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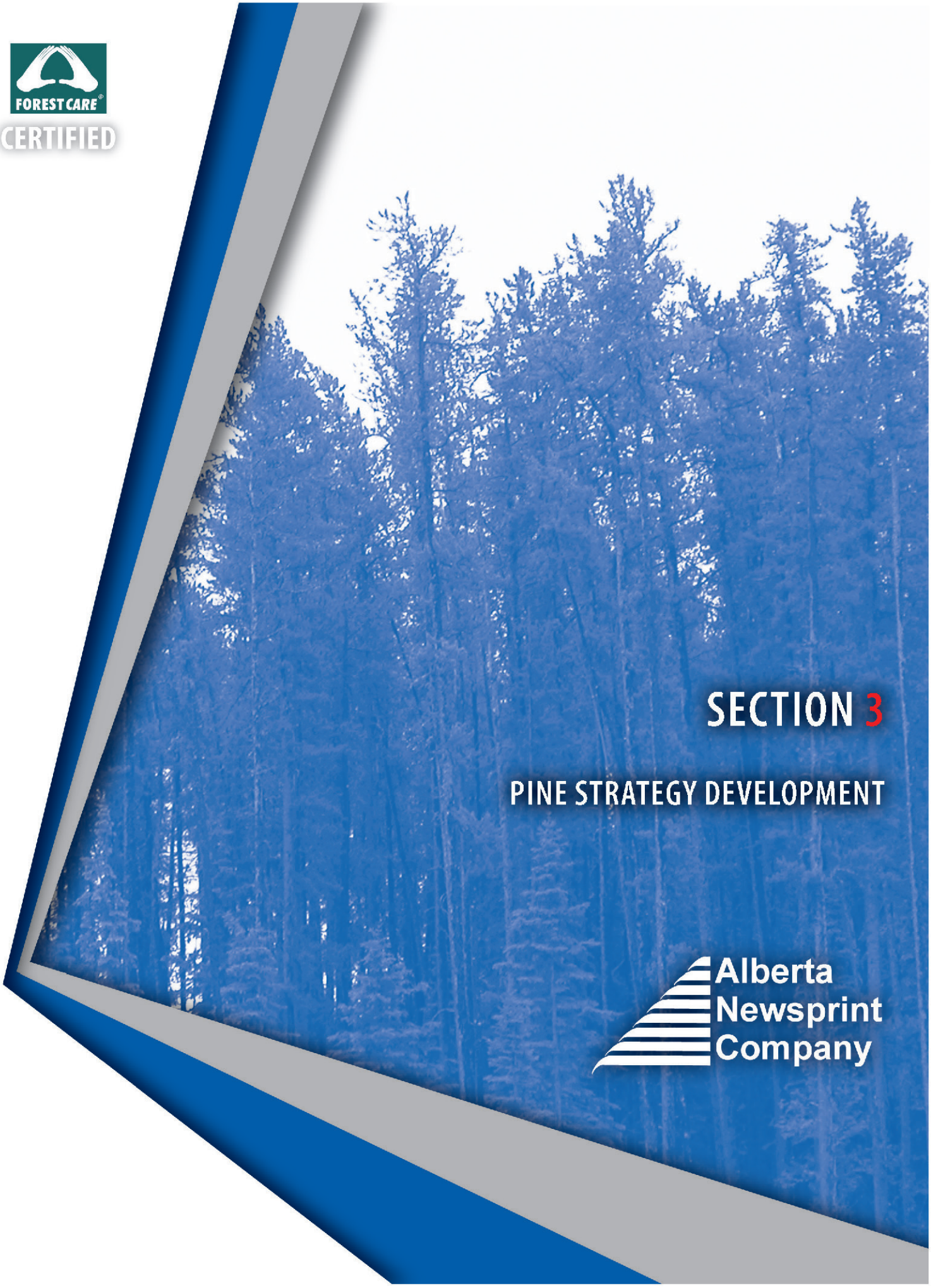


SECTION 3

PINE STRATEGY DEVELOPMENT

Alberta Newsprint Company

3 PINE STRATEGY DEVELOPMENT

3.1 Pine Strategy History

ANC Timber initiated a proactive MPB management approach in mid-2005. SRD has been developing a policy framework for MPB management over this same period. These two concurrent activities have created challenges in producing this MPB Management Plan. Following is a chronology of ANC's management activities initiated to date:

1. *Summer, 2005*: ANC initiates MPB management activities with the goal of developing an FMA-wide pine strategy;
2. *September, 2005*: SRD releases Mountain Pine Beetle Emergency Response Plan For Alberta draft document;
3. *Fall, 2005*: ANC defines requirements for MPB Pine Strategy;
4. *January, 2006 to June, 2006*: ANC develops MPB Pine Strategy and produces Emergency Response Plan document;
5. *June 22, 2006*: ANC submits MPB Emergency Response Plan to SRD for approval;
6. *September, 2006*: SRD releases Interpretive Bulletin. This document replaces the September, 2005 ERP document;
7. *October 2, 2006*: SRD responds to ANC's plan. It is acceptable in principle and SRD identifies additional requirements to satisfy the new Interpretive Bulletin;
8. *October 26, 2006*: ANC presents the DFMP Amendment Pine Strategy to the Alberta West Central Caribou Committee;
9. *November 2, 2006*: ANC presents the DFMP Amendment Pine Strategy to the Alberta Minister's Advisory Committee;
10. *December 15, 2006*: ANC provides a second presentation of the DFMP Amendment Pine Strategy to the Alberta Minister's Advisory Committee;
11. *October, 2006 to January 2007*: ANC undertakes work to meet the additional provincial requirements with the goal of re-submitting the updated document ASAP;
12. *January 31, 2007*: ANC submits an updated DFMP Amendment Pine Strategy to SRD for approval.

3.2 DFMP Summary

ANC Timber is currently operating under their approved DFMP. The analysis completed for the DFMP is the basis for the development of this Pine Strategy DFMP Amendment. The DFMP net landbase summary is presented in Table 3.1 and the growth and yield curves are presented in Figures 3.2 and 3.3.

Table 3-1: DFMP Net Landbase Summary

Net Landbase Determination	2002 Area (ha)	2006 Area (ha)
Gross Area	**378,726**	**378,726**
Recreation Areas:	4,899	4,899
Gross FMA Area	**373,827**	**373,827**
Non-Forested Areas:		
Natural	*11,668*	*11,668*
Anthropogenic	*7,250*	*7,250*
Sub-Total	18,918	18,918
Gross Forested Area	**354,909**	**354,909**
Hydrological Buffers:		
Lake Buffers – 100m	*541*	*541*
River Buffers – 60m	*3,503*	*3,503*
Stream Buffers – 60m	*1,652*	*1,652*
Stream Buffers – 30m	*5,925*	*5,925*
Lake Buffers – 20m	*34*	*34*
Sub-Total	11,656	11,656
Net Forested Area	**343,253**	**343,253**
Subjective Deletions:	3,356	3,356
Unmerchantable Areas:		
Unproductive Timber Productivity Rating	*41,689*	*41,689*
Fair Site Sb, Lt or Fb Leading Species, and Pure Softwood Species Group	*15,525*	*15,525*
Sub-Total	57,214	57,214
Net Productive Area	**282,683**	**282,683**

