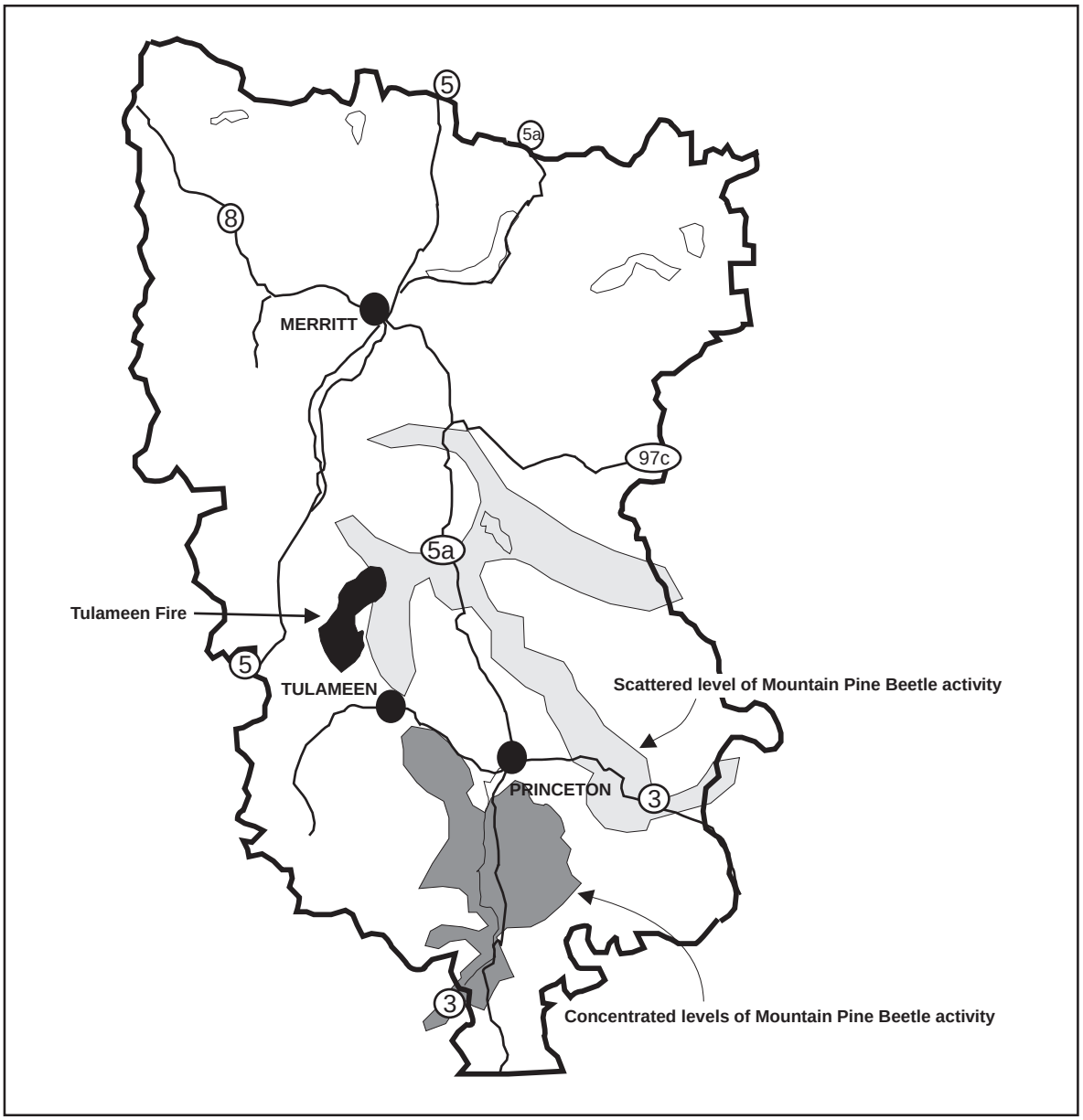
MERRITT FOREST DISTRICT

Information Package

Request for Temporary Allowable Annual Cut (AAC) Increase



November 25, 1998

BRITISH COLUMBIA
Ministry of Forests

Executive summary

The B.C. Forest Service's chief forester has been urgently requested to consider a temporary increase in the allowable annual cut (AAC) for the Merritt timber supply area (TSA). This request is due to the following recent catastrophic natural events:

- the 1998 Tulameen Fire which burned approximately 8000 hectares of Crown forested land, and
- epidemic mountain pine beetle infestations in the southern portion of the Merritt TSA

The B.C. Forest Service has just completed an assessment of the timber damaged from the Tulameen Fire and the epidemic mountain pine beetle infestations. The combination of these catastrophic natural events has created an urgent need to address the associated forest management concerns. If harvesting is not increased to salvage losses, much of the damaged timber will not be suitable for lumber manufacturing. At present harvesting levels, and to the extent possible, harvesting activities are aimed at salvaging damaged timber from other naturals agents such as the spruce bark beetle and wind-thrown timber.

