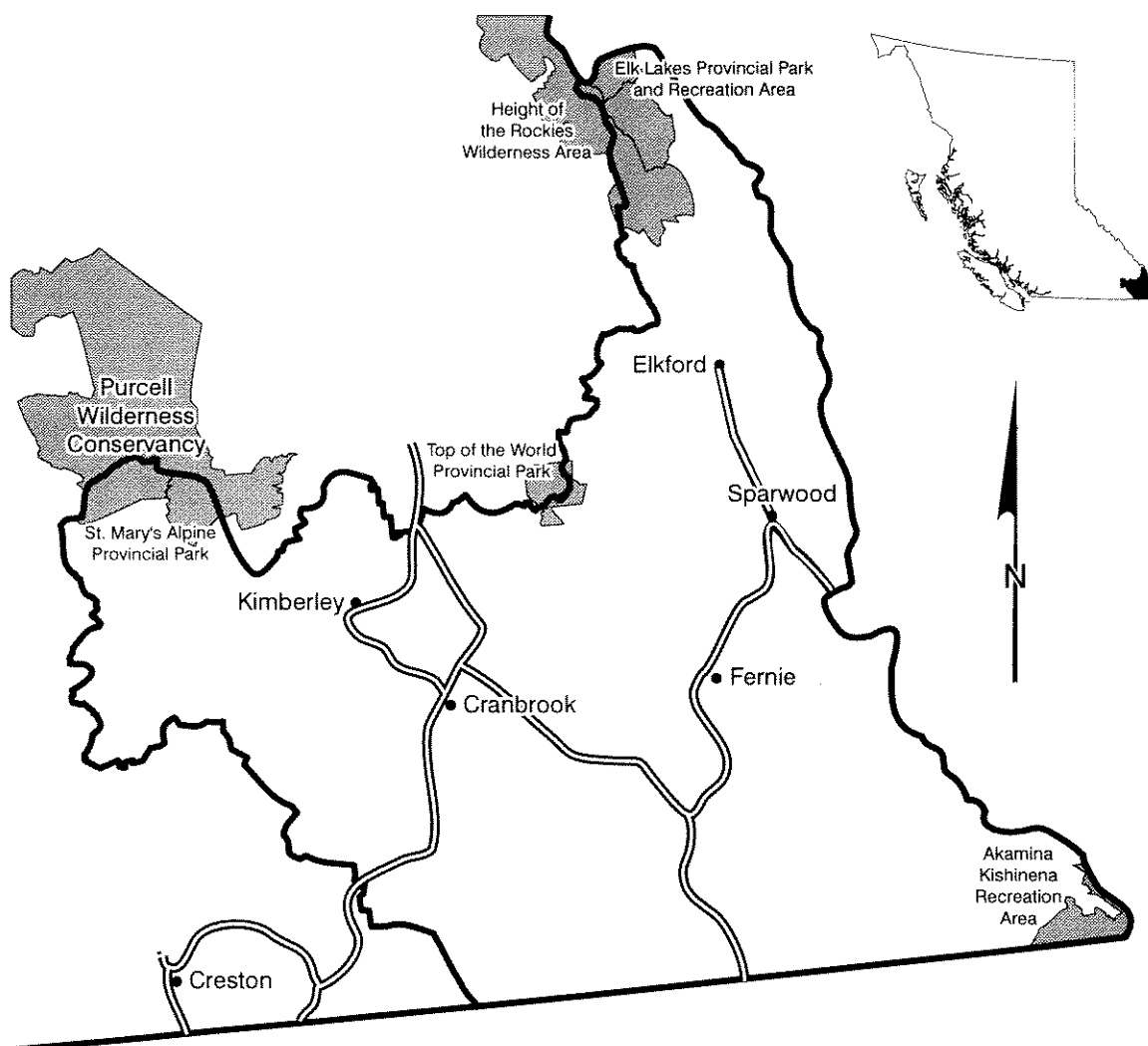




MINISTRY OF FORESTS

Cranbrook Timber Supply Area

Timber Supply Review Discussion Paper
March 1995



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British Columbia
Ministry
of Forests

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Cranbrook Timber Supply Area

Timber Supply Review Highlights

The Timber Supply Review for the Cranbrook Timber Supply Area began in June, 1994. As the Land Use Plan for the East Kootenays did not exist when this timber supply review was initiated, it could not be taken into account in this review. It may be possible to assess the timber supply impacts of the upcoming Land Use Plan in the Cranbrook Timber Supply Area before the maximum five year period required by the *Forest Act*.

- The British Columbia Forest Service is reviewing the timber supply in all timber supply areas* and tree farm licence* areas in the province. This review examines the impacts of current forest management practices* on the timber supply*, economy, environment and social conditions of the local area and the province. Based on the results of this review, the chief forester may decide to adjust the allowable annual cut* for the Cranbrook Timber Supply Area.
- The current allowable annual cut in the Cranbrook Timber Supply Area is 901,010 cubic metres per year. This includes the original cut which was set at 873,810 cubic metres per year plus 27,200 cubic metres per year added in 1994 when Tree Farm Licence 13 was amalgamated with the Cranbrook Timber Supply Area. Because the allowable annual cuts for woodlots are determined separately, they are not included in the timber harvesting land base for this review. The woodlot allowable annual cut was therefore deducted from the total cut, resulting in a current allowable annual cut of 896,136 cubic metres per year for this review. (page 5)
- Most of the current allowable annual cut is milled at three large sawmills in Cranbrook, Elko and Galloway. Harvesting and processing this timber supports approximately 1,531 person-years* of employment in the local area. An additional 687 person-years of employment are created provincially. (page 5)
- The timber supply analysis indicates the current allowable annual cut in the Cranbrook Timber Supply Area cannot be maintained with current integrated resource management practices without causing severe timber supply shortfalls in the future. The base case timber supply forecast indicates an immediate reduction of approximately 10 per cent to 806,000 cubic metres per year. This level can be maintained for 10 years followed by a projected decline of 10 per cent per decade for the next 40 years to 559,000 cubic metres per year (12 per cent below the long-term timber supply level). The timber supply is projected to remain at that level for 70 years before rising over 20 years to the long-term sustainable level of 633,000 cubic metres per year. (page 8)
- Several factors suggest the short-term timber supply may be even lower than initially projected:
 - increased forest cover requirements for integrated resource management
 - increased requirements to maintain older forests
 - increased minimum harvest ages
 - the combined impacts of these factors (page 9)
- Four factors may either increase or decrease the short-term timber supply:
 - estimates of unsalvageable timber losses
 - estimates of existing mature timber volumes
 - size of the timber harvesting land base
 - changes in green-up* requirements (page 10)
- Potential opportunities to partially offset the projected timber supply reductions include:
 - improved timber recovery from harvested areas
 - commercial thinning
 - intensive silvicultural treatments (page 11)
- The impact of adjustments in the timber supply on communities in the Cranbrook area is an important consideration in this review. The economy within the area is relatively diversified, and employment reductions may be offset by initiatives in value-added manufacturing, silviculture and environmental restoration through the Forest Renewal Plan. (page 12)
- The chief forester must determine an allowable annual cut as part of a strategy to achieve the projected long-term sustainable timber supply level. The base case timber supply forecast provides one alternative but the chief forester could select a different harvest level based on his consideration of the factors included in Section 7 of the *Forest Act*.

