



Exploring the Health and Safety Implications of the Mountain Pine Beetle Epidemic in the BC Interior

Report Prepared for

BC Forest Safety Council

DRAFT

October, 2005

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Executive Summary

During the mid 1990s the Ministry of Forests and the forest companies began to recognize the level of mountain pine beetle activity in the central interior was increasing rapidly. During this period, many companies in the Quesnel area were already concentrating 75-90% of their harvesting capacity on removing beetle attacked timber. From then until the end of 2004, a total of 7,022,000 hectares have been attacked by the mountain pine beetle and this area is continuing to increase.

With the extent of the epidemic becoming understood the provincial government began working more closely with local communities, the forest industry, other resource users and more recently the federal government in developing strategies to deal with the epidemic. Initially the major focus was on harvesting beetle attacked timber with a goal of maximizing the recovery of timber values. This involved the completion of timber supply analyses in the impacted areas and the implementation of allowable annual cut increases to provide for increased harvesting. Innovative legislation such as the Bark Beetle Regulation was adopted to expedite harvesting

Since the start of the epidemic in the mid 1990s through to the early 2000s when the Chief Forester began to recognize the epidemic in his cut determinations and up to the present with the introduction of emergency increases, the allowable annual cut volumes as well as the level of actual harvest have increased substantially. While recent harvest level uplifts have been the range of 8 million m³, in reality the harvest levels have increased from 27, 700, 000 m³ in the mid 1990s to 40,500,000 m³ today resulting in an overall increase of 13 million m³. If all of the increased harvest was to be removed, this would represent another 336,000 loads on our roads and highways annually.

While the timber supply review process and the strategy of increasing allowable annual cuts have become the major strategies to address timber, the government has focused attention on the protection of impacted communities with the goal of reducing the future impacts of allowable annual harvest reductions.

As the agency now responsible for safety in BC's forest industry, the BC Forest Safety Council must become proactive in ensuring the major changes taking place as result of the epidemic are implemented in a safe working environment. The Council should consider taking action in the following areas as its contribution to the dealing with the beetle epidemic.

- Ensuring adequate training for new entrants in the harvest and hauling fields as well as for personnel that will be involved in future stand restoration programs.
- Advocating for change in government timber pricing policy
- Advocating for economic strategies that ensure safe work practices
- Promoting adequate funding for infrastructure
- Becoming a communication tool for advancing information and knowledge that will result in safer working conditions for personnel across the epidemic area.

A. Introduction

CGR Management has been retained by the BC Forest Safety Council (the Council) to explore the health and safety implications of the mountain pine beetle epidemic in the BC interior. The Council is specifically interested in how its work can ensure that safety is a key consideration in government policy being developed to deal with the epidemic. The specific direction provided by the Council is summarized as follows:

- a) Provide input and suggestions on the provincial 5 year beetle strategy
- b) Provide comment and input into the Federal funding implementation plan
- c) Consider the safety implications of the significant increases in activity resulting from the increased AAC in infected areas and
- d) Consider other such safety and health issues as may arise during the inquiry.

In developing this report, CGR Management was not requested to undertake any new analyses consequently our comments are derived from existing information sources and discussions with informed forest industry representatives.

The Council also requested CGR Management Principal Gord Rattray make a presentation on the mountain pine beetle topic during the October 27 & 28 BC Trucksafe Summit. As a result of this request, the format for this report parallels the Summit presentation and incorporates an educational element that would not normally be included in a report of this nature. This report summarizes the current situation with respect to the size and expected expansion of the epidemic, outlines the strategies the provincial and federal governments are pursuing to deal with the epidemic and discusses key safety issues. The report incorporates suggestions and recommendations the Council may consider in developing its strategy for improving safety performance.

In reviewing this report and associated recommendations it must be understood that BC forest policy and legislation are complex topics. The current tenure structure, stumpage practices and the influence of the on-going softwood lumber dispute intertwine to make any discussion on policy and legislative change challenging. What could appear to be a simple change in one piece of legislation could have major impacts on another area of legislation in, for example, the areas of environmental protection or trade policy. With this stated, where people's safety is at risk and there is a need to make changes to save lives the complexity of the legislation should not be an impediment.

B. The MPB Situation – 1995 to 2014

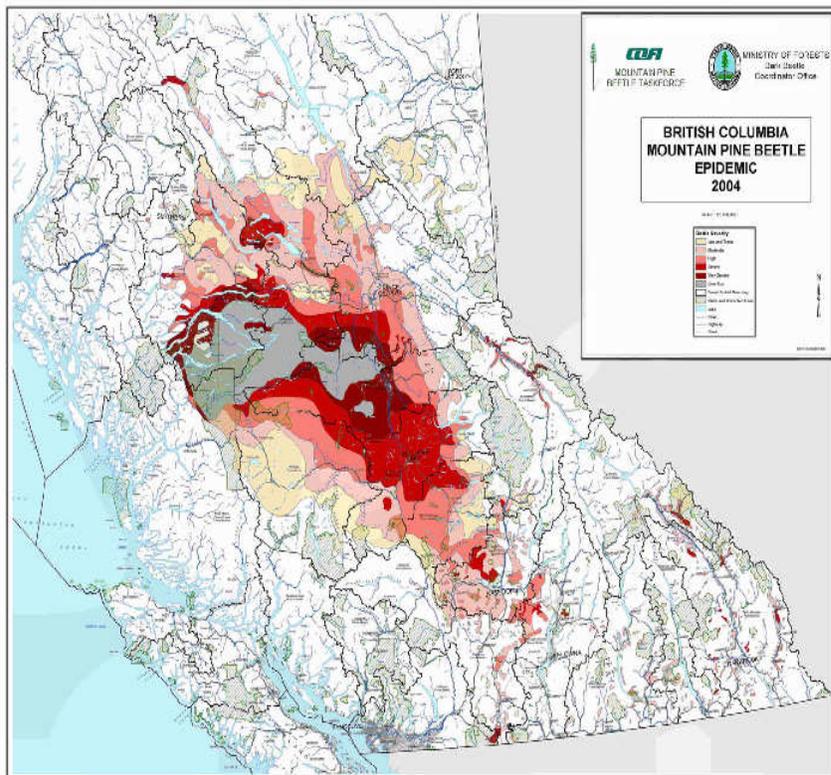
During the mid 1990's, the Ministry of Forests and the forest companies began to recognize the level of mountain pine beetle activity in the central interior was increasing rapidly. By the mid 1990s many companies in the Quesnel area were already concentrating 75-90% of their harvesting capacity on removing beetle

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attacked timber. By the late 1990s the forest industry trade associations in the central and northern interior established a joint task to work more closely with the Ministry of Forests on the epidemic. Processes were put in place to quantify the area and volume under attack and work commenced to develop strategies to deal with the ever increasing volume of dead and dying pine stands. While the attack was originally centered within a geographic area bounded by Quesnel, Prince George and Vanderhoof, the epidemic has continued to expand and now covers the majority of the interior of BC and the level of attack is intensifying.