The details of the request for a temporary AAC increase are -

Proposed term of temporary increase: start Jan.1, 1999 and end on Dec. 31, 2000.

Requested increase:

1) Salvage of wildfire damaged timber - up to 300,000 cubic metres for one and a half years.

2) Control and salvage of mountain pine beetle infestations - up to 400,000 cubic metres per year for two years.

Before determining if a temporary increase in the Merritt AAC is necessary, the chief forester will review all relevant reports and public input. The following document provides information that the chief forester will consider in making his decision regarding this request.

The objectives of this document are to provide British Columbians with information regarding the request to temporarily increase the Merritt AAC and to provide an opportunity for public review. The public is invited to provide written comments regarding any information contained in this document for the chief forester to consider when reaching his decision. Public comments will be accepted until 4:30 p.m. on December 14, 1998. (see last section below for more details)

Chief Forester's responsibilities

In accordance with the *Forest Act*, section 8—and under normal circumstances—the chief forester reviews and determines a new AAC for each of the 37 TSAs and 34 tree farm licences (TFLs) in the province at least once every five years. The chief forester's determination is an independent, professional judgement based on the best available information. By law, the chief forester is independent of the political process, and is not directed by the minister of forests when determining AACs.

The last AAC determination for the Merritt TSA was released on October 12, 1995 and became effective on January 1, 1996. As part of that determination, the chief forester noted the extreme susceptibility of the timber in the Merritt TSA to fire and insect damage. He indicated that if a catastrophic event were to occur which could not be managed under the AAC in place at the time, then the AAC should be reviewed in light of that new information. The recent catastrophic events have created an urgent need to review the AAC immediately. The chief forester's decision regarding any change to the AAC will be documented in a rationale and publicly released.

This urgent review in the Merritt TSA is not considered a provincial timber supply review. The provincial timber supply review of the Merritt TSA will commence in the near future and is expected to be completed in the year 2000.

Description of the timber supply area

The Merritt TSA is located in the southern interior of B.C. and is administered by the Forest Service offices in Merritt

and Princeton. The TSA covers approximately 1.12 million hectares.

As shown in Figure 1, a substantial area is covered by the 1998 Tulameen Fire and by the estimated area of the mountain pine beetle infestation within the Merritt TSA.