Figure 3-1: Ageclass Distribution: Net Landbase Area

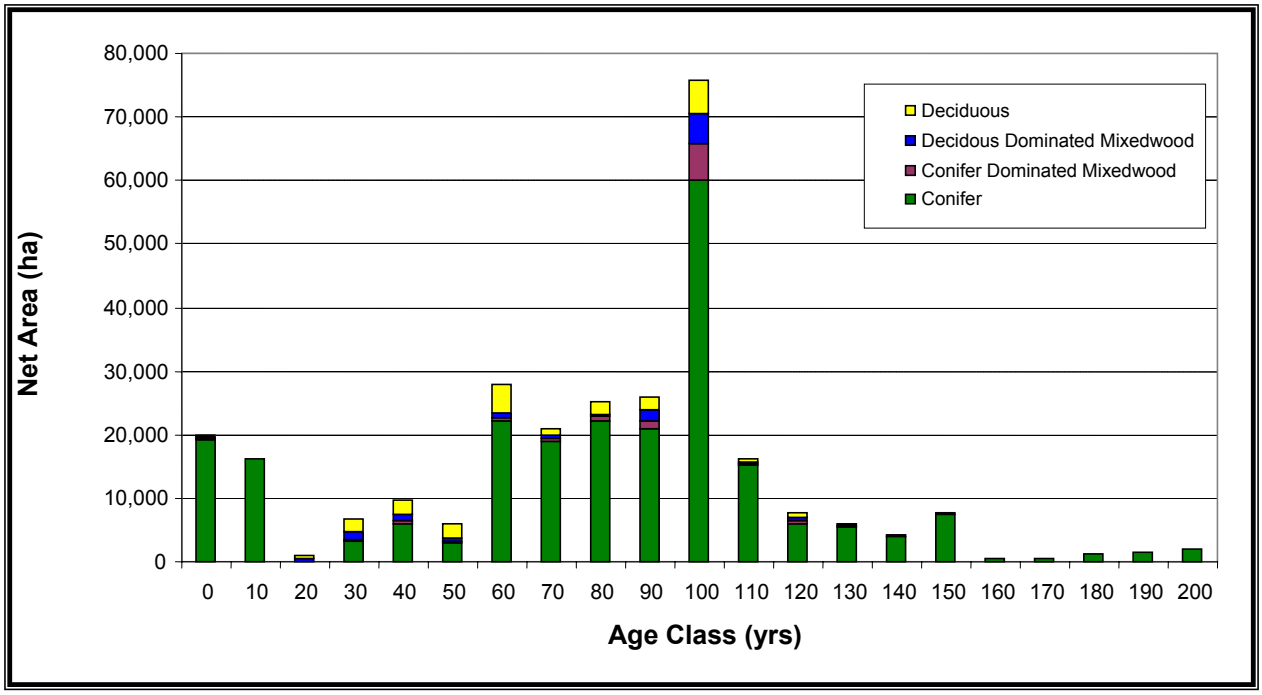


Figure 3-2: Yield Curves – AB Crown Closure

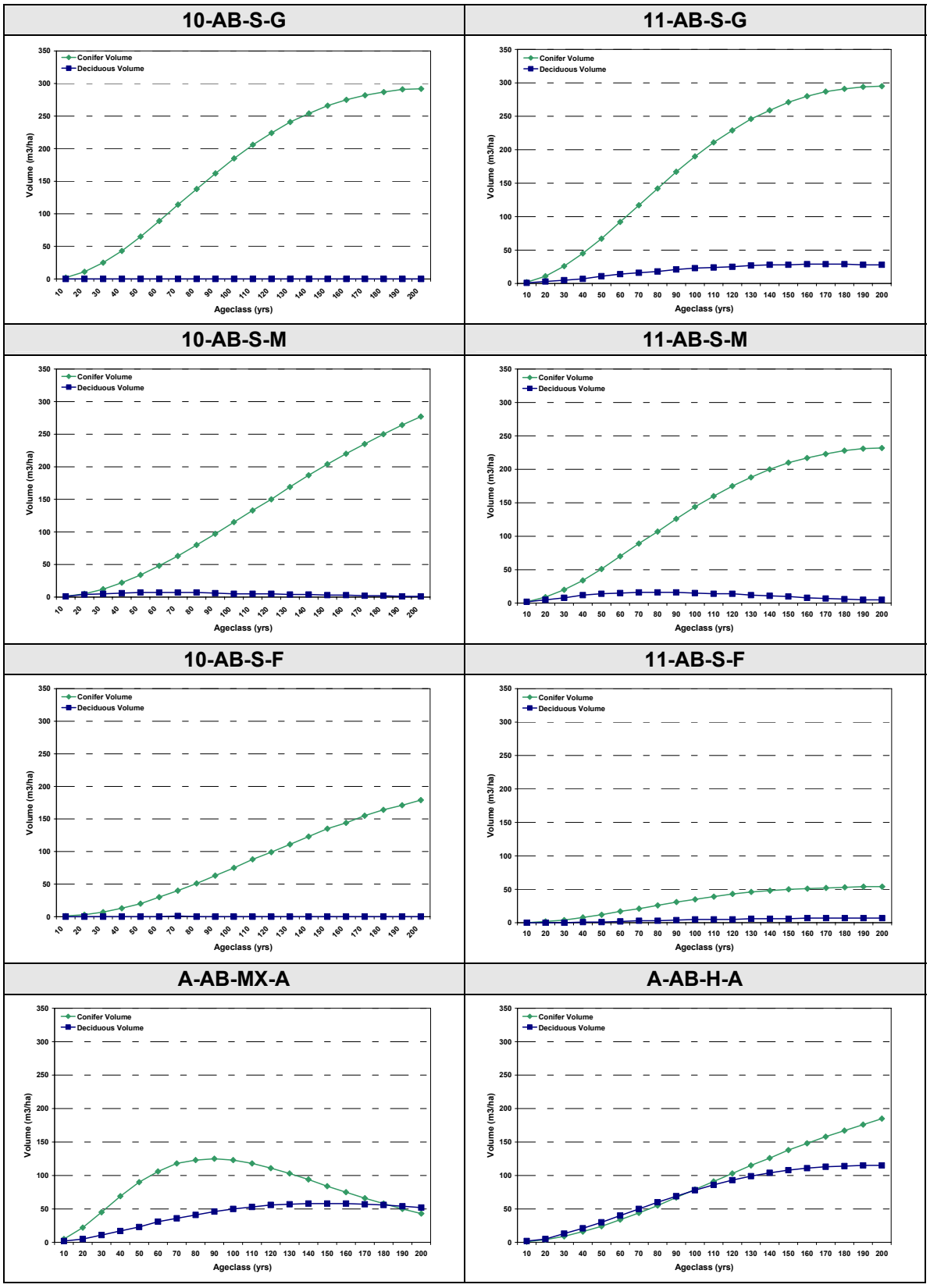
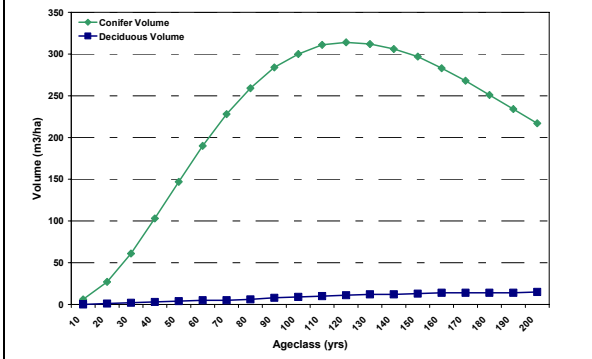