Figure #1 illustrates the extent of the epidemic as of 2004. This is a collaborative summary produced jointly by the Ministry of Forests and the Council of Forest Industries.

Figure#1: Extent of the MPB epidemic as of 2004



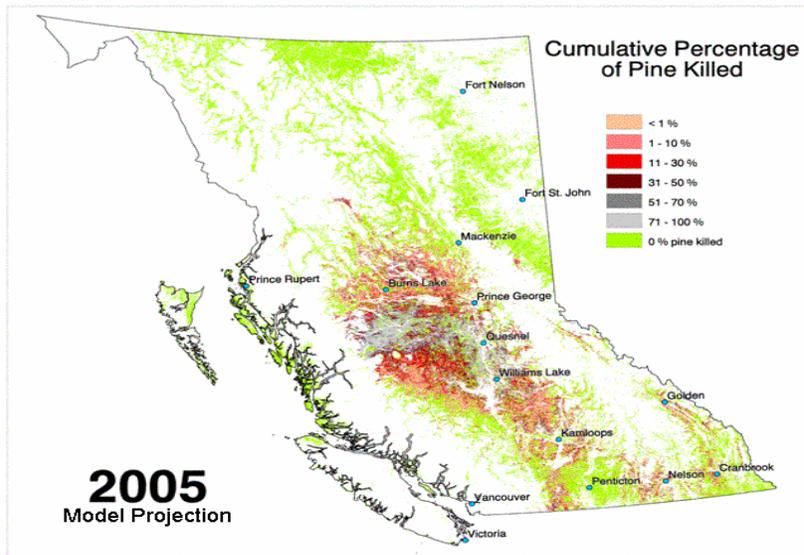
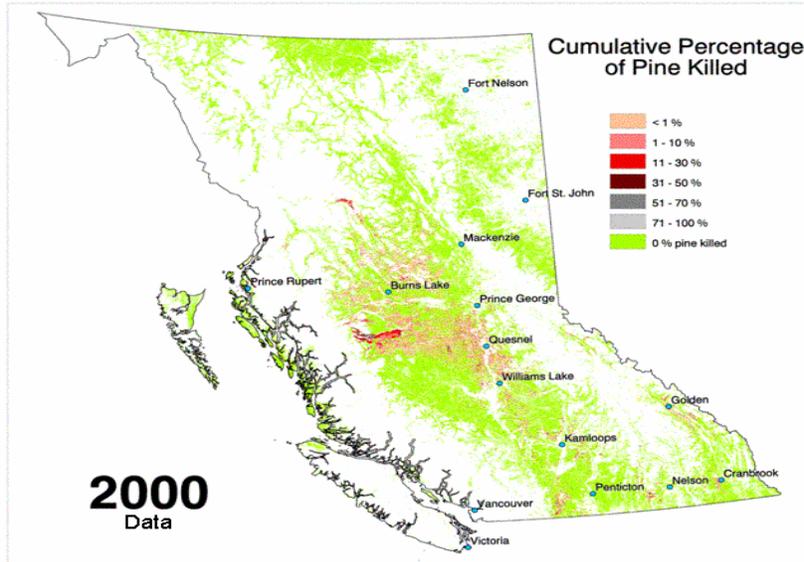
Credits: Council of Forest Industries Mountain Pine Beetle Task and the Ministry of Forests Bark Beetle Coordinator

The Ministry of Forests Beetle Information Bulletin of March 2005 reports a total of 7,021,886 hectares under attack by the mountain pine beetle across the province at the end of 2004.

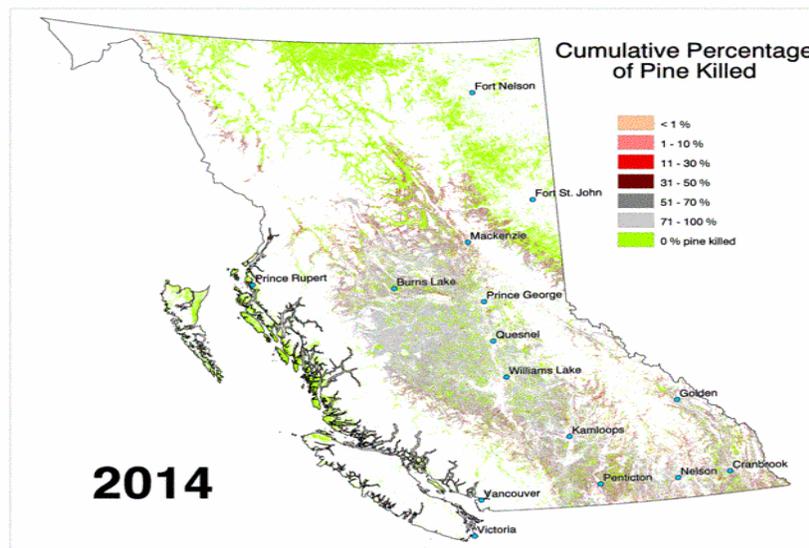
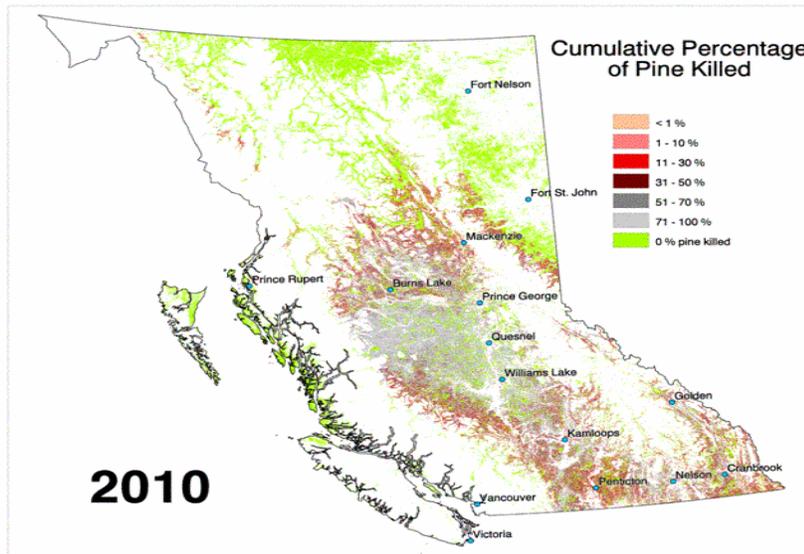
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The maps included in Figure #2 have been produced by the Ministry of Forests to illustrate the growth of the epidemic from 2000 to 2014.

Figure #2: Graphic Summary of MPB Expansion (source BC Ministry of Forests)



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These projections illustrate that the epidemic is expected to expand significantly over the next decade. This will most likely require further increases in allowable annual cut with commensurate increased harvesting activity.