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

Cranbrook Timber Supply Area

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 forecast that illustrates the effect of current forest management practices on the timber supply using the best available information.

Columbia River Treaty

Downstream Benefits Agreement

In return for building three dams, British Columbia will receive financial benefits in exchange for the increase in power potential resulting from improved stream flows in the United States.

Commission on Resources and Environment (CORE)

An independent commission established to develop regional land use recommendations in consultation with stakeholders.

Current forest management practices

Forest practices that were being approved and implemented in the area when this review was initiated. These practices are described in this paper beginning on page 7.

Environmentally sensitive areas

Environmentally sensitive areas that are mapped as land requiring special management attention to protect important recreation and scenic values, fish and wildlife resources, sensitive soils and unstable slopes.

Forest licence

An agreement with the provincial government which grants a private interest the right to harvest a specific volume of timber each year from Crown land within a timber supply area.

Forest Practices Code

A law which requires better forest practices, with heavy penalties for violators. The final code is currently planned for implementation in the coming months.

Green-up

The time required for regenerated forests to reach a desired condition (usually a specific height) after harvesting, to meet integrated resource management objectives and allow harvesting to take place in adjacent areas.

Integrated resource management

The identification and consideration of all resource values, including social, economic and environmental needs, in resource planning and 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 unit.

Land Use Plan for the East Kootenays

A government decision on land use in the East Kootenays that is being developed in consultation with stakeholders, taking into consideration the recommendations of the Commission on Resources and Environment (CORE).

Person-year

One person working the equivalent of one full year. If someone works full time for six months, he or she accounts for 0.5 person-years.

Protected Areas Strategy

A provincial initiative to protect representative ecosystems and special features on a regional basis.

Riparian areas

The land adjacent to the normal high water line of a stream, river, lake or wetland and extending to include the portion of land influenced by the presence of the adjacent ponded or channeled water.

Timber harvesting land base

Crown forest land within the timber supply area that is currently considered environmentally and economically feasible for timber harvesting.

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, in accordance with the *Forest Act*, primarily 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 defined area of Crown land in accordance with the *Forest Act*.

Cranbrook Timber Supply Area

Introduction

The British Columbia Forest Service is reviewing the timber supply in all timber supply areas* and tree farm licence* areas in the province. The objectives of this three-year review are to:

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

This discussion paper summarizes the technical reports for the Cranbrook Timber Supply Area and encourages British Columbians to comment on the findings. Public comments will be accepted until June 7, 1995. 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 British Columbia's timber supply would decline in the future—we could not keep cutting at the rate we've been going. Now there is an urgent need for up-to-date information to review the timber supply and allowable annual cuts throughout the province.

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 fully account for integrated resource management practices and protection of non-timber values
- procedures were far too time consuming
- 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 the chief forester's 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 licences:

- a) the rate of timber production that may be sustained from the area, taking into account:
 - the composition of the forest and its expected rate of growth
 - 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

Towards a sustainable future

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

- The *Forest Renewal Plan* is a partnership of all the forest interests, working together to invest in increasing the value of the forests 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 up-to-date information to adjust allowable annual cuts to ensure the sustainability of British Columbia's forests.
- The *Commission on Resources and Environment*, the *Protected Areas Strategy*, and *Land and Resource Management Plans* are moving to integrate all values into land-use planning in an effort to end confrontation and valley-by-valley battles.
- The *B.C. Treaty Commission* is moving us toward fair and equitable settlements of treaties which can create long-term social and economic stability for aboriginal and non-aboriginal British Columbians.

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- from the area due to use of the forest for purposes other than timber production
- any other information which relates to the capability of the area to produce timber
- 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
- 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, professional judgment based on the best information that is available. By law, the chief forester is independent of the political process and is not directed by the minister of forests when determining allowable annual cuts. In these determinations, the chief forester considers relevant information from any source, including interest groups. However, these determinations cannot be inappropriately influenced by the advocacy efforts of any group.

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.

Figure 1 illustrates the five-step process developed for the Timber Supply Review in timber supply areas. The diagram also indicates the status of the Timber Supply Review for the Cranbrook Timber Supply Area and the estimated time required to complete each step in the process.

As the legal mandate for allowable annual cut determinations for tree farm licence areas is the same as for timber supply areas, the Timber Supply Review process for tree farm licences is based on similar principles, but it has been designed to reflect the management role of these licensees. In the past, tree farm licences have not included specified timelines for licensees to prepare the information needed by the chief forester to determine allowable annual cuts for these areas. To reflect changing forest management standards, replacement tree farm licences specify timelines for preparing information.

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 area at least every five years after this review is completed to incorporate new information, new practices and government policies. Where major government initiatives prompt changes in land use designations or forest management practices which significantly impact the timber supply, the chief forester may decide to determine the allowable annual cuts more frequently than every five years.

Forest Practices Code

A *Forest Practices Code Act* for British Columbia was passed in the legislature in July, 1994. This law

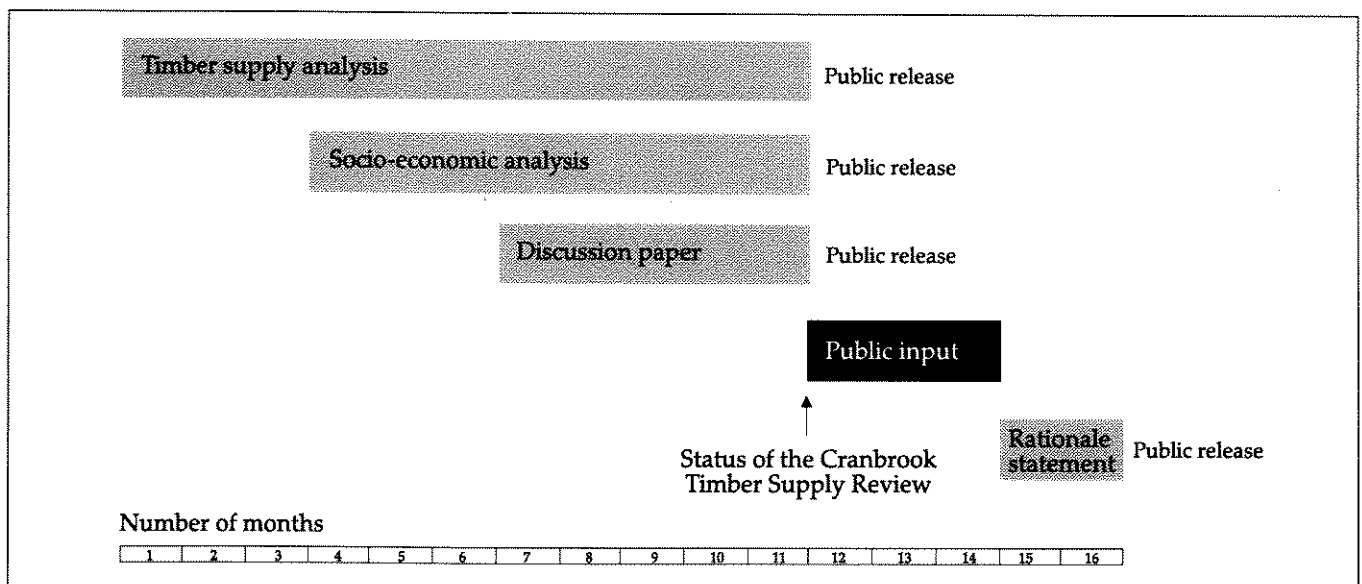


Figure 1 Steps in the Timber Supply Review process

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requires better forest practices throughout the province and establishes heavy penalties for violators. When the Code is fully implemented, forest management practices will be changed to meet its requirements. These new practices may influence both short- and long-term timber supply.