Figure 3-3: Yield Curves – CD Crown Closure

10-CD-S-G



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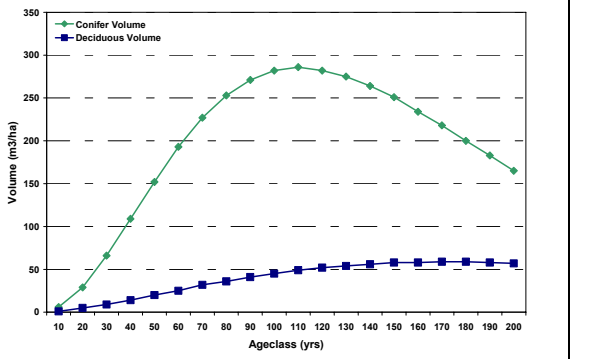

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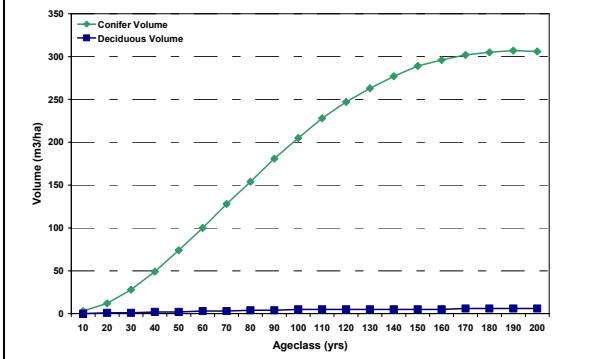

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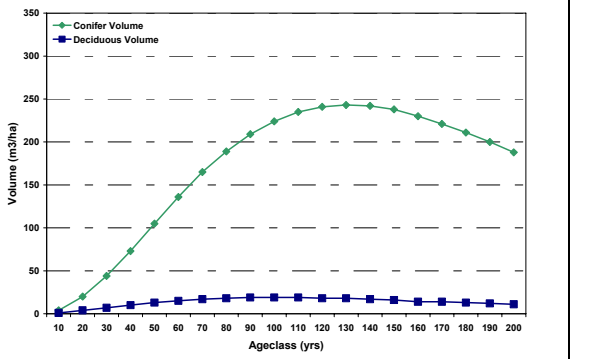
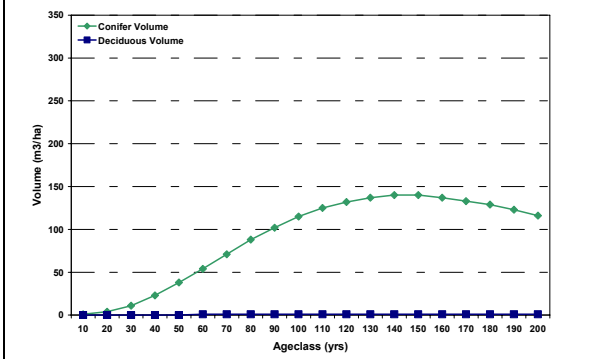
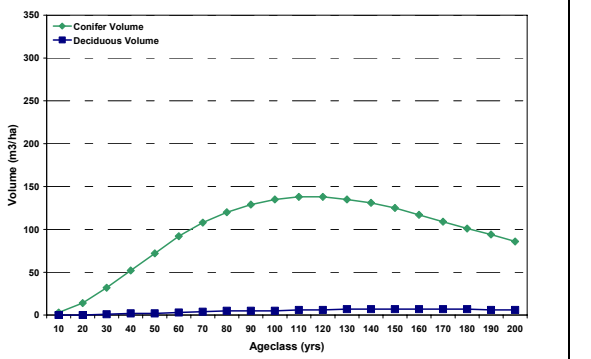


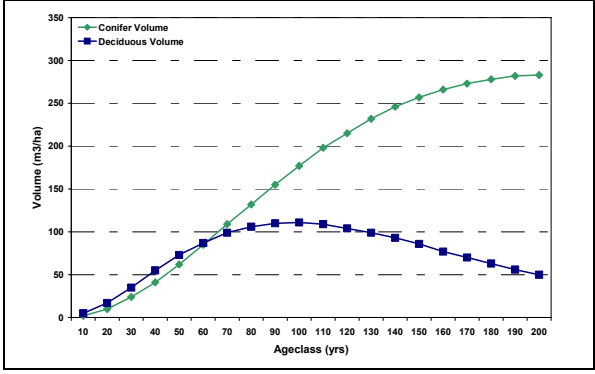
10-CD-S-F



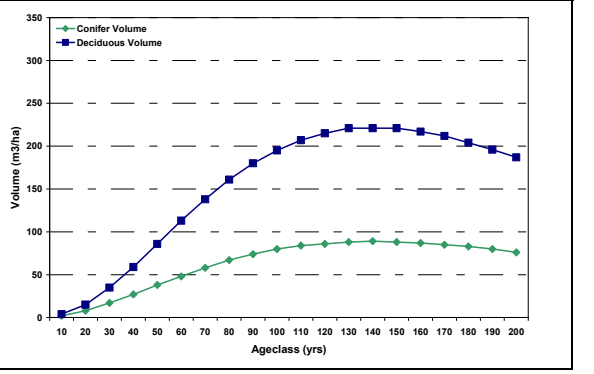
11-CD-S-F



A-CD-MX-A



A-CD-H-A



3.3 Alberta Policy Framework

The current pine strategy recommendation outlined in SRD's *Interpretive Bulletin Version 2.6 September 2006,* is as follows:

- *"The goal is to reduce the area of susceptible pine stands in the Rank 1 and Rank 2 categories in the Sustained Yield Unit (SYU) to 25% of that projected in the currently approved FMP at a point twenty years into the future."*

ANC has completed analysis consistent with the provincial interpretive bulletin guidelines to amend the DFMP.

3.4 Pine Strategy Scenario Development and Analysis

3.4.1 Updates to the DFMP

Prior to completing the scenario analysis additional data was incorporated into the current DFMP net landbase. These revisions incorporate new spatial information that enables reporting on additional forest values. Following is a list of the updates incorporated into the current DFMP net landbase:

1) ANC harvest area updates (quota holder harvest areas were incorporated where available);
2) Climate Factor provided via the SRD MPB Stand Susceptibility Index model;
3) Compartment Risk Assessment provided by the regional Forest Health Officer;
4) Caribou Habitat Value provided by SRD;
5) Watershed boundary data.

There was no change to the DFMP net landbase area as a result of these data additions.

3.4.2 Scenarios

Several possible outcomes (scenarios) have been evaluated in order to determine the potential impacts a MPB infestation may have on ANC's FMA. Four of these scenarios are summarized here that compare the potential impacts of a MPB epidemic and the management options that ANC is considering. One scenario was then selected and operationalized to produce the MPB PFMS. These scenarios were selected because they are perceived to reflect potential future outcomes. Table 3-2 summarizes these scenarios.