C. How the Epidemic is Being Dealt With

With the size and rate of expansion of the epidemic becoming understood, the provincial government began working in closely with local communities, the forest industry and other resource users and more recently with the federal government in developing strategies to deal with the epidemic. Initially, the major focus was on harvesting beetle attacked stems to maximize the recovery of timber values. This has required reviews of the timber supply across the impacted areas as adoption of innovative legislation to expedite timber harvest. With the timber supply review process and the strategy of increasing allowable annual cuts in place to address timber, the government has now turned its attention to protection of impacted communities with a goal of mitigating the future impacts of harvest reductions.

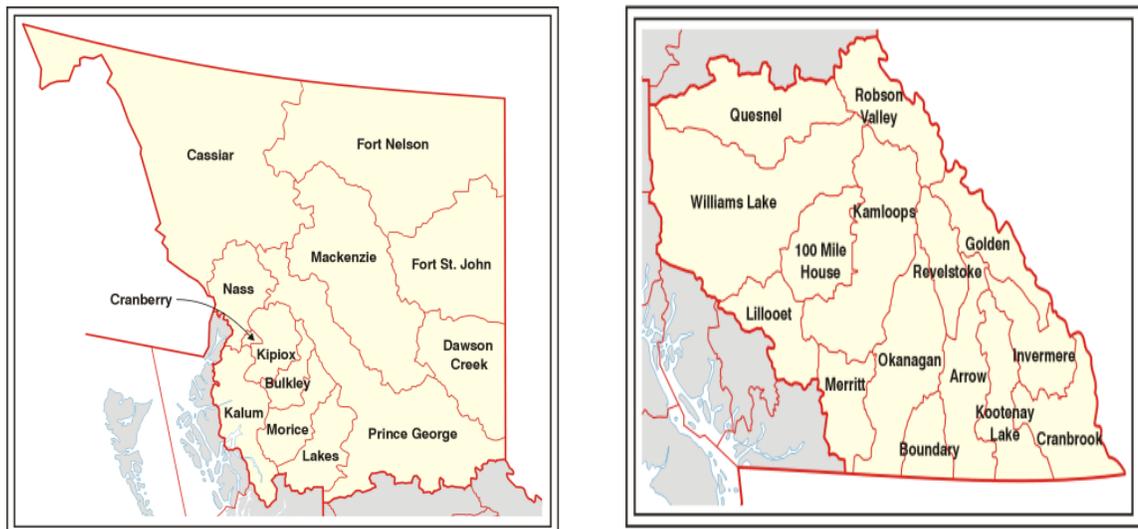
The following provides explanations of the timber supply/timber harvesting strategy as well as the government's approach to limit the impact on the communities.

Timber Supply Reviews and Timber Extraction:

In recognition of the expanding mountain pine beetle epidemic, the Chief Forester's strategy has been to increase allowable annual cuts in Timber Supply Areas and Tree Farm Licenses where the beetle is active.

Figure #3 illustrates the timber supply areas boundaries in the northern and southern forest regions. Comparing these boundaries against Figure #1- Extent of the MPB epidemic in 2004 illustrates the Chief Forester's AAC strategy.

Figure #3: Timber Supply Area Boundaries – Northern and Southern Regions



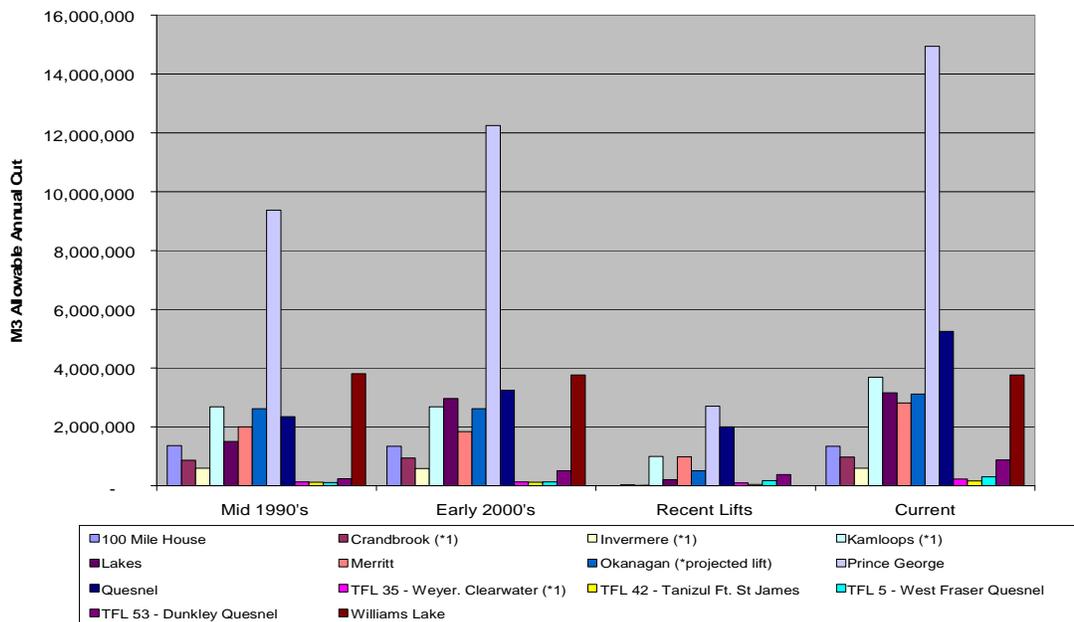
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Beginning in 1992, the province's Chief Forester began conducting regular reviews of the timber supply situations in the Timber Supply Areas and Tree Farm Licenses. Subject to the results of his findings he would then decide whether to increase, decrease or maintain the AAC at previous levels. This new program, termed TSR1, resulted in the majority of TSAs and TFL's analyzed and allowable annual cut determinations made by the mid 1990's. Coincidentally, the expansion of the mountain pine beetle epidemic began occurring as TSR 1 was being completed. This timeline provides a good benchmark to assess the impacts of the MPB on harvest levels. Figure #4 illustrates the changes in the allowable annual cut levels for TSAs and TFL's impacted by the beetle since the mid 1990s.

During the early 2000's, the Chief Forester began a subsequent process (known as TSR2) to reassess timber supply in the TSAs and TFL's. By this time, beetle activity had increased dramatically and AAC determinations began to increase in accordance with the beetle activity. More recently, the Chief Forester has begun expediting his reviews in beetle impacted TSAs and TFLs and is now introducing more immediate cut increases to provide the opportunity to remove as much beetle killed timber as possible.