Since the information was prepared for the Timber Supply Review, some practices have been implemented in the Cranbrook Timber Supply Area based on current understanding of the intentions of the Code. Information about these practices will be provided to the chief forester for consideration in this allowable annual cut determination. However, further implementation and experience with the Code will be required before the timber supply effects of new practices can be properly assessed, making it necessary to incorporate these factors in future allowable annual cut determinations.

Land Use Plan for the East Kootenays

On October 31, 1994, the Commission on Resources and Environment (CORE) released its recommendations for land use in the East Kootenay area, including the Cranbrook Timber Supply Area. Working from these recommendations, the government is currently in the process of developing a Land Use Plan for the East Kootenays that will define protected areas, areas where special management practices are required, and areas dedicated to resource development.

Until this plan is fully implemented and practices are adjusted in the field, the actual timber supply impact of the Land Use Plan cannot be measured. This Timber Supply Review will be used as the foundation for determining the actual impacts of the Land Use Plan once it is implemented. The next Timber Supply Review will be based on experience with the Land Use Plan gained during the implementation period.

For this Timber Supply Review, the Land Use Plan will provide the chief forester with an expression of government's commitment to achieve the Crown's social and economic objectives for the region and the Cranbrook Timber Supply Area.

If, during the implementation of the Land Use Plan, it becomes apparent that the Plan has modified the timber supply to such an extent that the allowable annual cut is no longer consistent with the Plan, the chief forester is prepared to reassess the timber supply and to redetermine the allowable annual cut based on Section 7 of the *Forest Act*. The chief forester is also prepared to investigate the possibility of implementing other more expedient procedures under the *Forest Act* to adjust the allowable annual cut if necessary.

It may be possible to assess the timber supply impacts of the Land Use Plan in the Cranbrook Timber Supply Area before the five years required in the *Forest Act*.

Timber Supply Review in the Cranbrook Timber Supply Area

Staff of the Forest Service and the Ministry of Environment, Lands and Parks in the Cranbrook Forest District prepared the information for the timber supply analysis in July 1994. This information was provided to local First Nations and to major timber companies for comment and is now available for public review at the Cranbrook Forest District Office. The Forest Service then conducted a short- and long-term timber supply analysis (*Cranbrook Timber Supply Analysis Report*, March 1995). A consultant also completed a socio-economic analysis of the timber supply forecasts (*Cranbrook Timber Supply Area Socio-Economic Analysis*, March 1995). Both reports are available from the Cranbrook Forest District office and the Nelson Forest Region office.

As the Forest Practices Code and the Land Use Plan for the East Kootenays did not exist when preparation for the timber supply analysis for the Cranbrook Timber Supply Area began in 1994, the *Timber Supply Analysis Report* and the *Socio-Economic Analysis* do NOT include the land use decisions and changes in forest practices resulting from these initiatives.

This discussion paper summarizes the *Timber Supply Analysis Report* and the *Socio-Economic Analysis*, and highlights critical factors the chief forester must consider to determine the allowable annual cut for the Cranbrook Timber Supply Area. In conjunction with the release of this discussion paper, Forest Service staff will actively solicit public input to ensure the information in the Timber Supply Review is correct. Input will be accepted until June 7, 1995, and will be summarized in a report to the chief forester and the minister of forests.

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 *Cranbrook Timber Supply Analysis Report*, and SEA is the *Cranbrook Timber Supply Area Socio-Economic Analysis*).

Cranbrook Timber Supply Area

Description of the Cranbrook Timber Supply Area

The Cranbrook Timber Supply Area covers approximately 1.48 million hectares in the southeastern corner of British Columbia. Its varied topography includes two rugged mountain ranges (the Rocky Mountains and the Purcell Mountains) separated by a broad, flat valley known as the Rocky Mountain Trench, through which the Kootenay River flows.

Forest resources

Timber

Over 50 per cent of the provincial land in the Cranbrook Timber Supply Area is either not forested or is not currently considered suitable for timber harvesting because of environmental sensitivity*, low timber productivity, rough terrain, difficult access or non-merchantable timber. Figure 2 illustrates that 29 per cent of the timber supply area is within the timber harvesting land base—the public forest land that is currently economical and feasible for timber harvesting and reforestation using current methods to meet existing land management objectives. (TSAR page 7)

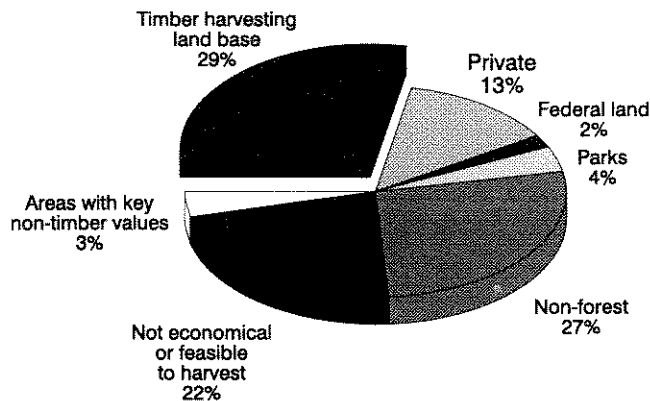


Figure 2 Classification of the land within the Cranbrook Timber Supply Area

Notes: Total land base: approximately 1.48 million hectares
Total land base for the timber supply analysis excluding large parks: 1.428 million hectares

A forest re-inventory completed in 1991 and updated in 1993 illustrates the range of commercial tree species in the forests in the Cranbrook Timber Supply Area (Figure 3). Lodgepole pine forests less than 100 years old cover more than 33 per cent of the timber harvesting land base. These forests are becoming susceptible to the mountain pine beetle which can rapidly kill large areas of forests.

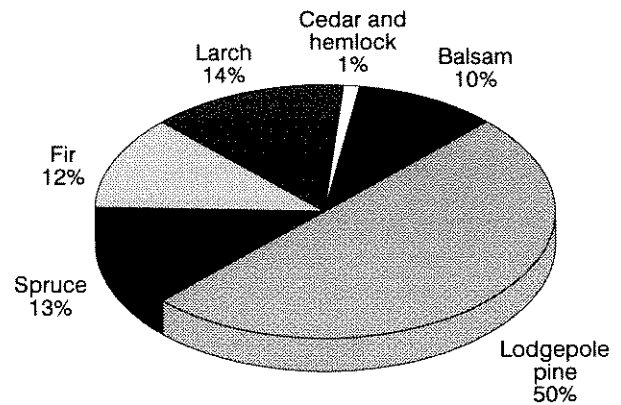


Figure 3 Area occupied by the dominant tree species in the timber harvesting land base

Figure 4 illustrates the irregular distribution of forest ages in the Cranbrook Timber Supply Area. There are large areas of forests less than 20 years old and 50 to 80 years old, and limited areas of old-growth forest.