Table 3.2: Scenario Description

#	SCENARIO	DESCRIPTION
1	**STATUS QUO**	Continue with the 1999 DFMP and assume no MPB outbreak occurs.
2	**STATUS QUO WITH MPB INFESTATION**	Continue with the 1999 DFMP and assume a MPB outbreak occurs (MPB kills all pine dominated stands within 20 years and stands with a lesser component of pine are adjusted to account for pine mortality).
3	**MPB SUSCEPTIBILITY REDUCTION**	Increase harvesting for 20 years at a level that will not impact the long-term sustainable harvest by more than 10%. Harvest the most susceptible pine stands first. Assume no MPB outbreak occurs as a result of management activities controlling the MPB threat.
4	**SRD MPB INTERPRITVE BULLETIN MPB SUSCEPTIBILITY REDUCTION**	Reduce the area of susceptible pine stands in the Rank 1 and Rank 2 categories in the Sustained Yield Unit (SYU) to 25% of that projected in the currently approved FMP at a point twenty years into the future. Harvest the most susceptible pine stands first. Assume no MPB outbreak occurs as a result of management activities controlling the MPB threat.

3.4.2.1 Scenario 1: Status Quo

The purpose of this scenario is to provide a baseline, 'business as usual' scenario for comparative purposes. This scenario is the existing DFMP Preferred Forest Management Strategy and reflects the decision rules and objectives outlined in the DFMP document.

Table 3-3: Harvest Simulation Control Parameters – Scenario 1: Status Quo

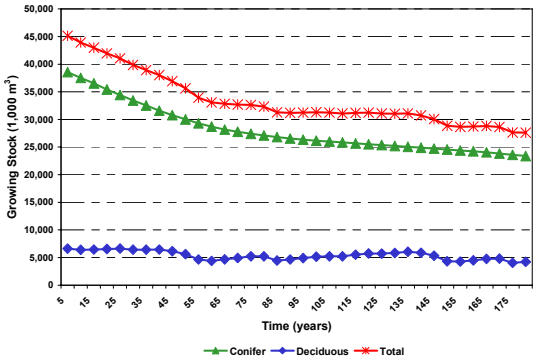
ANC FMA HARVEST SIMULATION CONTROL PARAMETERS – SCENARIO 1:	
Control Parameter	**Parameter Setting**
Effective Date	1999
Harvest unit:	E6 + E7 + W1 + W8
Planning horizon:	180 yrs
Targeted average harvest age at the end of the planning horizon:	90 yrs $\pm$ 5 yrs
Minimum harvest age:	70 yrs
Landbase:	Net productive landbase
Sorting rules:	1) Planned blocks first 2) Oldest first 3) Maximize conifer harvest
Harvest flow constraint:	Conifer Even Flow
Yield curves:	DFMP Yield Curves
Cull Deductions:	Applied (Variable 0 to 1.5% Conifer and 10% Deciduous)
Regeneration transition:	25% LFS PSP (W8 - Tree Improvement)
Regeneration lag:	Not Applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Applied to planned blocks only
Adjacency - Time Horizon:	20 Years (applied to planned blocks only)
Adjacency - Green-up:	20 Years (applied to planned blocks only)
Adjacency - Accumulate adjacent stands:	Not Applied
Age Normalization Factor:	Not Applied
Compartment sequencing:	Applied (Not Applied for E6)
Number of compartments open simultaneously:	E7 = 4, W1 = 12, W8 = 4
MPB Infestation:	Not Applied

Figure 3-4: Harvest Simulation Results – Scenario 1: Status Quo[1]

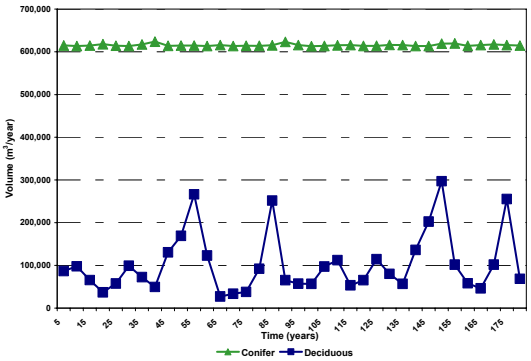
AAC SUMMARY TABLE	
Net Productive Area	282,683 ha
Conifer Harvest Level	613,000 m^3/yr (Years 0-180)
Deciduous Harvest Level	20 yr AVG: 71,750 m^3/yr

INITIAL AGE CLASS DISTRIBUTION

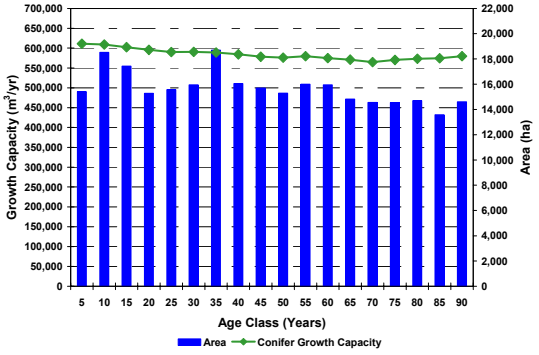
GROWING STOCK



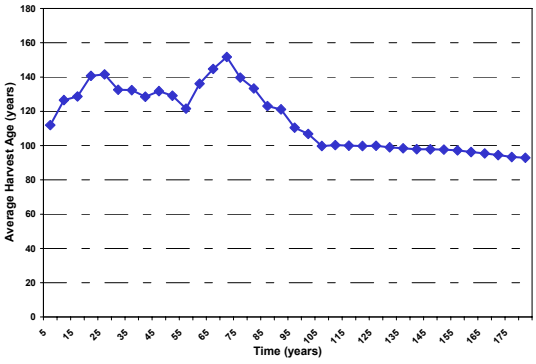
HARVEST FLOW SUMMARY



POST HARVEST FOREST CONDITIONS



AVERAGE HARVEST AGE BY 5 YEAR ITERATION



[1] *Run Summaries include: Run 183 (W8), Run 186 (E6), Run 187 (E7) and Run 190 (W1) from the DFMP.*

3.4.2.2 Scenario 2: Status Quo with MPB Infestation

This scenario will introduce a large scale beetle infestation at year 20 into scenario 1. This complex landscape event is represented by a number of simple and quantifiable rules in the interests of modeling. These rules have been provided by SRD as follows:

- Set the AAC at a level to 'reduce the area of Rank 1 and Rank 2 stands to 25% of that in the currently approved FMP at a point 20 years in the future' (Harvest Rate A);
- Assume massive pine mortality in 10 years;
- Assume harvest of salvage to continue at 'Harvest Rate A' for the next 10 years (years 11 to 20);
- Stands that are salvaged return at normal regeneration transition and normal regen lags;
- For stands that aren't salvaged, the following rules apply:
    a. For stands with greater than 60% pine content, assume entire stand mortality. Stand goes onto the lowest density yield curve (e.g. AB density) that strata with a 15-year regen lag. Stand age is reset to 0.
    b. For stands with less than or equal to 60% pine content, the approved yield curves from the last DFMP are reduced to remove the pine content, on a proportionate basis, and the stand continues to grow at its current age (stand age is not reset to 0). No assumption is made for stand release due to opening of the canopy by the pine mortality.