Figure # 4:

AAC Comparisons for MPB Impacted TSAs and TFLs



Note: (*1) includes provision for harvesting of fire damaged timber

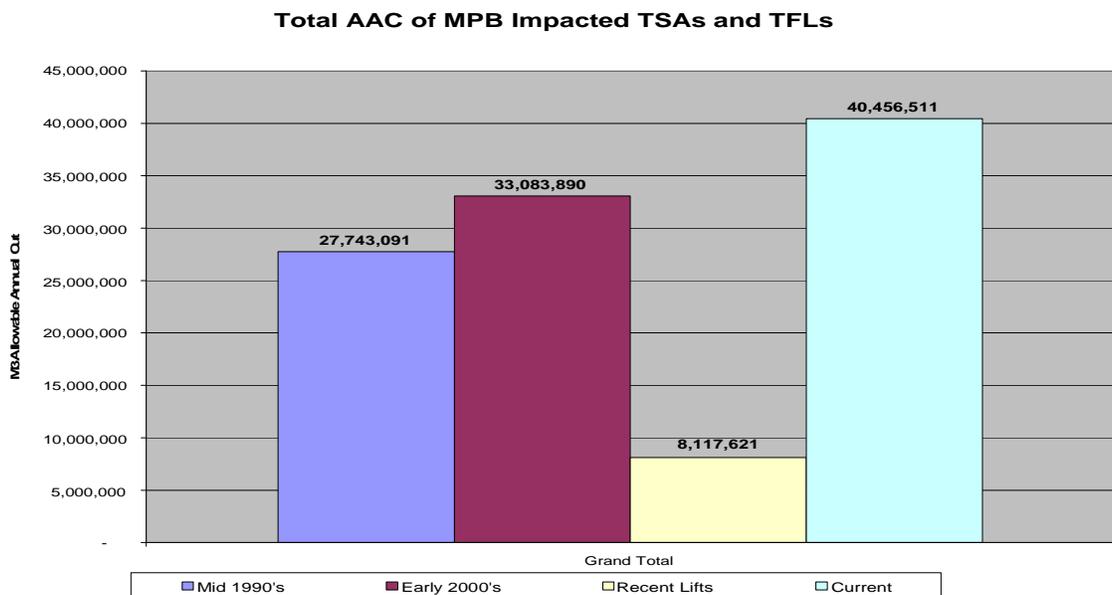
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A comparison of Figure #1 (the current situation) and Figure #2's 2014 projection illustrates that while allowable annual cuts have already been increased substantially, there are likely more increases coming as the epidemic moves southerly. It is anticipated that action taken now in the hardest hit northern TSAs will be mirrored in the southern TSAs i.e. increased AAC determinations followed by increased harvesting.

The timeline for the comparative analysis of the increase in allowable annual harvest volume is important. Figure #5 consolidates the increases in AAC's since the mid 1990's when the expansion of the epidemic began through updated AACs in the early 2000s when the Chief Forester began to recognize the epidemic in his determinations through to the current period when emergency increases are being implemented. While recent harvest level uplifts have been the range of 8 million m3, in reality the harvest levels have increased from 27,700,000 m3 in the mid 1990's to 40,500,000 m3 presently with the result that AAC's have actually increased by 13 million m3 over this period, a significant figure. The implications are increased harvest and hauling activities.

With regard to the allowable annual harvest levels, industry sources advise they are currently harvesting only about 60% of these levels. They advise there is currently about a 6 million m3 supply excess over demand. It is expected this supply/demand imbalance will only decline should new manufacturing (structural board, pellet plants, value-added plants and possibly some increased sawmilling capacity) facilities come on line with commensurate harvesting increases.

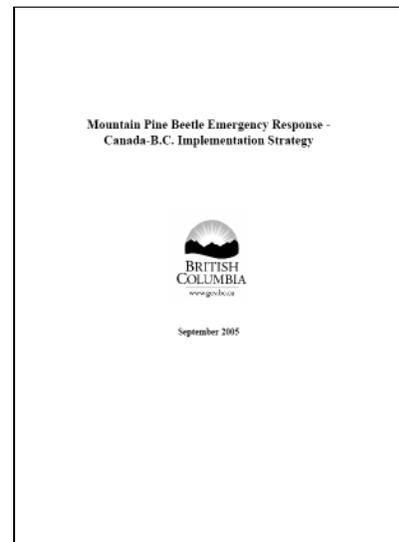
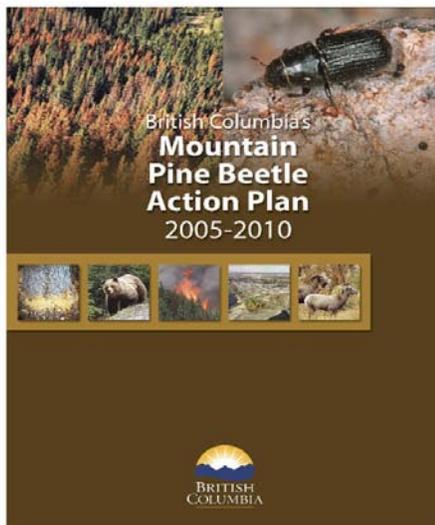
Figure # 5:



Provincial Strategies

In 2000 the Ministry of Forests established the position of Bark Beetle Coordinator. Former Vanderhoof District Manager Bob Clark was seconded to the position and remains in place to this date. Since commencing this role, the Bark Beetle Coordinator, working in conjunction with the MOF Executive (which includes the Chief Forester) has proceeded with a broad range of analyses and consultation processes to develop a strategy for dealing with this serious epidemic. He has undertaken a number of projects to expedite harvesting of beetle attacked timber including implementing a Bark Beetle Regulation which affords more flexibility in how planning and harvesting can take place.

Figure #6: Key Policy Documents – Provincial Action Plan 2005-2010 and the Canada-BC Implementation Strategy



The Provincial Cabinet has also taken a more active role in dealing with the beetle epidemic. Recent work has involved bringing forward the BC Mountain Pine Beetle Action Plan 2005-2010. Building upon the objectives contained in the action plan, the Provincial and Federal governments have developed a complimentary document that targets funding towards the objectives outlined in the 2005-2010 strategy (see Figure #6). Detail on these documents is included in Appendix #2.

The Canada-BC Implementation Strategy builds upon the objectives outlined in the 2005-2010 Action Plan. In addition, community groups have begun to spring up to assist the government in setting priorities for beetle mitigation activities.

Figure #7 is a compendium of the key objectives included in the provincial strategy as well expenditure proposals contained in the joint Canada/BC document.

FIGURE #7:

#	<u>Key Provincial Objective</u>	<u>Activity</u>	<u>3 year Distribution (\$ million)</u>
1	Encourage Long-term economic stability for communities affected by the epidemic	Community Diversification	\$13.2
1	"	Natural Range	\$ 4.5
2	Maintain and protect public health, safety and infrastructure	Fuel Management	\$ 24.8
3	Recover the greatest value from dead stands before it burns or decays while respecting other forest values	R&D – Wood Products	\$ 6.3
4	Conserve the long-term forest values identified in the land use plans		
5	Prevent or reduce damage to forest in areas that are susceptible but not yet experiencing epidemic infestations	Parks/Protected Areas MPB Mitigation	\$ 2.7
5	"	Spread Control	\$ 21.7
6	Restore the forest resources in areas affected by the epidemic	Inventory	\$ 10.9
6	"	R&D – Bio-Physical	\$ 6.7
6	"	Ecosystem Restoration	\$ 7.0
7	Maintain a project management structure that ensures coordinated and effective planning and implementation of mitigation measures	Corporate Support	\$ 2.2
		Total	\$100

At the present time, the Federal government has committed \$100 million towards beetle mitigation. Substantial increases in federal government contributions are expected in the future. In addition, the provincial government has committed additional funding through the Northern Development Initiatives Trust, other individual community initiatives as well as a direct funding program through the Bark Beetle Coordinator known as Forests Forever.