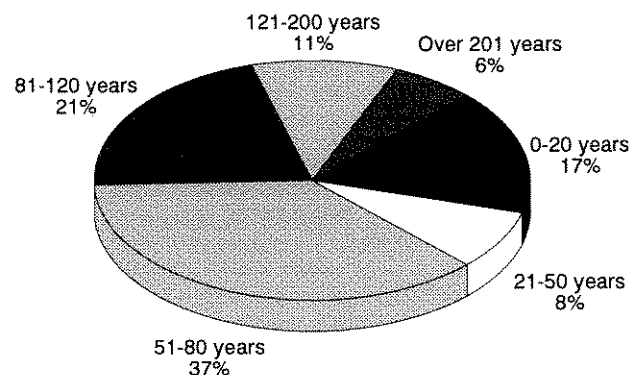


Figure 4 Forest ages within the timber harvesting land base

Mining and petroleum resources

The Cranbrook Timber Supply Area contains areas of high mineral values including a large lead-zinc mine at Kimberley, extensive coal reserves with producing open pit mines, and the potential to develop oil and gas resources. Active exploration and assessment programs are ongoing.

Wildlife

The Cranbrook Timber Supply Area is well known for its wildlife diversity and highly productive wildlife habitat. Some of the highest value wildlife winter range in all of Canada is within this timber supply area. Elk, mule and whitetail deer, bighorn sheep, mountain goat, moose, mountain caribou, grizzly and black bear, wolverine, cougar, bobcat, lynx, small mammals, amphibians, reptiles, insects and many

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resident and migratory bird species all depend on the wildlife habitats within the timber supply area. This wildlife contributes to the significant biodiversity of the area.

Range

An active ranching industry within the timber supply area depends on the extensive public rangelands throughout the area.

Recreation

Recreational values are also extremely high. Sightseeing, camping, fishing, boating, downhill and cross-country skiing, snowmobiling, hiking, mountaineering, caving, mountain biking, canoeing, kayaking and hunting are all popular recreational activities. The diverse wildlife in the area supports public recreational opportunities such as wildlife viewing and a guided hunting industry catering to mainly foreign hunters. Approximately 17 per cent of all the hunting in British Columbia occurs in the southeastern Kootenay Region.

Current allowable annual cut

The current allowable annual cut in the Cranbrook Forest District is 901,010 cubic metres per year. This level is based on a 1981 timber supply analysis that lead to a determination of an annual allowable cut of 873,810 cubic metres per year. In 1994, 27,200 cubic metres per year were added when the area that was within Tree Farm Licence 13 was amalgamated with the Cranbrook Timber Supply Area.

Approximately 87 per cent of this allowable annual cut is harvested under long-term timber tenures, with approximately 71 per cent harvested by one timber company. Approximately 12.5 per cent is harvested through the Small Business Forest Enterprise Program administered by the Forest Service; 0.5 per cent is harvested through woodlot licences. (SEA page 54)

Because the allowable annual cuts for woodlots are determined separately, they are not included in the timber harvesting land base for this review. The woodlot allowable annual cut was therefore deducted from the total cut, resulting in an allowable annual cut of 896,136 cubic metres per year for this review.

Socio-economic profile

The population of the Cranbrook Timber Supply Area in 1991 was 45,470, with 36 per cent in the community of Cranbrook, 14 per cent in Kimberley, 11 per cent in Fernie, nine per cent in Sparwood and six per cent in

Elkford. The remaining 24 per cent live in small unincorporated communities or rural areas. (SEA page 20)

First Nations

The Cranbrook Timber Supply Area is located within the traditional tribal territory of the K'tunaxa/Kinbasket Tribal Council. Most of the aboriginal people in the area are K'tunaxa people. The St. Mary's Band and the Tobacco Plains Band are the primary aboriginal settlements in the area, with both bands having a combined population of approximately 600. Approximately 7.5 per cent of the First Nations labour force in the area are employed in the forestry sector.

Local economy

The economy within the Cranbrook Timber Supply Area is relatively diverse. Figure 5 illustrates the sectors which generate employment in the Cranbrook Timber Supply Area. In 1991, the timber industry accounted for 13 per cent of the total employment and after-tax income in the Cranbrook Timber Supply Area. (SEA page 32)

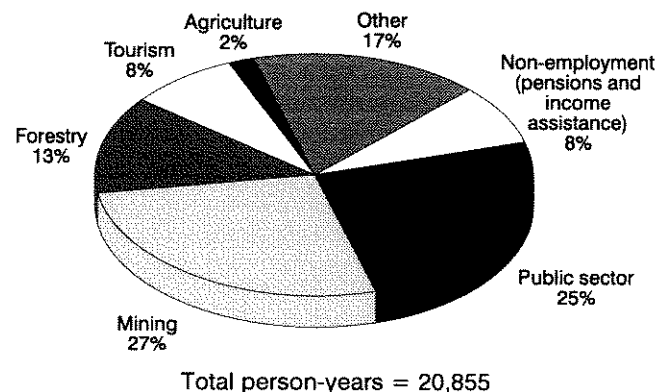


Figure 5 Sectors which generate employment in the Cranbrook Timber Supply Area

Dependency on the forest sector is higher in communities where the mining industry is less significant, such as Cranbrook, where approximately 16 per cent of the total employment is dependant on the forest sector. (SEA page 32)

Timber industry

One timber company which owns major sawmills at Cranbrook and Elko and a pulpmill in Skookumchuck dominates the timber industry in the Cranbrook Timber Supply Area. Although the pulpmill is outside the Cranbrook Timber Supply Area, most of the employees live within the timber supply area in Cranbrook or Kimberley, and much of its chip supply comes from mills within the timber supply area. Other firms operate a sawmill, a wood preserving

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plant and a cedar pole operation. A number of small wood products plants are located in the area. It is estimated that the major sawmills consume 1.254 million cubic metres of timber annually, 62 per cent of which comes from the Cranbrook Timber Supply Area. (SEA page 58)

Harvesting and processing the current allowable annual cut in the Cranbrook Timber Supply Area generates approximately 968 person-years of direct forestry employment within the timber supply area based on the estimate that 1.08 person-years of direct forestry employment are created from every 1,000 cubic metres of timber harvested. Figure 6 illustrates the types of forestry employment that are generated. This direct employment is estimated to generate an additional 563 person-years in spin-off employment (0.58 person-years for each direct person-year) in the area, for a total of 1,531 person-years of employment within the timber supply area. (SEA page 60)

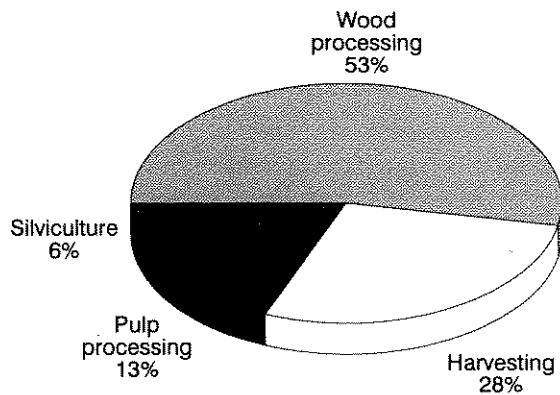


Figure 6 Types of forestry employment generated

Provincial economy and revenues

On a provincial basis, it is estimated that a total of approximately 2,245 person-years of employment is created, including employment within the timber supply area, from timber harvested in the Cranbrook Timber Supply Area. This includes 968 person-years of direct employment in the forest industry and 1,277 person-years of spin-off employment in the service sector. This employment is estimated to generate \$59.4 million annually in employment income. (SEA page 67)