Table 3-4: Harvest Simulation Control Parameters – Scenario 2: Status Quo with MPB Infestation

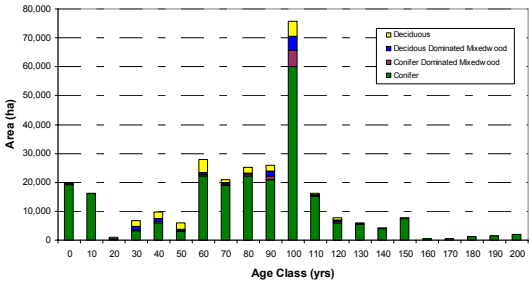
ANC FMA HARVEST SIMULATION CONTROL PARAMETERS – SCENARIO 2:	
Control Parameter	**Parameter Setting**
Effective Date	1999
Harvest unit:	E6 + E7 + W1 + W8 (years 1-20) ANC FMA area (years 21-180)
Planning horizon:	180 yrs
Targeted average harvest age at the end of the planning horizon:	90 yrs $\pm$ 5 yrs
Minimum harvest age:	70 yrs
Landbase:	Net productive landbase
Sorting rules:	1) Planned blocks first 2) Oldest first 3) Maximize conifer harvest
Harvest flow constraint:	Conifer Even Flow
Yield curves:	DFMP Yield Curves
Cull Deductions:	Applied (Variable 0 to 1.5% Conifer and 10% Deciduous)
Regeneration transition:	25% LFS PSP (W8 - Tree Improvement)
Regeneration lag:	Applied (15 year regeneration lag for MPB killed stands)
Introduce harvest plans:	Applied
Spatial stand adjacency:	Applied to planned blocks only
Adjacency - Time Horizon:	20 Years (applied to planned blocks only)
Adjacency - Green-up:	20 Years (applied to planned blocks only)
Adjacency - Accumulate adjacent stands:	Not Applied
Age Normalization Factor:	Not Applied
Compartment sequencing:	Applied (Not Applied for E6)
Number of compartments open simultaneously:	E7 = 4, W1 = 12, W8 = 4
MPB Infestation:	Applied

Figure 3-5: Harvest Simulation Results – Scenario 2: Status Quo with MPB Infestation

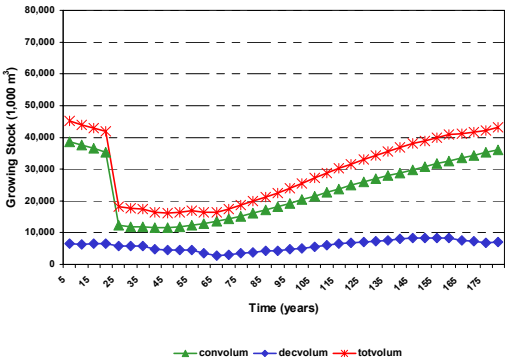
AAC SUMMARY TABLE

Net Productive Area	282,683 ha
Conifer Harvest Level	20 yr AVG: 613,000 m^3/yr Years 21-180 : 316,000 m^3/yr
Deciduous Harvest Level	20 yr AVG: 71,750 m^3/yr Years 21-180: 75,500 m^3/yr

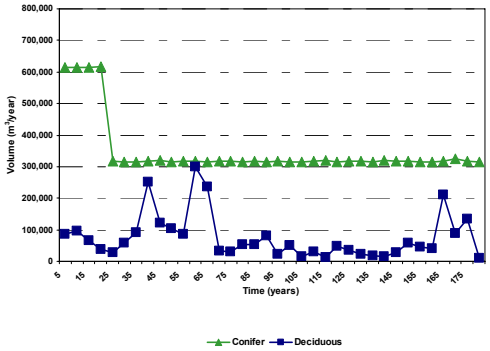
INITIAL AGE CLASS DISTRIBUTION



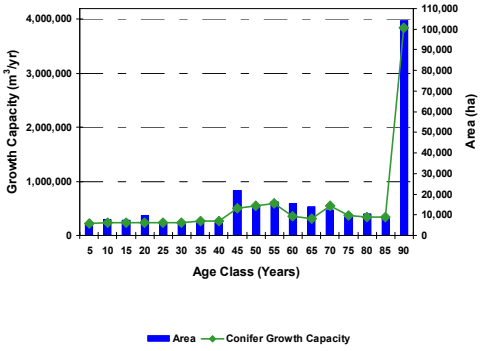
GROWING STOCK



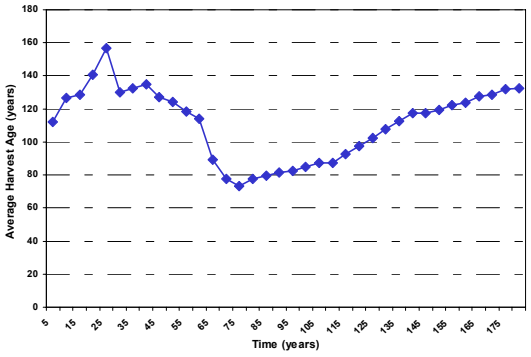
HARVEST FLOW SUMMARY



POST HARVEST FOREST CONDITIONS



AVERAGE HARVEST AGE BY 5 YEAR ITERATION



3.4.2.3 Scenario 3: MPB Susceptibility Reduction

This scenario focuses on decreasing the highly susceptible pine stands over the next 20 years, while not exceeding a 10% impact to the long term AAC. Stands are prioritized for harvest based on Pine Stand Ranking where the highest ranked stands are harvested first while not exceeding a reduction greater than 10% in the current long term AAC. A "no beetle infestation" assumption will be used in order to evaluate long-term impacts to the AAC as a result of accelerating the harvest of pine stands in the absence of MPB.

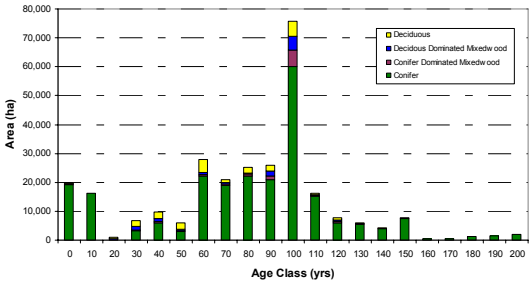
Table 3-5: Harvest Simulation Control Parameters - Scenario 3: MPB Susceptibility Reduction

ANC FMA HARVEST SIMULATION CONTROL PARAMETERS – SCENARIO 3:	
Control Parameter	**Parameter Setting**
Effective Date	1999
Harvest unit:	ANC FMA Area
Planning horizon:	180 yrs
Targeted average harvest age at the end of the planning horizon:	90 yrs $\pm$ 5 yrs
Minimum harvest age:	70 yrs
Landbase:	Net productive landbase
Sorting rules:	1) Highest Pine Stand Ranking first 2) Oldest first 3) Maximize conifer harvest
Harvest flow constraint:	Conifer Even Flow
Yield curves:	DFMP Yield Curves
Cull Deductions:	Applied (Variable 0 to 1.5% Conifer and 10% Deciduous)
Regeneration transition:	25% LFS PSP (W8 - Tree Improvement)
Regeneration lag:	Not Applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not Applied
Adjacency – Time Horizon	Not Applied
Adjacency - Green-up:	Not Applied
Adjacency - Accumulate adjacent stands:	Not Applied
Age Normalization Factor:	Not Applied
Compartment sequencing:	Applied
Number of compartments open simultaneously:	Not tracked
MPB Infestation:	Not Applied

Figure 3-6: Harvest Simulation Results – Scenario 3: MPB Susceptibility Reduction

AAC SUMMARY TABLE	
Net Productive Area	282,683 ha
Conifer Harvest Level	20 yr AVG: 1,170,000 m^3/yr Years 21-180: 551,700 m^3/yr
Deciduous Harvest Level	20 yr AVG: 99,500 m^3/yr Years 21-180: 108,000 m^3/yr