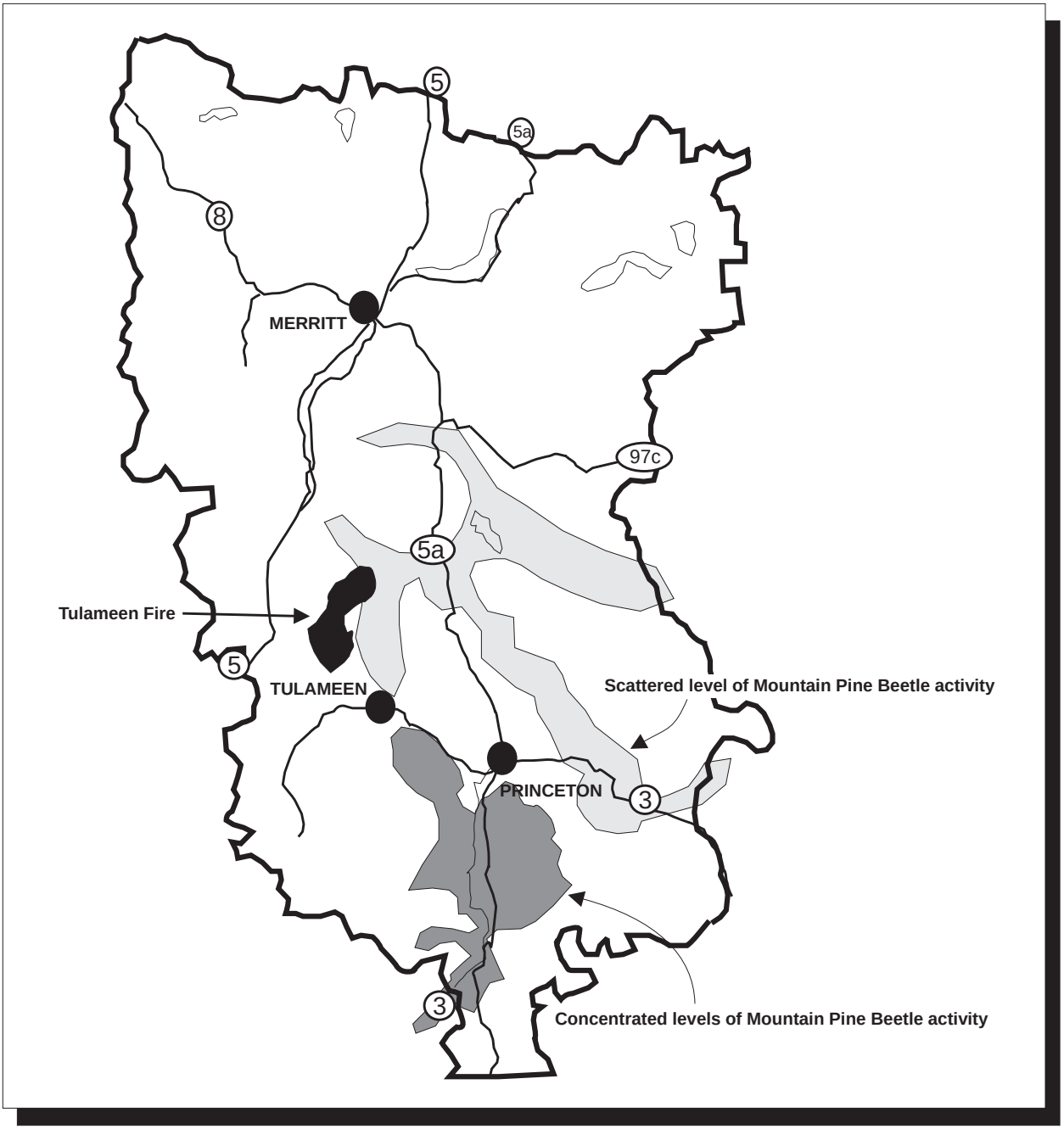


Figure 1. *Map of Merritt TSA*

Current allowable annual cut

On October 12, 1995, the chief forester increased the Merritt AAC to 1.45 million cubic metres. This new AAC maintained the previous level of 1.2 million cubic metres for the main portion of the TSA and included a harvest level increase of 250,000 cubic metres for small-diameter pine stands.

Under provincial policy, the rate of timber harvesting should not exceed the maximum limits—with minor variations permitted—established for each licence and the sum of these should not exceed the AAC set for the TSA (or TFL). To the extent possible, the current AAC for the Merritt TSA is completely dedicated to the removal of existing damaged timber as a first priority. Therefore there is insufficient AAC volume available to ensure that the damaged timber from the recent natural events can be salvaged.

Catastrophic Events and Associated Timber Losses

1998 Tulameen Fire

The Tulameen Fire started on August 31, 1998 as the result of a lightning strike. Extended drought, large expanses of heavy forest fuels, steep slopes and extreme fire weather caused the wildfire to spread rapidly. Rates of spread were documented at 75 metres per minute, ranging up to 96 metres per minute during peak runs.

Crown forested area burned by the wildfire was approximately 8000 hectares, containing 1900 hectares of newly reforested areas. About 734,000 cubic metres of timber has been either damaged or destroyed. This timber and the associated area is considered to fully contribute to the current AAC. Of the timber burned, it has been estimated that approximately 477,500 cubic metres can be salvaged. The opportunity to salvage any of this timber will decline substantially within one and a half years. After this time, the trees will become economically unsuitable for lumber manufacturing. Approximately 177,500 cubic metres can be harvested within the current AAC, however, a harvest level increase of 300,000 cubic metres for one and a half years is required to fully salvage timber as a result of the Tulameen Fire.

About 256,500 cubic metres of the damaged or destroyed timber will not be harvested due to environmental and economic reasons.

When determining AACs, the chief forester considers a number of factors including timber losses due to fire and insects damage. In the *1994 Merritt TSA timber supply analysis*, Forest Service staff estimated losses to be 38,715 cubic metres per year, based on a ten-year average of past wildfires. Staff estimate that if no salvaging were to occur on the Tulameen Fire, the losses due to this fire alone, would increase the estimate to about 73,000 cubic metres per year.