This is important information because funding will be a major issue as the province deals with the present and future situation. Many organizations, including the Council will need to have a good understanding of these programs in order to access funding to deliver their respective programs.

D. Setting the Stage to Address Safety

Of utmost concern to the Council must be the safety implications of the major increase in harvesting activity to remove dying and dead pine stands. There must be the understanding that this already heightened level of activity will only increase as the epidemic spreads across the province.

The government's strategies to reduce the long-term impacts upon the province and local communities will have additional safety implications as new projects are implemented to restore damaged ecosystems and return these areas to a productive state.

This section and the next are intended to set the stage for a better understanding of the current situation and associated safety considerations.

Facts and Figures:

- There are limited safety statistics specific to harvesting of beetle killed timber.
- The current increase in allowable annual cut (AAC) to deal with the epidemic (subject to the time line used) is between 8,000,000 and 13,000,000 m³. At an average truckload of **45 m³**, this represents an increase of between 178,000 and 289,000 log truck loads **if** the increased AAC volume is harvested. At the present time, 60-70% of the increased AAC is being removed.
- The economics of the interior forest industry are driven by the demand and subsequent prices paid for lumber in the US market. The on-going lumber dispute with the United States has resulted in tariffs being imposed on BC lumber which influences the prices paid for timber and related extraction costs.
- The prices paid to government for BC interior timber are guided by government policy through the Interior Appraisal Manual. Stumpage prices are adjusted quarterly to reflect changes in lumber and chip prices in geographic pricing zones.
- Environmental standards (which influence harvesting schedules and logging road construction) are subject to government legislation, most directly by the Forest and Range Practices Act, with harvesting and road construction costs guided by the Interior Appraisal Manual.
- Over the period 2000-2004 there were 3706 reported logging truck crashes with 51% occurring in the central and northern areas of the province, 26% in the southern interior and the remaining 23% occurring in the lower mainland and on Vancouver Island.
- Of the 3706 crashes, 1467 occurred in the first quarter of the year and 1082 occurred in the last quarter for a total of 2549 crashes during these two periods.
- Of the trucking accidents reported in the period 1999-2003, 69% were roll-overs or jack-knives, 10% were road run-offs with the balance either being collisions (on-coming or with other vehicles and other mobile equipment).

- Of the trucking accidents reported, the age groups included: 16-24: 5%, 25-44: 48%, 45-64: 44%, 65 & over: 3%. All the reported accidents involved males.
- There is a general shortage of skilled workers in many of BC's industrial sectors including the forest industry. Many skilled loggers, truckers and maintenance people are needed. Many current forest industry employees will be retiring within this decade.

E. Safety Issues

As outlined in the introduction the Council did not mandate new analysis towards completing this report. It concluded the majority of issues could be revealed through the examination of existing information sources and through dialogue with informed forest industry representatives. This guidance was well founded. With this said, there is a general lack of good statistics available to sufficiently analyze the real impacts of the epidemic on safety. This should be of concern to the Council and requires further attention.

In discussions with a broad range of individuals certain themes evolved. The following is intended to summarize that have major safety implications (**the bold statement is considered a theme and the subsequent bullets are intended for clarification**).

- a) **Harvest volumes are continuing to increase and there is a significant shortage of skilled people to harvest this volume:**
 - There are continuing increases in allowable annual cut to allow prompt harvesting of beetle killed stands
 - There is shortage of skilled workers evident in many sectors
 - There is a changing demographic in the timber harvesting and hauling business with many of the operators nearing retirement.
- b) **High environmental standards and the current stumpage system can be impacting the amount of annual worker days due to frequent curtailments which may result in difficulty in earning adequate wages and encourage new entrants.**
 - Frequent curtailments in operations occur to avoid environmental damage. Specific examples including curtailing skidding and hauling to avoid erosion and potential rutting on the blocks and on roads. This results in a reduced number of working days per year for workers.
 - Stumpage management is resulting in operational curtailments i.e. curtailments in harvesting and hauling when it is anticipated that a quarterly adjustment will result in reduced stumpage costs. Stumpage prices are adjusted quarterly in BC. Trends indicate stumpage prices are higher in last quarter and lower in the first quarter. In attempting

to reduce costs, companies may increase or decrease harvesting and hauling activities to take advantage of lower stumpage costs from quarter to quarter.

Of note, Appendix #3 includes a comparison of quarterly base rates (the average price for timber paid in the respective quarter) against reported truck accidents. There is an apparent relationship that indicates an increase in truck accidents during periods when the quarterly base rate is low or in decline signaling that more trucks are on the road to take advantage of lower stumpage costs.

- The outcome of our high environmental standards and stumpage management can be a “start/stop” situation where workers may be idled and upon return to work must work longer hours to make up for lost time with associated safety implications.
- c) **The economics associated with the extraction of timber is impacting safety.**
- The current stumpage system applies cost estimates for overhead, planning, road construction, harvesting, silviculture that influence how a forest company manages its operations. This can influence the standards that are applied to road construction.
 - The infrastructure (roads and bridges) over which this tremendous increase in activity is occurring is not keeping up specifically road construction and maintenance. Further there is a general lack of adequate funding to ensure proper infrastructure.
 - The softwood lumber dispute with the US imposes significant penalties on forest companies which, in turn, impacts the price paid for timber and related extraction costs.
 - The major increase in volume of timber on the market in some areas of the province has a major supply/demand effect and consequently the prices that are paid for timber are substantially less which commensurate impacts on safety.
 - Company managers are measured on their economic performance consequently they attempt to achieve the lowest per unit costs possible. This is done through tough negotiations on harvesting and hauling costs. In some cases, the resultant rates have impacted the financial viability of the equipment owners and operators. Company managers must also be concerned about the precedent that is set when they negotiate higher rates which may be detrimental during periods when product prices are low.

- d) **Infrastructure, specifically roads, is a problem and there are more and more trucks using roads not designed for this volume of traffic.**
 - o Some roads are now having double and triple the amount of traffic they were designed for.
 - o There is more money needed to upgrade the roads i.e. more money for turnouts, better alignment and improved bridges but this not forthcoming.
 - o The appraisal manual dictates the amount that can be spent and this document looks back, not forward
 - o There needs to be more planning to ensure that when traffic volumes increase they are being scheduled properly.

- e) **Mitigation strategies for restocking and restoring of forest lands will require a trained workforce.**
 - o The government strategies are proposing programs to restore the productivity of sites where timber has been killed by the beetle and to reduce the fire interface in communities where pine has been killed. These programs will require skilled personnel to complete the proposed projects.