INITIAL AGE CLASS DISTRIBUTION



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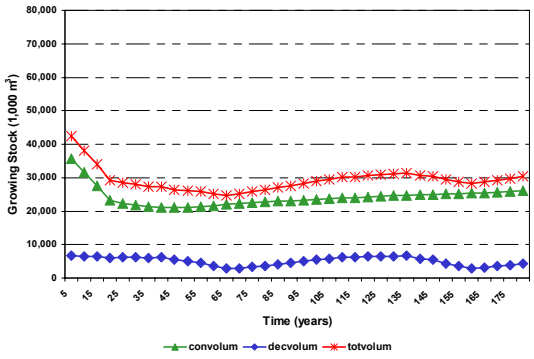
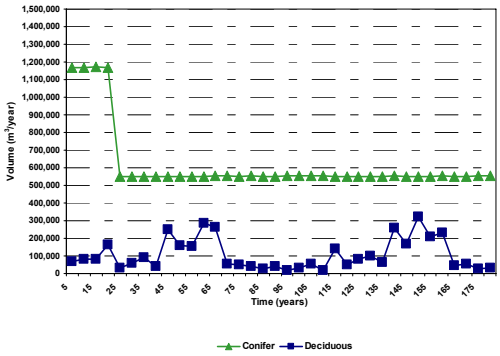
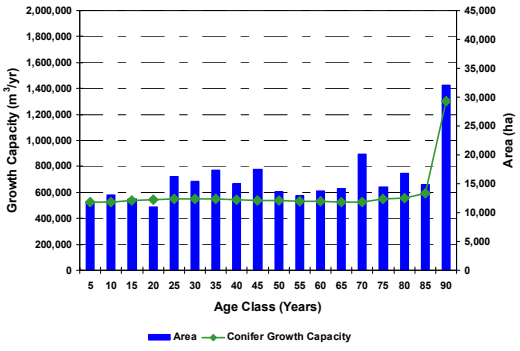


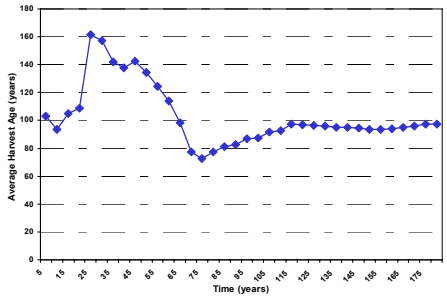
HARVEST FLOW SUMMARY



POST HARVEST FOREST CONDITIONS



AVERAGE HARVEST AGE BY 5 YEAR ITERATION



3.4.2.4 Scenario 4: SRD MPB Interpretive Bulletin MPB Susceptibility Reduction

As outlined in Table 3-2, this scenario will reduce the area of susceptible pine stands in the Rank 1 and Rank 2 categories in the Sustained Yield Unit (SYU) to 25% of that projected in the currently approved FMP at a point 20 years into the future. This objective begins at the 1999 effective date and effectively requires that 100% of the equivalent Rank 1 and Rank 2 area sequenced in the DFMP PFMS (approximately 44,584 ha) be harvested, plus 75% of the Rank 1 and Rank 2 area remaining at the end of the 20 year DFMP PFMS SHS (approximately 107,847 ha). This combined harvesting will occur over 20 years beginning at the 1999 effective date and amount to approximately 152,431 ha. The purpose of this scenario is to simulate harvesting the area that is indicated within the SRD Interpretive Bulletin.

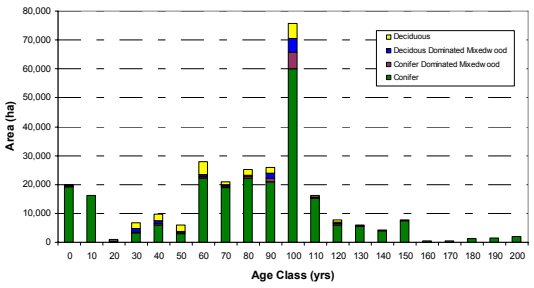
Table 3-6: Harvest Simulation Control Parameters – Scenario 4: SRD MPB Interpretive Bulletin MPB Susceptibility Reduction

ANC FMA HARVEST SIMULATION CONTROL PARAMETERS – SCENARIO 4:	
Control Parameter	**Parameter Setting**
Effective Date	1999
Harvest unit:	ANC FMA Area
Planning horizon:	180 yrs
Targeted average harvest age at the end of the planning horizon:	90 yrs $\pm$ 5 yrs
Minimum harvest age:	70 yrs
Landbase:	Net productive landbase
Sorting rules:	1) Highest Pine Stand Ranking first 2) Oldest first 3) Maximize conifer harvest
Harvest flow constraint:	Conifer Even Flow
Yield curves:	DFMP Yield Curves
Cull Deductions:	Applied (Variable 0 to 1.5% Conifer and 10% Deciduous)
Regeneration transition:	25% LFS PSP (W8 - Tree Improvement)
Regeneration lag:	Not Applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not Applied
Adjacency – Time Horizon	Not Applied
Adjacency - Green-up:	Not Applied
Adjacency - Accumulate adjacent stands:	Not Applied
Age Normalization Factor:	Not Applied
Compartment sequencing:	Applied
Number of compartments open simultaneously:	Not tracked
MPB Infestation:	Not Applied

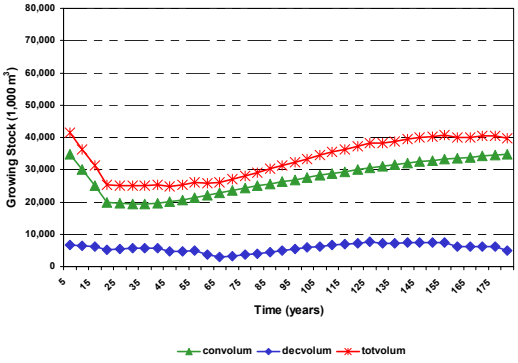
Figure 3-7: Harvest Simulation Results – SRD MPB Interpretive Bulletin MPB Susceptibility Reduction

AAC SUMMARY TABLE	
Net Productive Area	282,683 ha
Conifer Harvest Level	20 yr AVG: 1,324,000 m^3/yr Years 21-180: 477,000 m^3/yr
Deciduous Harvest Level	20 yr AVG: 135,500 m^3/yr Years 21-180: 94,000 m^3/yr