Mountain Pine Beetle

The mountain pine beetle (MPB), *Dendroctonus ponderosae* Hopkins (Coleoptera: Scolytidae), is the most damaging insect attacking lodgepole pine in western Canada. On average, 16,000 hectares of mature timber are killed each year by this insect in the Kamloops Region, with large tracts of susceptible timber remaining. Susceptible stands are largely comprised of even-aged lodgepole pine greater than 120 years of age.

Figure 2 shows the age class distribution of the timber harvesting land base in the Merritt TSA as reported in the *1994 Merritt TSA timber supply analysis* report. Approximately 65% of the timber harvesting land base is greater than 100 years of age and 77% of the TSA is above the minimum harvestable age.

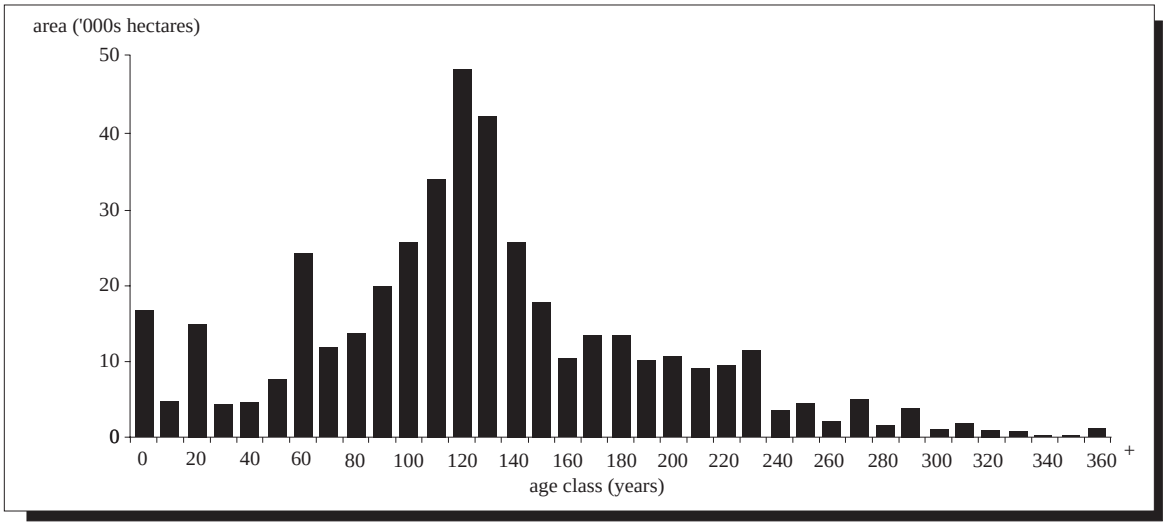


Figure 2. *Age class distribution, 1994 Merritt TSA timber supply analysis*

Figure 3 shows the timber harvesting land base by species group and maturity as reported in the *1994 Merritt TSA timber supply analysis*. Leading lodgepole pine forest types make up approximately 52% of the mature area and 67% of the timber harvesting land base