Harvesting and processing timber from the Cranbrook Timber Supply Area is estimated to generate approximately \$19.2 million in provincial

revenue (SEA page 70). This estimate does not include the increased stumpage revenues being generated to fund the Forest Renewal Plan. On a provincial basis, stumpage revenues are expected to increase by as much as 80 per cent, but 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. The Ministry of Environment, Lands and Parks is responsible for the management of fish, wildlife and water resources, and parks. 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 current management practices—practices being approved and implemented in the Cranbrook Timber Supply Area in 1994, when the timber supply analysis was initiated. Readers are encouraged to review the *Cranbrook Timber Supply Analysis Report* (Sections 2 and 3 and Appendix A) for more detailed information.

Management zones and integrated resource management practices

To assess the timber supply impacts of current integrated management practices, the timber harvesting land base was divided into the management zones described below. Each zone was assigned forest cover requirements which define:

- the maximum amount of forest that can be less than a certain height
- the minimum amount of area defined in the *Cranbrook District Interim Old Growth Strategy* that must have forests older than a certain age to meet old-growth, wildlife habitat, and biodiversity requirements.

The area within each zone is illustrated in Figure 7.

Cranbrook Timber Supply Area

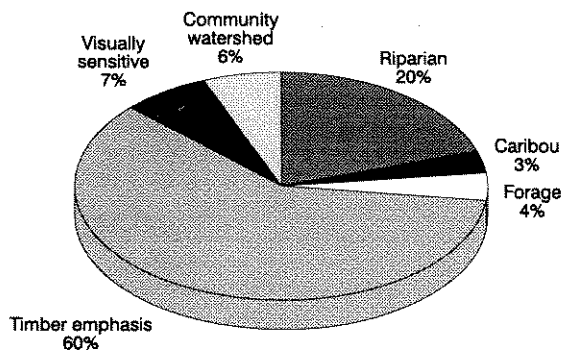


Figure 7 Area within each management zone

- **Visually sensitive zones** (30,919 hectares) — areas where the emphasis is on protecting scenic values. In these areas, studies have shown that forests must be at least six metres tall to meet visual quality objectives.
 - most visually sensitive-partial/retention (24,601 hectares): areas along the Rocky Mountain Trench and scenic corridors where changes to the landscape are permitted to be visible but not conspicuous. A maximum of 10 per cent of these areas is permitted to have forests less than six metres tall at any time. At least 10 per cent of this zone must have forests older than 140 years at any time.
 - less visually sensitive-modification (6,318 hectares): areas along the Rocky Mountain Trench and some areas visible from the main highways. A maximum of 20 per cent of these areas is permitted to have forests less than six metres tall at any time. Ten per cent of this zone must be maintained in forests over 140 years old.
- **Community watershed zone** (24,825 hectares) — licensed community watersheds identified by the Ministry of Environment, Lands and Parks. To protect water quality, quantity and flow rates, a maximum of 25 per cent of the area may have forests less than nine metres tall. Also, at any time, 10 per cent of this zone must be maintained in forests over 140 years old.
- **Riparian management zone** (86,522 hectares) — areas adjacent to streams and lakes as defined in the approved *Cranbrook Forest District Riparian Management Zone Guidelines*. Within this zone, a maximum of 35 per cent of the area can be less than nine metres tall at any time. Twenty-five per cent of this zone must have forests older than 120 years at any time.
- **Core caribou habitat zone** (13,910 hectares) — an area identified by the Ministry of Environment, Lands and Parks as critical to the health of a particular caribou herd. Current management requirements allow a maximum of 35 per cent of the area to have forests less than three metres tall at any time. At least 12 per cent of the area must have forests older than 140 years at any time.

- **Forage zones** (15,733 hectares) — areas in the Rocky Mountain Trench where forage production is the priority based on the *Trench Integrated Renewable Resource Management Plan*, as well as a portion of the Wigwam River drainage where increased forage for wildlife is required. There is no maximum area permitted to be below a certain height because plans call for forage production following harvesting.
 - forage predominant (8,609 hectares): three per cent of the forests in this zone are to be maintained in trees over 140 years old.
 - forage significant (7,124 hectares): six per cent of this zone is to be maintained in forests over 140 years old.
- **Timber emphasis zones** (251,536 hectares) — areas within the timber harvesting land base that are not included in the other zones. For the timber supply analysis, a maximum of 35 per cent of the area in this zone was permitted to have forests less than three metres tall at any time. The amount of area within each timber emphasis zone that must have forests older than 140 years at any time varies from 0 to 10 per cent depending on the ecological conditions, and the amount of forests older than 140 years that are not within the timber harvesting land base in the area.

Current practices

The current forest management practices that were being approved and implemented in each zone when the timber supply analysis was initiated are briefly described below. The *Cranbrook Forest District Riparian Management Zone Guidelines* and the *Cranbrook Forest District Interim Old Growth Strategy* outline some of the current practices in the Cranbrook Timber Supply Area.

- **Basic silviculture** — British Columbia laws require areas that are harvested and expected to produce timber in the future must be reforested with ecologically acceptable species within a specified time frame (three to six years was used in the analysis). The most common silvicultural practice is to clearcut harvest, allow for natural regeneration and/or plant, then brush and weed if needed.
- **Incremental silviculture** — Juvenile spacing, pruning and commercial thinning are practised on some of the most productive sites in the Cranbrook Timber Supply Area.
- **Unsalvaged timber losses** — Timber losses due to wildfire, insects, diseases and blowdown are minimized as much as possible. Based on the best available information for the past 10 years, unsalvaged losses are estimated to be 139,000 cubic metres per year from the following sources:

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- insects (mainly mountain pine and spruce bark beetles): 77,000 cubic metres per year
- diseases: 11,000 cubic metres per year
- wildfire, windthrow and snow damage: 51,000 cubic metres per year
- **Riparian areas** - The *Cranbrook Forest District Riparian Management Zone Guidelines* include the following requirements to provide protection and maintenance of water quality, aquatic habitats, wildlife habitats and biodiversity:
 - buffers where machinery is not permitted
 - reservation of deciduous trees
 - restrictions on cutblock size
 - minimum area of unlogged forests between cutblocks
 - minimum height of regenerated forests in cutover areas before adjacent timber can be harvested (green-up height)
 - maximum area that can be harvested and be below the green-up height at any one time
 - maintenance of a minimum amount of mature forests
- **Wildlife/biodiversity** - Current wildlife management requirements include maintaining a specified number of dead trees, larger trees and clumps of timber within cutblocks to provide wildlife habitat.
- **Harvest ages** - Minimum harvest age is defined as the time it takes for forests to grow to harvestable size. The minimum harvest ages used in the timber supply analysis range from 50 to 200 years based on tree species, ecological considerations and current harvesting practices.
- **Soil conservation** - Harvesting layout follows provincial and regional guidelines. For the timber supply analysis, 4.5 per cent of the timber harvesting land base was deducted for existing roads and landings that are no longer productive. To account for future roads and landings, the remaining land base was reduced by 4.5 per cent after the first harvest.