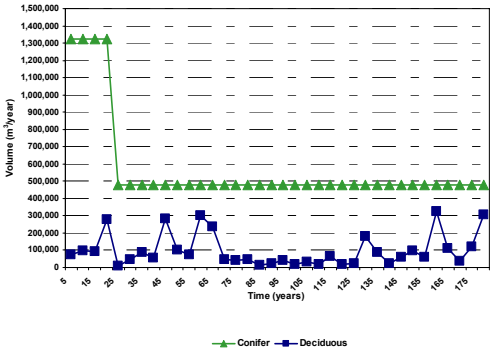
INITIAL AGE CLASS DISTRIBUTION



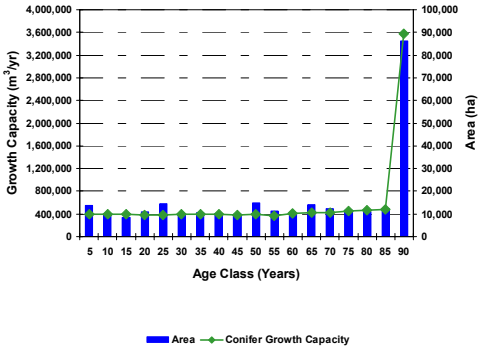
GROWING STOCK



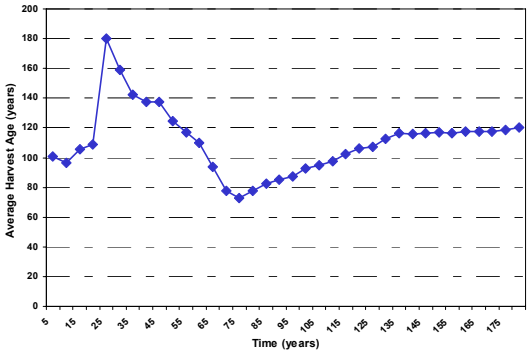
HARVEST FLOW SUMMARY



POST HARVEST FOREST CONDITIONS



AVERAGE HARVEST AGE BY 5 YEAR ITERATION



3.5 Scenario Comparative Analysis

Following a review of the results from Scenarios 3 and 4, ANC has decided to pursue a management strategy consistent with Scenario 3. This decision to proceed with Scenario 3 is deemed more conservative than the current provincial policy, it results in a slightly lower cut level and a more favorable long term fibre supply. If it is realized that this approach is not aggressive enough due to rapid expansion of beetle within the FMA over the next few years a more aggressive approach may need to be considered.

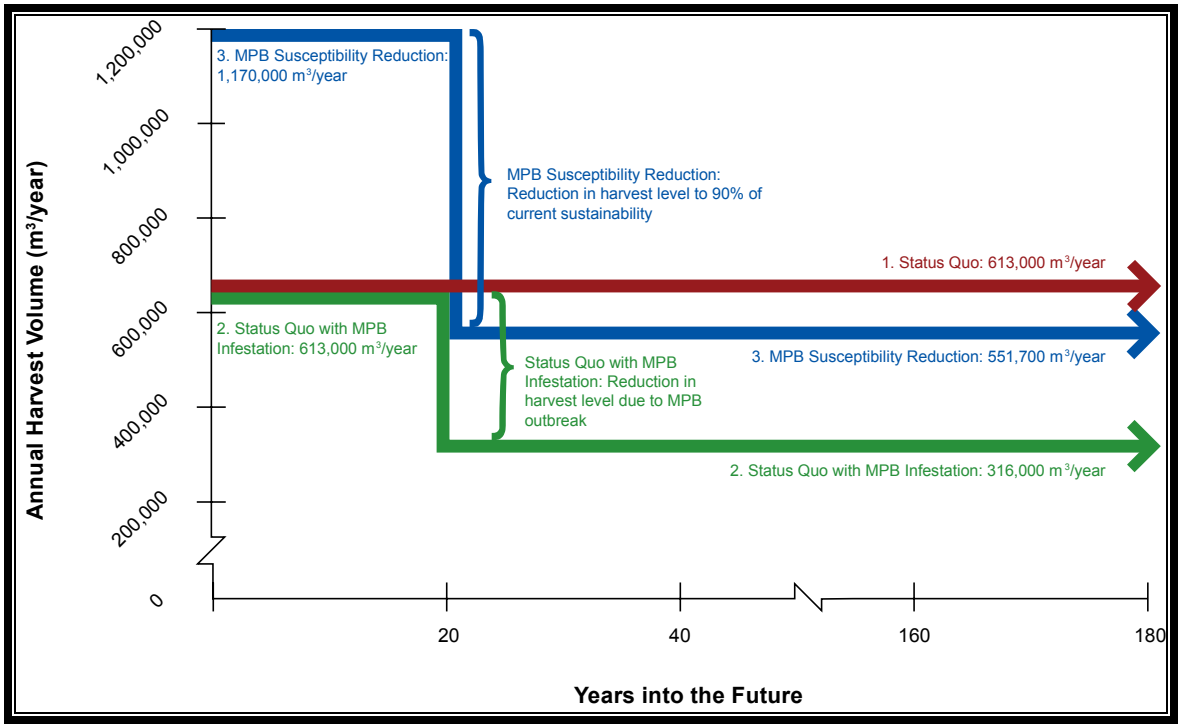
This section presents the results of Scenarios 1 to 3 in terms of their impacts on:

- Long Term Fibre Sustainability;
- MPB Pine Stand Ranking Reduction;
- Woodland Caribou Habitat;
- Watersheds;
- Access.

3.5.1.1 Long Term Fibre Sustainability

MPB infestation and mitigating management have the potential to impact the long term fibre sustainability and thus, long term fibre supply. Figure 3-8 illustrates the impact of each scenario as it relates to the long term sustainability of the fibre resource.

Figure 3-8: Run Results Summary[1]

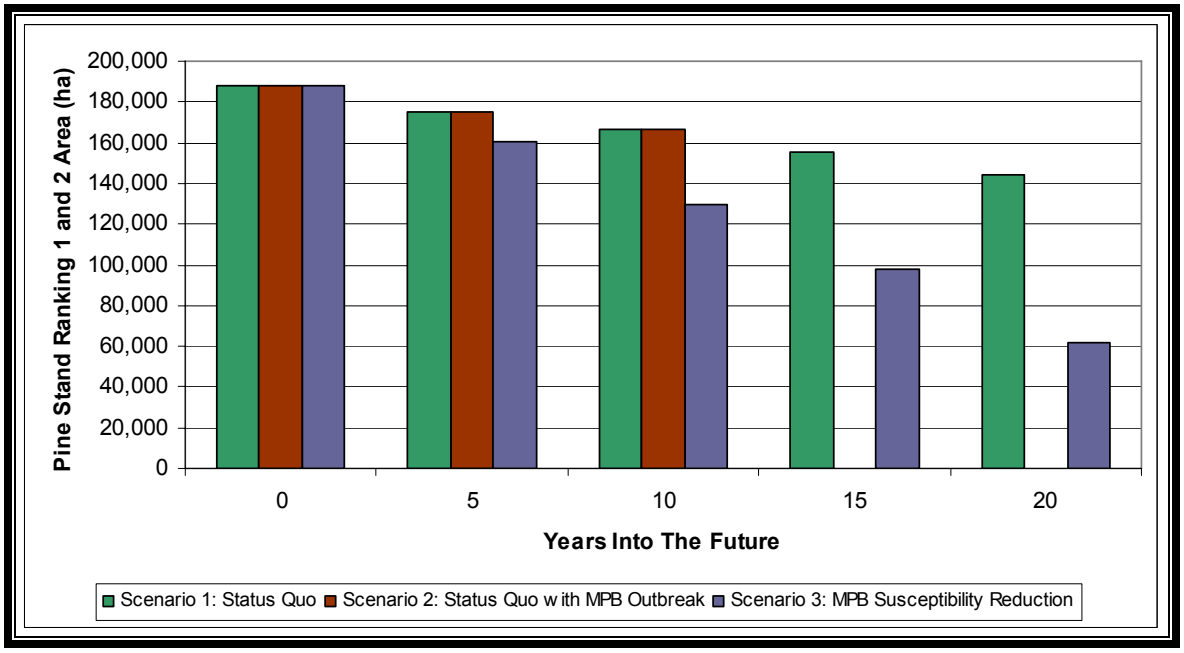


[1] *1999 Effective Date*

3.5.1.2 Reduction in MPB Pine Stand Ranking

The reduction in MPB susceptibility achieved with Scenario 1 is compared against the reduction achieved with Scenarios 2 and 3 in Figure 3.9 and is illustrated in Map 3.2 and Map 4.2. The amount of Rank 1 and Rank 2 area on the gross landbase at time 0 (1999 effective date) is 188,380 ha. The Scenario 1 sequence results in a 44,584 ha reduction in Rank 1 and Rank 2 stands (24%). The Scenario 3 20 year harvest sequence results in approximately a 126,462 or 67% reduction of Rank 1 and Rank 2 stands over the 20 year period. Because Scenario 2 experiences a MPB outbreak at year 10, there is no remaining Rank 1 and Rank 2 area following this event as all pine volume from the landbase has been removed.