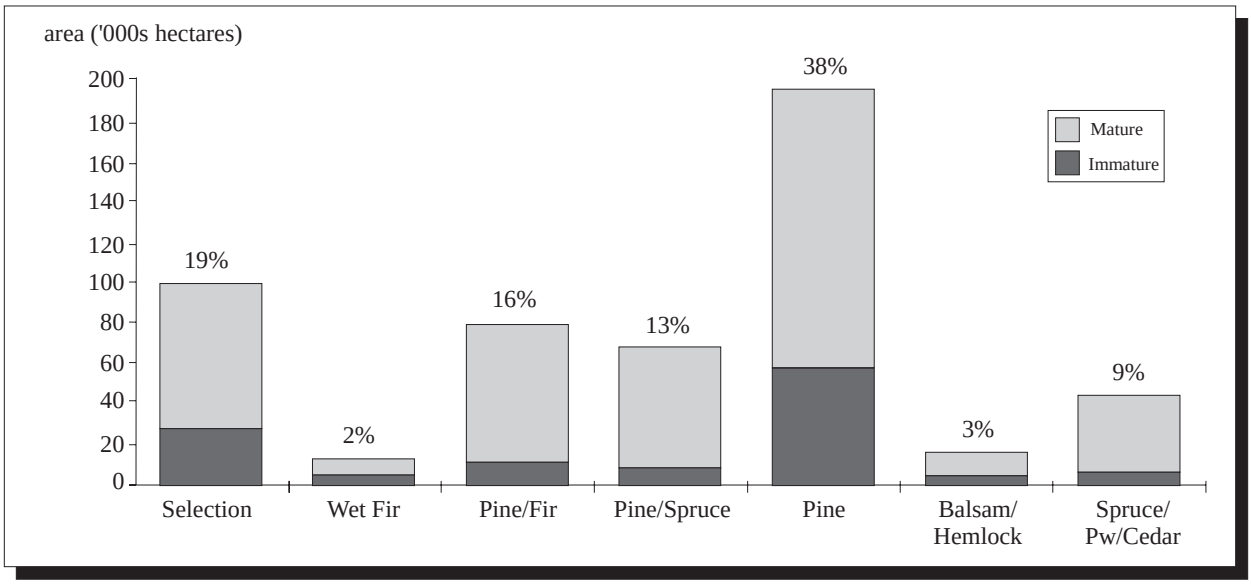


Figure 3. *Area by dominant tree species and maturity, 1994 Merritt TSA timber supply analysis*

Figures 2 and 3 shows that the forests within the Merritt TSA reflect some of the most MPB susceptible stands within the province. In the Merritt TSA, mountain pine beetle, coupled with fire, are the most dominant natural forces of succession. Therefore, forest management activities must be planned in coordination with the current, and predicted future status of the mountain pine beetle population.

The increase in the number and area of red attacks (tree crowns are red and indicate a dead lodgepole pine due to MPB) following the 1998 detailed aerial survey, caused concern that current management strategies for the beetle were not able to adequately address the problem. Field assessments on the ground were conducted to evaluate the level of 1998 green attack (tree crowns are green and MPB has just attacked) in select drainages in the Merritt TSA. The level of green attack varied among areas, but on average, the expansion rate of attack was at least 20% or greater. In other TSAs, similar expansion rates ($\geq$20%) were noted in 1998. Ground surveys revealed that in general, low elevation, mixed species stands had low level of green attack and high levels of red and grey (trees dead more than one year) attack incidence. MPB population

levels had built up in these stands and the insects then dispersed to other susceptible areas. Many of the visited stands had very high levels of green attack and very few red attack trees. Other areas showed the MPB moving into stands of predominately small diameter stems (low hazard), indicating intense pressure from beetle infestation.

Table 1 shows expansion rates—as estimated from detailed aerial overview flights—of the mountain pine beetle in the Merritt TSA. Expansion is expressed as a percentage, calculated by determining the area affected in one year compared to the area affected in the previous year. (These percentages were derived by determining annual expansion rates for several years and calculating the average). As of 1992-93, the mountain pine beetle has been increasing in select drainages in the Merritt TSA. Over the past two summers, the population has increased dramatically. Factors leading to this outbreak population of beetle include:

- a mature and ageing lodgepole pine forest
- natural cycling of the insect population
- availability of suitable host (lodgepole pine)
- favourable climatic conditions conducive to MPB survival and development, plus two mild winters followed by a very hot, dry summer in 1998

Year	Average annual expansion rate of MPB (%)
1993-98	19.4%
1994-98	37.0%
1997-98	29.0%

Table 1. *Expansion rates of mountain pine beetle in the Merritt TSA*

The average annual expansion of MPB affected area over the TSA for the period 1993 to 1998 is approximately 19.4%. At the current level of attack, an additional 854 hectares of damage are predicted each year. The most recent beetle flight resulted in an increase in affected area from 1997 to 1998, of over 1,200 hectares. This increase equates to an annual rate of expansion of 29%.

Data from 1998 detailed aerial overview surveys indicated that mountain pine beetle currently affects an area in excess of 4,400 hectares within the Merritt TSA. This overview survey captured information about 1997

beetle attack. It is important to note that these populations have since spread to new hosts as a result of the 1998 beetle flight. Initial ground reconnaissance work appears to indicate that substantial spread has resulted from the 1998 flight and that some populations have dispersed to new (susceptible) host stands. It is estimated that approximately 80% of this affected area (3,500 hectares) falls within the timber harvesting land base.

If this trend continues annual unsalvaged losses will increase by approximately 77% from estimates reported in the *1994 Merritt TSA timber supply analysis*. These estimated trends were calculated by combining all of the affected area that have not been, nor were anticipated to be salvaged over the past three years. Forest Service staff estimate that approximately 80% of this total area contributes to the current timber supply, has an average stand volume of 275 cubic metres per hectare and an average of 40% of the stand volume has been lost.