Timber supply forecasts and critical factors

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 harvest levels. The base case forecast and the critical factors described below are part of the information the chief forester will use to determine the allowable annual cut for up to the next five years.

Base case forecast

To complete the timber supply analysis for the Cranbrook Timber Supply Area, a computer model was used to produce a base case* timber supply forecast that met all of the following conditions:

- the current allowable annual cut was maintained for as long as possible, or if this was not possible, the highest initial harvest level was identified, then
- if significant reductions were required, the forecasted harvest level was reduced by eight to 12 per cent per decade until the long-term timber supply level was reached, and
- the timber supply level was maintained at or above the projected long-term sustainable level

If a timber supply forecast could not be generated that met all of these conditions, the analyst adjusted the conditions until a feasible forecast could be produced. Several of these conditions had to be adjusted to create a base case timber supply forecast for the Cranbrook Timber Supply Area, given the best available information on the management practices that were in place when the analysis was initiated in 1994.

As Figure 8 illustrates, the initial analysis indicated that maintaining the current allowable annual cut in the short term is projected to result in a substantial decline in timber supply to well below the long-term level in 60 years. Figure 8 also illustrates another test that was completed to evaluate whether a reduction below the long-term level could be avoided.

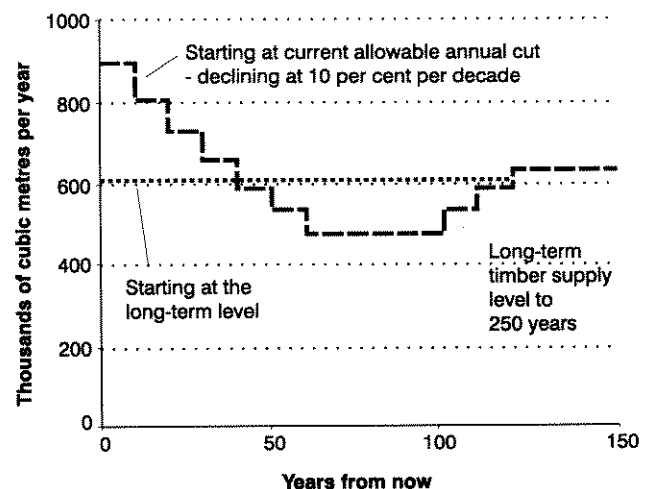


Figure 8 Initial timber supply forecasts

Based on the information from these initial forecasts, a base case forecast was developed which balances the short- and long-term impacts of the required timber supply adjustments (Figure 9). The base case forecast indicates an immediate reduction in the allowable annual cut by approximately 10 per cent (90,000 cubic metres) to 806,000 cubic metres per year.

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This level can be maintained for 10 years, followed by a projected decline of 10 per cent per decade for the next 40 years to 559,000 cubic metres per year (12 per cent below the long-term level). The timber supply is projected to remain at that level for 70 years before rising over 20 years to the long-term sustainable level of 633,000 cubic metres per year. (TSAR pages 18-19)

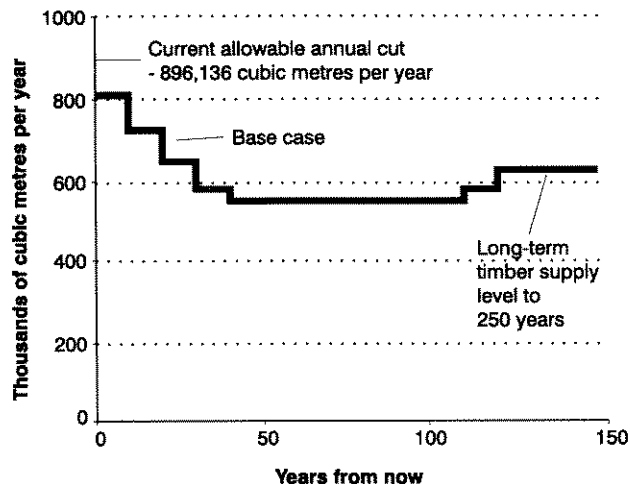


Figure 9 Base case timber supply forecast

Examining critical factors

Since 1994 when the data was prepared for the timber supply analysis, Forest Service staff have been collecting more information for some of the factors in the analysis. Also, tests completed during the timber supply analysis identified which factors had the greatest effect on the timber supply forecasts. These critical factors are discussed in this section. Other factors in the analysis were tested and are discussed in the *Timber Supply Analysis Report* (see pages 27-44) but were not considered as critical to this review and therefore are not included in this discussion paper.

The chief forester must carefully evaluate this information when assessing the allowable annual cut and identifying where improved information is needed. We encourage you to do the same.

Factors indicating the short-term timber supply may be lower than predicted in the base case

- **Increased forest cover requirements**
The timber supply in the Cranbrook Timber Supply Area depends to a large degree on the forest cover requirements—the amount of forest, within a

geographical area, that, at any time, can be occupied by recently harvested sites with trees below a specified height. The impacts of changing the forest cover requirements are shown in Figure 10. (TSAR page 37)

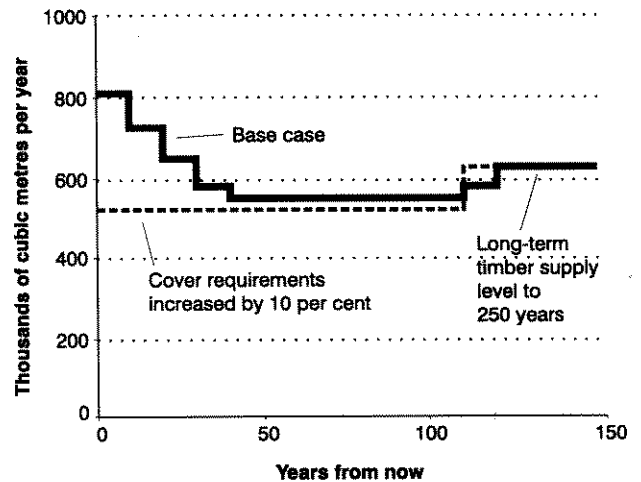


Figure 10 Impacts of more restrictive forest cover requirements

Recent changes in integrated resource management practices, particularly to achieve biodiversity objectives, and the effects of previous harvesting patterns may necessitate higher forest cover requirements than were defined in the base case analysis; this may restrict the amount of timber available for harvesting in the short term. The recent report from the Commission on Resources and Environment also includes recommendations for increased forest cover requirements.

- **Increased requirements to maintain older forests**
In order to meet biodiversity and wildlife habitat objectives it may be necessary to maintain more of the timber harvesting land base with older forest cover than was defined for the base case timber supply forecast. The threatened mountain caribou herd is particularly dependent upon the availability of suitable old-growth forests.