F. What Can Be Done to Improve Safety

As outlined in the introduction, the Council direction for this project included:

- a) Provide input and suggestions for the redrafting of the Provincial 5 year Beetle Strategy
- b) Provide comment and input into the federal Funding Implementation Plan
- c) Consider the safety implications of the significant increases in activity resulting from the increased AAC in infected areas and
- d) Consider other such safety and health issues as may arise during the inquiry

The following is a discussion on key issues and proposals for Council actions to ensure these programs are carried out in a same manner. With reference to a) and b) the following are specific statements are lifted from the documents with associated comments related to safety

Objective 2: Maintain and protect public health, safety and infrastructure

- ***Carry out fuel management and implement wildfire mitigation where necessary for public safety***

With the potential for major fires resulting from dead trees, there is a need to undertake programs to “fire-proof” communities and wherever possible reduce the potential for wildfire. This will require trained personnel to complete these projects. The Council should take a proactive

approach to ensuring the personnel that are placed in these potentially hazardous situations are well trained and equipped appropriately.

The funding allocation for carrying out this program outlined in the Canada-BC Implementation Strategy is set at \$24.8 million. The Council should assess the safety strategy for this program and ensure that programs and funding are adequate and, where warranted, lobby for more aggressive training programs and/or increased funding.

➤ ***Assess the existing transportation network within the impacted regions and develop plans for necessary upgrades or changes.***

This report reinforces the position there will be ever-increasing traffic associated with the movement of crews and the transport of logs as the allowable annual cuts increase to allow for the harvesting of beetle killed stands. Present figures indicate there could be upwards of 300,000+ extra truckloads on our roads if all the AAC is accessed. Ensuring that adequate planning, construction and maintenance of the transportation network with related funding issues is a challenge the Council should become proactive.

Objective #3: Recover the greatest value from dead timber before it burns or decays while respecting other forest values

➤ ***Price damaged timber in a manner that recognizes its value and maintains revenue to the Crown and industry viability during the term of the salvage program***

Pricing of provincial timber has a major impact upon the amount and timing of timber being moved within the province. The potential for "start/stop" highlighted in the previous section can have major safety implications. The Council should consider becoming proactive in advocating for changes in the in timber pricing policy with a goal of "leveling out" the harvest and transport activity.

➤ ***Undertake stand treatments on a priority basis to ensure timber will be available for harvest sooner than originally planned***

Implicit within this direction is the need to establish silviculture crews to undertake critical activities such as planting, spacing, fertilization as well as other treatments. There will be a more a major shortage of personnel carry out these projects. The Council must consider becoming involved to ensure adequate training of these crews to avoid accidents and fatalities.

Objective #5: Prevent or reduce damage to forest in areas that are susceptible but not yet experiencing epidemic infestations

Under this objective, the Canada/BC expenditure program advocates an expenditure of in excess of \$ 23 million for “on-the-ground” treatment of stems in Parks and Protected areas. While Park’s staff do not come under the Council umbrella there could be opportunities for development of joint training activities to ensure industry and the workers carrying activities in the areas receive adequate safety training.

- ***Continue streamlined approach to operational planning and approvals for access and harvesting where necessary to achieve beetle management strategies***

With the ever increasing harvest, the goal of streamlining planning and approvals to allow for harvesting becomes an ever more challenging task. However avoiding “bottlenecks” and ensuring the even flow of harvesting activities is critical in distributing available harvesting capabilities and avoiding congestion. The Council should consider taking a proactive role in ensuring the government achieves this goal with the potential for reductions in accidents.

Objective #6: Restore the forest resources affected by the epidemic

- ***Examine the opportunities and costs including possible funding sources for silviculture techniques to address mid-term timber supply gap***

With reference to the previous discussion, silviculture will become an ever increasing priority to get areas back into production. Ensuring well trained and well equipped crews should be a key objective in reducing accidents and the Council should become proactive in ensuring that training personnel is give the priority it must have.

- ***Apply timber administration and pricing in areas with similar circumstances***

As in a previous discussion, the role of timber administration and pricing is a critical issue in determining where and when timber is harvested. Stabilizing harvest and transport activities throughout the year would provide major safety benefits. The Council should give consideration in advocating for timber pricing policies that achieve a more even-flow harvest across the province.

With reference to part c) "consider the safety implications of the significant increases in activity resulting from the increased AAC in infected areas" this report has highlighted the major increase in allowable annual cut to date and the potential for continuing increases in the future. This report has also made reference to some key issues that have major safety implications now and will become even more critical as the harvest volumes increase.

With respect to safety, the major increase in harvest volumes will undoubtedly have the most significant factor on safety performance. In the discussions with government, industry and contractor representatives there are common elements which come across in the interviews. This is extremely critical to the Council because while safety has to be given the utmost consideration, balancing the interests of the diverse interests in the industry must be a factor in how the Council elect to address policy changes.

Proposals for BC Forest Safety Council Consideration In Improving Safety Performance:

A. *The government should review its stumpage adjustment practices to lessen the motivation for stumpage management and resultant disruptions in harvest and hauling activities.*

A discussed previously, stumpage rates are adjusted quarterly to reflect changes in market prices for lumber and chips. This results in reduced or increased rates being charged from quarter to quarter. Stumpage is payable when the timber crosses the scales at the level determined for the particular cutting authority. This impacts hauling more substantially than harvesting. This is because timber can continue to be moved to road side and processed without having an impact upon economics. This quarterly adjustment practice has been termed "stumpage bingo" by some industry organizations because of the uncertainty associated with the changes. They speculate companies will automatically adjust production targets to take advantage of reductions or increases in stumpage across quarters

In the discussions with industry and contractor interests, both groups supported the position that quarterly adjustments have an impact upon the continuity of production and consequently upon safety. The degree of impact was the only issue open to debate. While the contractors felt the impact was significant, the industry spokespersons felt quarterly adjustments did not have as a major impact because of the approach they took in managing change. Larger companies are not able to "turn-off" production as readily as smaller companies or those companies solely involved in harvesting. The larger companies would be unable to achieve annual production targets if they were to completely cut-off deliveries during some periods during the year. They are prepared to accept that they will be pay higher stumpage to ensure they are able to maintain volume in the yard. Where larger companies do manage stumpage, they generally target curtailments in cutting authorities with marginal economics or, alternatively,

establish production targets from one quarter to the next that will keep wood flowing while attempting to reduce the economic impacts of buying timber in a quarter that precedes a quarter with reduced rates.

The major challenge in advocating for change is the Canada/US softwood lumber dispute and reluctance by industry strategies to make change while the dispute continues.

In summary, both the industry and contractors would support changes in the quarterly adjustment strategy with the proviso that it could not impact upon the overall level of stumpage paid by the companies.

The Council could consider advocating for change in the stumpage system that could help reduce the “stop/start” impacts of stumpage management.

B. *The government should to review its stumpage zoning practices to allow fibre to move more freely between zones. This is intended to broaden the movement of wood across geographic areas.*

The Comparative Value Pricing system (the system used for the majority of licensee held tenures) establishes pricing across an entire area (coast and interior) as well as within pricing zones. These pricing zones generally reflect differences in products sales values for lumber and chips and result in significant variations in individual stumpage prices. The impact is that timber may not move freely across zones because of the economic impact of purchasing timber in zones with higher stumpage prices rather than purchasing in another zone with lower prices. The overall result may be an increase in activity individual zones i.e. more concentrated harvesting and hauling in particular rather than “spreading out” activity across all zones.