In spite of the B.C. Forest Service implementing one of the most intensive single-tree treatment programs—with the goal of reducing the spread of MPB—in the province, the problem and its impact on all resource values continues to increase. This places the future timber supply for the Merritt TSA in jeopardy since such a large component of the TSA is comprised of susceptible lodgepole pine host.

In order to address the MPB problem in an expedient manner and reduce both long- and short-term impacts, specific information was required. This information has now been gathered where possible, or assumptions have been made, based on historical data. Models were used to determine the impact and effects of control strategies. The following assumptions were made:

- the average stand volume for affected pine stands is estimated at approximately 275 cubic metres per hectare.
- the average harvest area to affected area ratio is between 3:1 and 5:1. This value has been derived using three samples of between 20 and 40 cutblocks harvested or planned in areas infested with mountain pine beetle in the Willis, Whipsaw, Sunday, and Steven’s Creek drainages. These areas were selected because they were representative examples of

sanitation and salvage operations in epidemic beetle populations.

- the annual rate of expansion of the unharvested balance of mountain pine beetle in the TSA is estimated at 19.4%. This value has been derived from the historical trends in affected area as detected in annual aerial overviews over the past six years. This already takes into consideration current management strategies including reductions due to single-tree treatments, accelerated harvesting and natural causes.
- total area affected as of the 1998 aerial overview is approximately 4,400 hectares
- total affected area on the operable land base is approximately 3,520 hectares
- area requiring harvest, using a 4:1 ratio is 14,080 hectares

Therefore, the total harvest volume required—at 275 cubic metres per hectare—to address control and salvage needs is estimated to be approximately 3,520,000 cubic metres. Some of this volume can be harvested within the existing AAC, however, additional harvest level volume is required. The following describes the proposed management strategies available.

Proposed Management Strategies

The following two figures are graphical interpretations showing the projected MPB area affected compared to area harvested each year based on an expansion rate of 19.4% for two different strategies. The figures show a timeframe for the projection of unsalvaged losses—area between two curves—for the two strategies.

Figure 4 (next page) shows how the area affected by MPB each year will continue to increase under current management.

Figure 5 (next page) shows the projected impact of redirecting the existing harvest operations and a temporary AAC increase of 400,000 cubic metres per year for sanitation (removal of potential host trees) and salvage for 1999 and 2000. This allows the epidemic to be brought under control within the next few years.