Figure 11 illustrates two alternative forecasts of the impacts of increasing the area maintained as older forests within the timber harvesting land base. (TSAR page 41)

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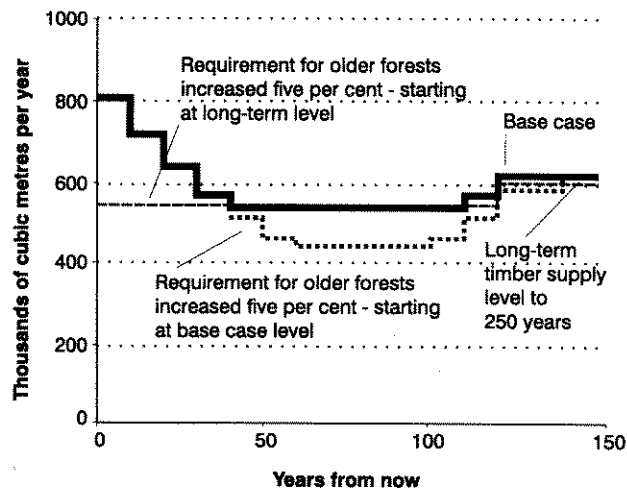


Figure 11 Impacts of changing the requirements to maintain older forests

- **Increased minimum harvest ages**

For the timber supply analysis, tree species, current practice and ecological considerations (particularly the susceptibility of lodgepole pine to mountain pine beetle) were used to define minimum harvest ages. These largely range from 50 to 100 years, although in two situations the minimum harvest ages are greater than 100 years (TSAR page 61). In almost all cases, these ages are lower than the age when the maximum timber production occurs.

By harvesting these forests at the defined minimum age, a smaller amount of timber volume is harvested from each hectare than if the forest was left to grow, but more area is available for timber harvesting in the short term. As Figure 12 illustrates, increasing the minimum harvest age reduces the projected short-term timber supply, but increases the projected long-term timber supply. (TSAR page 35)

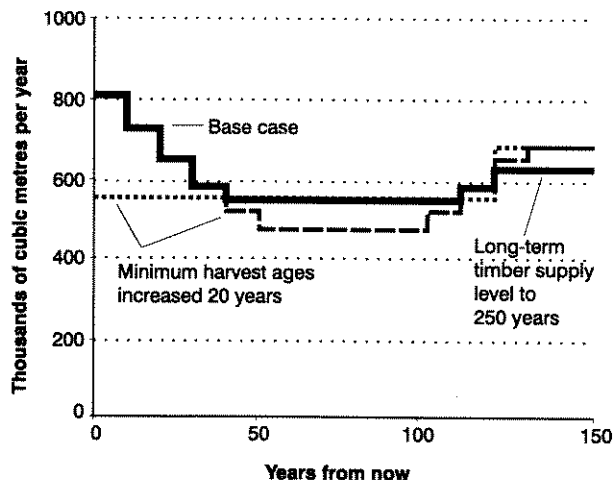


Figure 12 Impact of increasing the minimum harvest ages

- **Combined impacts**

Each of the critical factors explained above may reduce the short-term timber supply. Cranbrook Forest District staff are of the opinion that the risk of these factors occurring together is high. In some cases the impacts of these factors may be compounded while in others the impacts may overlap. The relationship of these factors is a consideration in the allowable annual cut determination.

Factors that may either increase or decrease the short-term timber supply

- **Estimates of unsalvageable timber losses**

In the Cranbrook Timber Supply Area, based on information available for the last 10 years, it was estimated that each year 139,000 cubic metres of timber are damaged by insects, diseases, windthrow and other forces and become unsuitable for harvesting. This estimate is substantially larger than for other timber supply areas.

Estimating unsalvageable timber losses is difficult in most situations. Several factors complicate this task in the Cranbrook Timber Supply Area:

- **insect epidemics**

Two mountain pine beetle epidemics and a spruce bark beetle epidemic have occurred in the Cranbrook Timber Supply Area in the last 20 years. A number of other insect problems also exist in the area. Over the last 10 years, it is estimated that 77,000 cubic metres per year have been damaged by insects and have not been salvaged. Future losses due to insects are highly unpredictable.

- **diseases**

The impact of forest diseases is difficult to estimate because there is limited information and a wide divergence in scientific opinion on the topic. The extent to which the timber volume estimates used in the base case forecast account for these losses is also unclear. In the timber supply analysis, 11,000 cubic metres per year were estimated to be lost to diseases.

- **wildfire, windthrow and snow damage**

Losses to wildfire, windthrow and snow damage are also highly variable and unpredictable. An estimate of 51,000 cubic metres per year was used in the timber supply analysis.

Given the uncertainty about the estimated losses due to forest diseases, and the unpredictability of insect epidemics, fire incidence, windthrow and snow

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damage, it is possible that future losses could be much higher or lower than the estimates used in the base case forecast. Increased salvage of damaged timber might also reduce these losses. An increase in the estimated losses would reduce the projected timber supply by an equal amount; a reduction in losses would increase the projected timber supply.

- **Estimates of existing mature timber volumes**

As Figure 13 illustrates, in the Cranbrook Timber Supply Area, changing the estimates of merchantable timber in the existing mature forests could have a substantial impact on the projected short-term timber supply. (TSAR page 32)

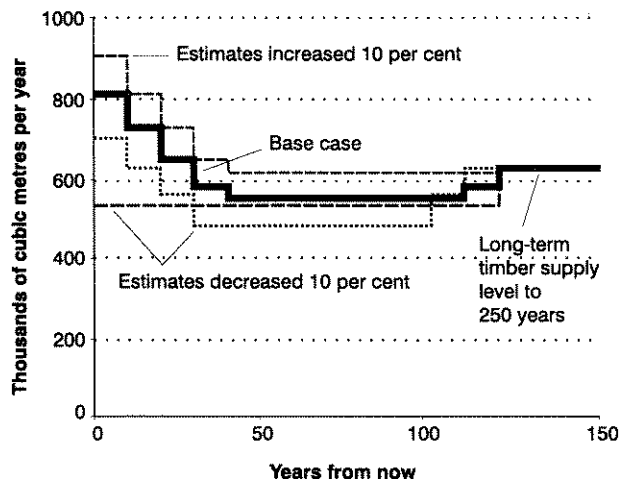


Figure 13 Impact of changing the estimates of mature timber

Preliminary assessment of the accuracy of the estimates used in the timber supply analysis are underway.

- **Size of the timber harvesting land base**

The projected timber supply is closely related to the size of the timber harvesting land base (TSAR page 34). As new technologies become available, and as timber values increase, it is possible that some of the areas deducted from the timber harvesting land base for this review may be feasible to harvest and reforest in the future.

However, many of the areas currently excluded from the timber harvesting land base are required to meet non-timber resource management objectives such as forest cover requirements. Therefore, harvesting these areas could restrict harvesting in areas with higher value timber. Also, despite advances in technology, it may not be feasible to harvest some of these areas without compromising their environmental values.

The size of the timber harvesting land base may also be affected by the Land Use Plan for the East Kootenays.