In discussions with company and contractor representatives, both groups appear willing to support change with the proviso that overall economics must not be impacted. As in the previous discussion, the softwood lumber dispute would be a major factor in determining whether changes to this system are feasible.

C. *The industry (companies and contractors) should review internal business practices to ensure that financial “yardsticks” promote safer working practices including production rates and fees paid to government for timber.*

In discussions with both company and contractor representatives, both groups highlighted the influence of a “rates” including those paid for harvesting, hauling and stumpage. Allegations that companies are having a major impact upon safety because of their strategies to ensure lowest costs for timber purchase and extraction were heard. This strategy supposedly places added pressure on contractors to maximize production with resulting long hours. Stumpage management was also alleged to have safety implications because of the impact upon harvesting and hauling continuity. Allegations were also leveled against

other companies regarding high prices for timber (stumpage) purchased through the BC Timber Sales. Critics stated that excessive rates paid through bonus bids added onto normal stumpage rates result in creating marginal operations whereby safety becomes secondary priority to achieving sufficient financial returns from these sales.

As noted in previous sections, there is currently +/- 60% of the increased allowable annual cut being harvested. This corresponds to a 6-7 million m³ excess supply when compared against milling capacity. Over time, it is expected that this excess supply situation will decrease as more production capability comes on lines. This increased capacity is expected to come in the form of new structural board plants, pellet plants, other value added operations as well as some increased sawmilling capacity in the southern area of the province. An issue of importance to the Council should be the caliber of the new timber harvesting and hauling firms that will be brought in to harvest the additional volume. Safety must be of paramount of importance to these firms however if marginal economics of some firms result in pressure on rates and production, safety could be impacted.

From this discussion, it should be apparent there is a diversity of management approaches between the groups whether they be a major company or small contractor. Irrespective, economics is having an impact on safety. Efforts must be made to identify and deal with any company that knowingly establishes rates, pays a premium for timber or establishes other practices which result in a poor safety environment for its workers. While addressing the management practices and financial motivations of individual companies would be a major challenge, any strategies that target poor performers would provide real benefit in reducing accidents and saving lives.

The Council could consider undertaking further analyses to better understand the role and impacts of financial strategies that impact safety performance.

D. Additional funding must be identified for future infrastructure and existing infrastructure upgrade especially related to the road network. Funding programs including Forests for the Future could be promoted to assist in funding critical infrastructure.

In the discussions with government, companies and contractors, all agreed that major improvements in infrastructure are needed. Many respondents referenced the current influence of the provincial stumpage system on the quality of roads being built. A major problem with the stumpage is that it is "backward looking" whereby future cost estimates are based on previous experience. In a situation where, for example, a new standard of road is required to accommodate substantially increased usage, the companies will not be receiving sufficient allowances because the costs are based on a standard used two to three years previously. Respondents advised that many improvements are required including increasing road widths, establishing more pull-outs and installing specific safety items control lights and possibly highway overpasses where major haul routes

intersect highways. It is important that the local groups work closely together to decide what level of infrastructure is required to safely and effectively harvest and transport the increased volumes of beetle killed timber. Once these strategies are in place, they will be in a better position to lobby for more funding to achieve the required improvements.

As in the discussion on the previous recommendations, the Canada/US softwood lumber dispute has significant implications on addressing infrastructure due to the potential for further allegations of subsidy to the forest industry.

The BC Forest Safety Council could play a key role in advocating for more infrastructure funding.

E. All groups must promote a more stable environment to encourage new entrants into the forest industry. The level of harvest and issues related to lack of personnel necessitates more experienced employees. Training for inexperienced forest workers is critically important.

In the discussions with company and contractor representatives, all raised the on-going challenge of finding skilled and experienced personnel. Many referenced the seasonal nature of work in the industry and the added impacts of stringent environmental legislation. As more focus is placed on promptly harvesting beetle killed timber, the need to find additional skilled personnel becomes even more important. With the shortage of skilled people, younger, less skilled people will fill the vacancies. The need for high quality training programs becomes even more important.

The Council must become an advocate for ensuring the forest industry is promoted as a safe, stable place in which to pursue long-term employment. It must also advocate for safety programs to be established for new entrants and that these new entrants receive on-going safety training.

F. With the proposed expansion of silviculture programs, there is a need to ensure crews receive adequate training in the important areas of planting, power saw use and survival first aid.

The provincial and federal government mountain pine beetle mitigation strategies promote site rehabilitation and ecosystem restoration. The majority of these programs will require tree planters, tree spacers and other field related positions. It will be difficult to find experience personnel to fill this positions consequently many will be new entrants. Training and experience building programs should be targeted for development soon to ensure they can provide quality training programs that these forest workers will need.

The Council should take an active role in ensuring quality training programs are in place.

G. Summary

In summarizing the overall message in this report is to say that:

“Over the next two decades, the mountain pine beetle epidemic will expand across the interior with increasing volumes of timber being harvested. We need experienced and well-trained people, excellent infrastructure and forest policy that allows for the most efficient practices possible to maximize the recovery of the timber and mitigate the impacts of this major epidemic on current and future citizens of BC **and** this must be done in the safest manner possible”

The Council must be an advocate for ensuring that safety lessons that have been learned in the areas of the province that have already been hard hit are translated to other parts of the province that are only now be affected. Training programs, infrastructure (planning and funding) and better statistics are some examples.

We need to be very innovative in how we work to improve safety. In the introduction, it was stated that BC forest policy is complex and fraught with legacies and precedents. We need to get to the root of these problems and find solutions. We cannot have people getting hurt or worst case dying for lack of monies or misinformed policies.

The Council can be a real advocate for change. There are many solutions that only need to be put on the table for discussion. When we talk about funding, we should consider promoting concepts such as carbon credits. The decay of major volumes of dead pine and release of carbon dioxide can be offset but getting our forests back into production and again converting carbon dioxide to oxygen. This is a win-win for the province and the country and could go a long way to a getting the type of infrastructure funding for such things as roads. There are many innovative solutions possible.