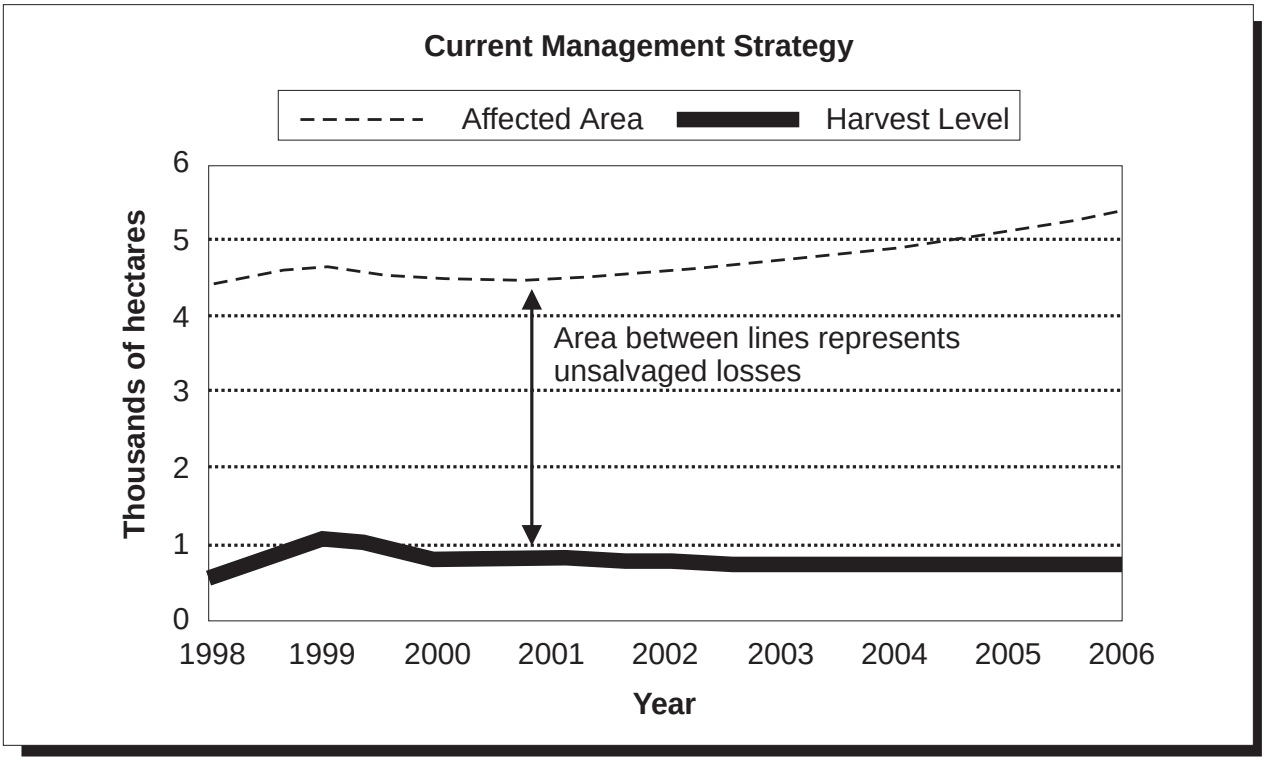


Figure 4. *Area affected by mountain pine beetle with current management*

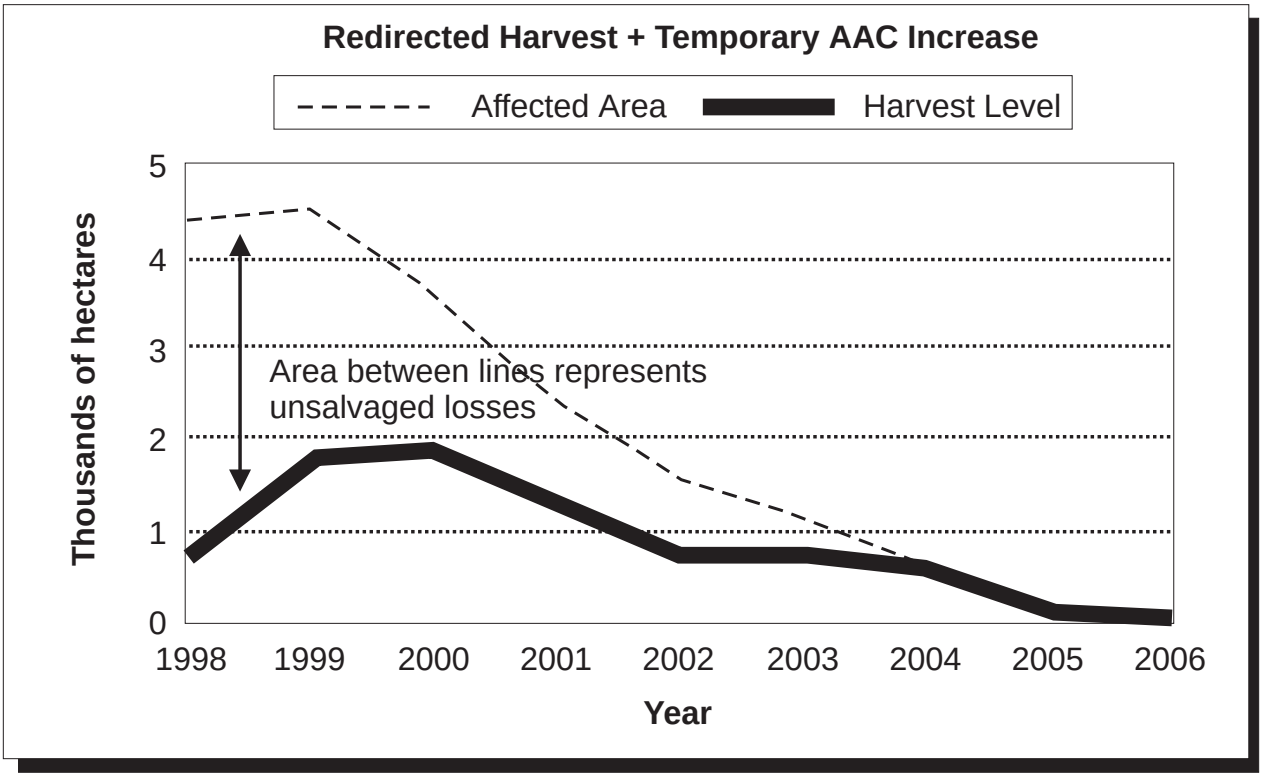


Figure 5. *Area affected by mountain pine beetle with redirecting the existing harvest and a temporary AAC increase*