- **Changes in green-up requirements**

As Figure 14 indicates, the short-term timber supply in the Cranbrook Timber Supply Area is closely related to the estimated minimum height (green-up height) that regenerated forests must reach before adjacent timber can be harvested. (TSAR page 35)

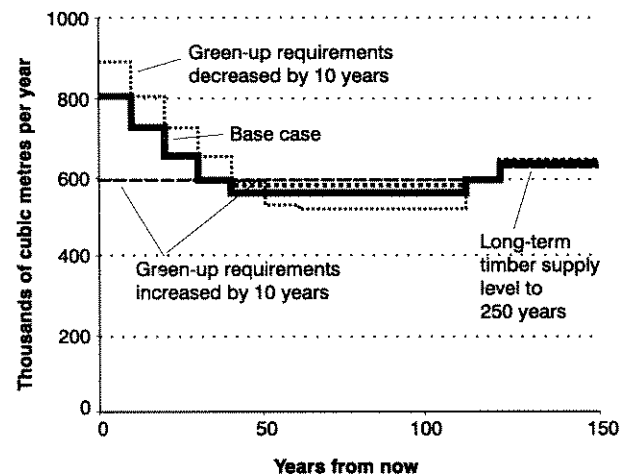


Figure 14 Impact of changing the green-up requirements

To meet visual quality, water management or wildlife management objectives, it may be necessary to increase the green-up height. On the other hand, partial cutting, innovative cutblock design and layout, and alternate harvesting techniques may permit harvesting of adjacent areas before the green-up height is reached.

Potential opportunities to partially offset projected timber supply reductions

- **Increased timber recovery from harvested areas**

The forest industry has been experimenting with harvesting and processing smaller pieces of timber than has previously been considered feasible and economical. This practice could increase the volume harvested from existing merchantable forests, and encourage harvesting of forests with smaller timber that has been harvested in the past. The biological effects of removing this additional amount of organic material from these areas must be considered before this practice is widely implemented.

- **Commercial thinning**

Approximately 40 per cent of the forests in the timber harvesting land base are 30 to 80 year old and may be candidates for commercial thinning. To date, very little commercial thinning has occurred in the Cranbrook Timber Supply Area. Commercial thinning has the potential to supply some additional timber in the short term. Further study is required to identify candidate forests for

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commercial thinning, to examine the feasibility of a commercial thinning program, and to assess the impact of this practice on the projected short- and long- term timber supply.

- **Intensive silvicultural treatments**

In some circumstances, intensive silvicultural treatments (i.e. juvenile spacing, fertilization, etc.) that increase tree growth and the long-term timber supply can also increase the short-term timber supply.

The Timber Supply Review was designed to assess the timber supply impacts of current practices, thus the range of intensive silvicultural treatments that might be implemented in the Cranbrook Timber Supply Area were not examined. Further analyses are required to examine the potential opportunities for intensive silvicultural treatments, and the implications.

Environmental and socio-economic impacts

Environmental concerns

Ministry of Environment, Lands and Parks staff are concerned that continuing with current forest harvesting practices will lead to a continued decline in the amount of mature and old-growth forest habitats, a loss of biodiversity, and fragmentation of habitats. They also believe that the increase in roads within the Cranbrook Timber Supply Area is having a severe negative effect on wildlife. Loss of grassland communities to forest development, which is made worse by vigorous fire suppression, is also a concern. From their perspective, the current timber supply analysis does not fully account for a number of practices that are important for maintaining wildlife habitats and populations. These practices include the establishment of networks of forested ecosystems throughout the landscape, and maintenance of forests with a range of ages and conditions within management units to promote biodiversity. (SEA page 83)

First Nations impacts

First Nations are very concerned that their traditional forms of land use are being compromised by resource development. Therefore, it is thought that reduced timber harvesting levels may be more compatible with protecting these traditional land uses.

On the other hand, First Nations are also concerned that they do not receive an equitable share

of public timber harvesting rights or forest industry employment. In the Cranbrook Timber Supply Area, most of the forestry-related employment for aboriginal peoples is in silviculture and fire suppression which are not directly tied to timber harvesting levels. It is expected that a reduction in the allowable annual cut would make it more difficult for First Nations people to acquire rights to harvest public timber and create forestry employment. (SEA page 82)

Any job losses associated with harvest reductions could be significant for First Nations. Employment opportunities for First Nations people in silviculture and environmental restoration are expected to be created through the Forest Renewal Plan.

Community impacts

The impact of timber supply adjustments on the communities in the Cranbrook Timber Supply Area is an important consideration in this review. In the *Socio-Economic Analysis*, it was assumed that a change in the timber supply would create economic impacts directly related to the size of the reduction or increase in timber supply (i.e., a 10 per cent decrease in timber supply would result in a 10 per cent decrease in forestry employment).

If the chief forester reduced the allowable annual cut to conform to the base case forecast, with its initial 10 per cent reduction, it is estimated that a total of 152 person-years of local employment would be lost, including 96 person-years of direct forestry employment. (SEA page 64)

Significant wood supply shortages currently exist compared to the mill capacity in the Cranbrook and neighbouring timber supply areas. Mills in the area are currently processing a significant amount of timber from private lands and from outside the province. The continuity of this wood supply is uncertain. This means there may be reductions in operations or a mill closure even if the current allowable annual cut for the timber supply area is maintained. (SEA page 65)

Although the larger communities in the Cranbrook area have broad and stable community infrastructures, some are dependent on the timber. The impact of employment reductions due to changes in timber supply will depend on the alternative sources of employment that are available within these communities. New jobs could be created in areas such as value-added manufacturing, silviculture and forestry planning, as well as through initiatives of the Forest Renewal Plan or the Columbia River Treaty Downstream Benefits Agreement* currently being negotiated.

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Provincial impacts

If the chief forester adjusted the Cranbrook Timber Supply Area allowable annual cut to conform to the base case forecast, the initial 10 per cent reduction may result in a total reduction of 223 person-years of employment provincially. (SEA page 67)

If the allowable annual cut was reduced by 10 per cent and current taxation procedures were maintained, annual provincial government revenues are projected to decline by \$1.9 million (SEA page 70). As stated earlier, these estimates do not include the increased stumpage revenue being generated to fund the Forest Renewal Plan.

Chief forester's determination

The chief forester must determine an allowable annual cut as part of a strategy to achieve the projected long-term sustainable timber supply level. The base case timber supply forecast provides one alternative, but the chief forester could select a different harvest level based on his consideration of the factors included in Section 7 of the *Forest Act*.

Your input is needed

The allowable annual cut is an important determination 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 aspects of this *Discussion Paper*, the *Timber Supply Analysis Report* and the *Socio-Economic Analysis Report* and other topics related to the timber supply in the Cranbrook Timber Supply Area. Forest Service staff would be pleased to discuss questions or concerns 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 June 7, 1995.

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 when the chief forester's allowable annual cut determination is announced.

For more information contact:

District Manager
Cranbrook Forest District
1902 Theatre Road
Cranbrook, B.C. V1C 4H4
Phone: (604) 426-1700
Fax: (604) 426-1449

Discussion Paper Response Form

- the rate of timber production that can be sustained from the area
- the short- and long-term implications for the province of alternative rates of timber harvesting from the area
- the timber requirements of established and proposed timber processing facilities
- the economic and social objectives of the Crown, as expressed by the minister, for the area, the general region, and the province
- abnormal pest infestations in the timber on the area and major salvage programs that are planned

A. Economic and social objectives

[illegible]

Please use the space below to provide any information which you believe may assist the chief forester in considering the technical factors to determine the allowable annual cut for the Cranbrook Timber Supply Area. Further information on the critical factors outlined on pages eight to twelve 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) _____

District Manager
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