APPENDICES

Appendix #1: AAC Volume Summary

Summary of Allowable Annual Cut Determinations for Timber Supply Areas and Tree Farm Licenses Impacted by the Mountain Pine Beetle				
Timber Supply Review	Mid 1990's	Early 2000's	Recent Lifts	Current
Grand Total	27,743,091	33,083,890	8,117,621	41,201,511
Timber Supply Review	Mid 1990's	Early 2000's	Recent Lifts	Current
100 Mile House	1,362,000	1,334,000	-	1,334,000
Crandbrook (*1)	871,000	941,000	33,000	974,000
Invermere (*1)	591,500	581,570	12,000	593,570
Kamloops (*1)	2,679,180	2,682,770	1,000,000	3,682,770
Lakes	1,500,000	2,962,000	200,000	3,162,000
Merritt	2,004,250	1,838,750	975,421	2,814,171
Okanagan (*projected lift)	2,615,000	2,615,000	500,000	3,115,000
Prince George	9,363,661	12,244,000	2,700,000	14,944,000
Quesnel	2,350,000	3,248,000	2,000,000	5,248,000
TFL 35 - Weyer. Clearwater (*1)	130,000	125,600	100,000	225,600
TFL 42 - Tanizul Ft. St James	120,000	120,000	40,000	160,000
TFL 5 - West Fraser Quesnel	110,000	122,800	177,200	300,000
TFL 53 - Dunkley Quesnel	239,500	500,000	380,000	880,000
Williams Lake	3,807,000	3,768,400	-	3,768,400
* 1 = includes some provision for removal fo fire damage timber				

Appendix #2: BC Government Action Plan

British Columbia's Mountain Pine Beetle Action Plan 2005-2010

The MPB Action Plan contains 7 **specific objectives**, *immediate actions* and *five-year actions* (***a double asterisk identifies issues of significance for the BC Forest Safety Council*).

1. Encourage long-term economic stability for communities affected by the epidemic

- *Assess the long-term timber supply that has historically supported communities and identify possible alternative economic opportunities for the when the supply declines*
- *Assess immediate and long-term impacts of the change in forestry activities on forest dependent communities and First Nations*
- *Accelerate the development of other resource-based sectors to diversify the economic base*
- *Encourage new, expanding and emerging forest and non-forest product businesses*
- Ensure established sectors such as agriculture and tourism are at their maximum potential
- Continue to work with communities, First Nations and the federal government to undertake research and identify opportunities to prepare for future impacts by building on existing and new economic diversification and adjustment options.
- Identify infrastructure requirements to accompany economic growth and diversify initiatives.

2. Maintain and protect public health, safety and infrastructure

- *** Carry out fuel management and implement wildfire mitigation where necessary for public safety*
- *** Assess the existing transportation network within the impacted regions and develop plans for necessary upgrades or changes.*
- *Work with communities to mitigate the damage to urban forests and subsequent loss of park, green-space and other community values.*
- *Work with the federal government and private land owners to address the epidemic on private property.*
- Work with appropriate agencies and service providers to monitor trends in public health and safety that may be impacted by the consequences of the epidemic.
- Identify and monitor critical water supplies that may be impacted by the infestation or forestry mitigation activities
- Identify and monitor areas of unstable terrain that may be impacted by the infestation or mitigation activities

3. Recover the greatest value from dead timber before it burns or decays while respecting other forest values

- *Work with the federal government to support research and assessments that will help determine how long dead timber will retain economic value and use the information to guide salvage priorities*
- *Determine the best rate of harvest to capture the economic value from timber to be salvaged over the term of the strategy while considering other forest values*
- *Invite applications for licenses to harvest increases in the Allowable Annual Cut*
- *** Price damaged timber in a manner that recognizes its value and maintains revenue to the Crown and industry viability during the term of the salvage program*
- *Encourage full utilization of the existing timber processing capacity*
- *Encourage emerging and alternate timber processing and value-added industries to utilize timber that is incremental to the needs of the existing industry*
- *Investigate Export Opportunities*
- *Develop new and innovative timber tenures to facilitate recovery of timber and achievement of mitigation strategies*
- *Use small scale opportunities where they are the most appropriate method to achieve mitigation strategies*
- *Work with the industry and other existing product marketing organizations to maintain and expand markets*
- Update and improve the timber inventory and information about non-timber resources to facilitate more accurate assessments and forest management decisions in the epidemic area.

4. Conserve the long-term values identified in land use plans

- *Work with land use plan monitoring committees and stakeholders to ensure beetle management and timber salvage activities are carried out in a manner that respects the values identified in land use plans*
- *Ensure parks and protected area management incorporates an assessment of the impacts of the epidemic on conservation values*
- *Incorporate conservation objectives into timber salvage operations leaving some areas unharvested as temporary conservation areas*
- Examine the opportunities and costs including possible funding sources and new research for techniques to restore non-timber values (e.g. wildlife habitat, hydrological function)
- Assess the impact of the epidemic on the full range of forest values to provide information for future management decisions

5. Prevent or reduce damage to forest in areas that are susceptible but not yet experiencing epidemic infestations

- *Continue to establish Emergency Management Units, as needed, according to science-based criteria and the appropriate forest management strategies applied*
- *Continue to conduct timely and appropriate detection and assessment surveys to monitor the level of infestation and success of mitigation actions*
- *** Continue streamlined approach to operational planning and approvals for access and harvesting where necessary to achieve beetle management strategies.*

6. Restore the forest resources affected by the epidemic

- *** Examine the opportunities and costs including possible funding sources for silviculture techniques to address mid-term timber supply gap*
- *** Restore forest ecosystem productivity*
- *Reforest on a priority basis to return the best sites to timber productivity*
- *** Undertake stand treatments on a priority basis to ensure timber will be available for harvest sooner than originally planned*
- *Improve forest resource inventory information*
- *Encourage adaptive management monitoring research and innovation*
- *Identify the policy issues or constraints to implementation of longer-term objectives and address them*

7. Maintain a project management structure that ensures coordinated and effective planning and implementation of mitigation measures.

On-going actions

- *Provide leadership and direction through the Minister of Forests and Premier's Office*
- *Solicit broad stakeholder input through the Minister's Community Advisory Group*
- *Implement a coordinated approach between all levels of government including federal, local and First Nations*
- *Assure inter-ministry coordination through the Deputy Minister's Committee on Environment and Resource Development and the Deputy Ministers Committee on Healthy Communities and Safety*
- *Coordinated the implementation of provincial government activities through an Assistant Deputy Minister responsible for a Mountain Pine Beetle Task Force*
- *Zone the infested and susceptible areas to ensure that forestry mitigation measures taken are suitable and feasible for the local circumstances*
- *** Apply timber administration and pricing in areas with similar circumstances*
- *** Work with forest companies and forest industry associations to manage and implement solutions*
- *Work with stakeholders to communicate about the epidemic and mitigation procedures*
- *** Investigate the feasibility of a long-term fund to support mitigation and recovery activities.*

Appendix #3: Comparison: Interior Base Rate versus Truck Accidents

Analysis of Reported Logging Truck Accidents Compared Against The Interior Base Rate for the Respective Quarter		
Date	Interior Base Rate	Reported Logging Truck Accidents
10/1999	\$34.90	
01/2000	\$31.12	295
04/2000	\$29.47	98
07/2000	\$27.70	147
10/2000	\$20.97	204
01/2001	\$16.23	272
04/2001	\$16.68	80
07/2001	\$18.36	142
10/2001	\$26.45	202
01/2002	\$22.85	313
04/2002	\$17.75	119
07/2002	\$25.10	155
10/2002	\$19.31	191
01/2003	\$14.83	313
04/2003	\$17.18	70
07/2003	\$17.06	116
10/2003	\$13.61	247
01/2004	\$20.31	274
04/2004	\$18.15	88
07/2001	\$25.45	142
10/2004	\$30.19	238