The mountain pine beetle infestation in the Merritt TSA is critical. If significant changes are made immediately to address beetle populations, including the new management approach of redirecting existing harvesting operations and a temporary AAC increase, the situation may be brought to a more manageable level within a 4-5 year period. Stands containing high green attack levels (exponential beetle increases) should be identified prior to January 31, 1999. These affected stands must then be harvested prior to the spring 1999 beetle flight. If these activities are not expedited, the likelihood of containing the MPB and reducing unsalvaged losses will be greatly reduced.

Other factors affecting the Merritt timber supply

The benchmark for assessing the timber supply and the request for a temporary AAC increase is the previous timber supply review. When considering a temporary increase, chief forester will consider factors that have changed since the last timber supply review. This section outlines those factors, which have changed since the *1994 Merritt timber supply analysis*, and the *1995 Merritt AAC Rationale*.

The *1994 Merritt TSA timber supply analysis* showed the AAC could be maintained for 110 years before declining by 7% per decade, reaching the long-term harvest level of 925,000 cubic metres per year in 150 years.

Since the time of the *1994 Merritt TSA timber supply analysis*, either new or additional information is now available which better reflects forest management for the Merritt TSA. It is acknowledged that some information remains uncertain, however, this will always be true where information is constantly evolving and management issues changing.

Timber harvesting land base factors

- ongoing study on approximately 40,000 hectares of repressed Douglas-fir forests have shown that the majority of these areas should be considered as contributing to the timber supply. These areas did not contribute in the last timber supply review.

- research into better quantification of the areas lost due to existing roads, trails, and landings has shown actual areas lost to be lower than previously estimated
- operability lines have now been completed for the Merritt TSA. The results indicate that some portions of the timber harvesting land base are now considered inoperable.
- the riparian management zone and reserve area required to buffer and protect streams, wetlands, and lakes is expected to increase over previous estimates.

Growth and yield factors

- as part of the last AAC determination, the chief forester made note of the high likelihood that the estimates of site productivity are low for managed lodgepole pine stands and possibly spruce stands. Since that time better quantification of the potential productivity of these areas has occurred showing these managed forest types to be much more productive than previously estimated.

Integrated Resource Management factors

- the completion of watershed assessment processes within the nine community watersheds may result in additional harvest constraints in these areas
- the area managed for visual landscape purposes has increased approximately 20% since the last analysis. Recent studies have indicated green-up requirements in the visual zone were previously overestimated
- district staff have estimated that approximately eight percent of the total Crown land base is being retained for wildlife tree purposes. It is estimated that approximately one-half of this area overlays with riparian reserves, inoperable areas, other excluded or already constrained areas
- retention of old growth for landscape-level biodiversity was not explicitly accounted for in the last analysis
- the area in lakeshore management zones has increased due to the classification of many more lakes

Summary

Current assessments of the catastrophic losses due to the Tulameen Fire and MPB have shown that the present AAC requires a temporary increase to manage the recovery of fire-damaged timber and to control the spread of the MPB. The existing AAC for the Merritt TSA is currently focused on the removal of damaged timber as a result of other agents such as spruce bark beetle or timber damaged by wind. The district staff are proposing a management strategy that includes both a temporary AAC increase and a requirement that existing harvesting activities increase to harvest damaged timber as well.

Due to the severity of the Tulameen Fire, salvaging the fire-killed timber is estimated to best occur within one and a half years. The increase in MPB populations in conjunction with the proximity of a large amount of mature lodgepole pine host material imposes a significant risk on the standing timber inventory of the Merritt TSA.

Both the wildfire and the MPB epidemic are considered catastrophic events and require urgent remedy for salvage and control. The assessments indicate that proper recovery and control measures are beyond the ability of the present AAC to adequately address the extent of the events.

References

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Your input is needed

The allowable annual cut is an important determination requiring well-informed and thoughtful public input. Please review the information contained in this document and provide any additional information you feel is important and relevant to this decision. Forest Service staff in the Merritt office are available to discuss questions or concerns that would help you prepare your input.

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.

Please mail your comments to the chief forester at the address below. Your comments will be accepted until 4:30 p.m. on December 14, 1998.

A summary of public comments will be available along with the chief forester's allowable annual cut determination when it is announced.

For more information regarding this document, contact:

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