Figure 3.9: Scenario Comparison of Reduction in Pine Stand Ranking[1]

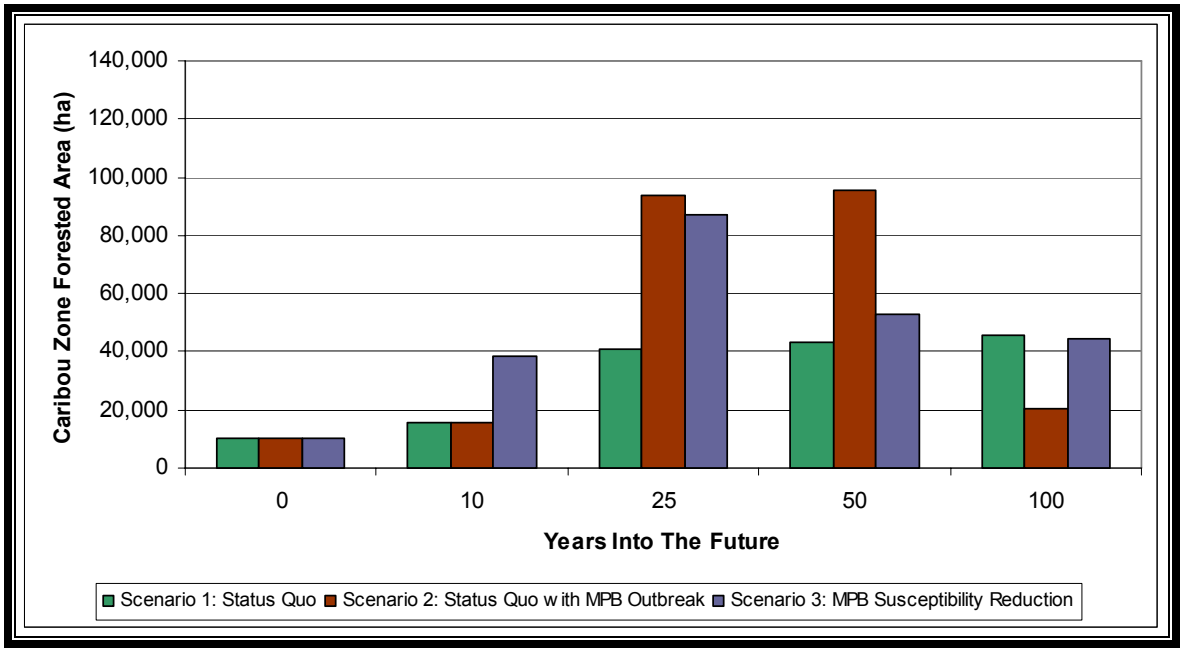


[1] *1999 Effective Date*

3.5.1.3 Woodland Caribou Habitat

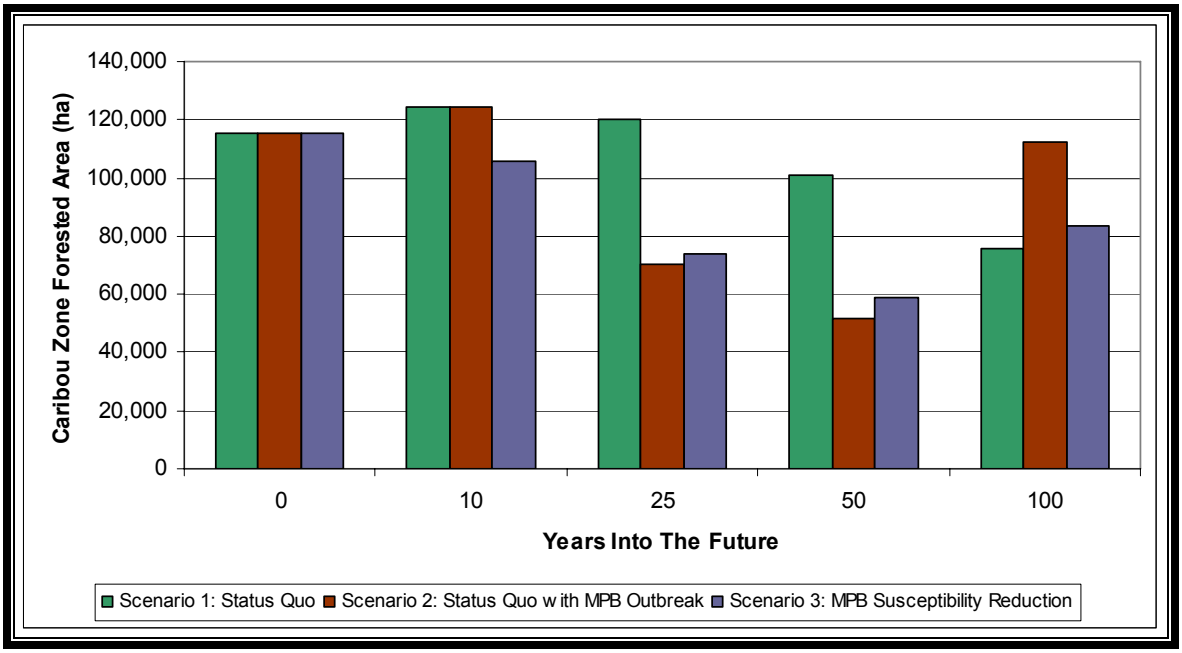
The ANC FMA area provides habitat of varying quality to woodland caribou. The Little Smoky caribou herd in particular utilizes this landbase as part of its range. This landbase is favorable to a mountain pine beetle outbreak that could significantly impact woodland caribou habitat availability. In order to approximate the potential implications that changes to the forest will have on woodland caribou, their preferred habitat was summarized over time. ASRD wildlife biologists indicated that the amount of forest area younger than 40 years and equal to or older than 80 years is critical to the health of caribou populations. Early seral stage forests (< 40 years) are considered lower caribou habitat quality and later seral stage forests (> 80 years) higher value. Using these criteria an analysis of Caribou Habitat over time was completed for Scenarios 1 to 3 and then compared. The results are presented in Figures 3-10 and 3-11.

Figure 3-10: Scenario comparison of forested area less than 40 years within the Caribou Zone[1]



[1] *1999 Effective date*

Figure 3-11: Scenario comparison of forested area greater than or equal to 80 years within the Caribou Zone1



3.5.1.4 Watersheds

A MPB outbreak has the potential to significantly impact watersheds across the FMA. Thus, a watershed analysis was performed to assess the hydrologic response of a potential MPB outbreak compared to the response of a pine management strategy.

Watersheds for the ANC FMA were derived using a 25 meter digital elevation model (DEM) to approximate catchment areas using polygons flowing into areas based on their elevation and orientation to one another. The number of polygons used to determine the catchment areas was then manipulated to achieve a desired target watershed size of approximately 10,000 ha. The derived watersheds were then used to complete an analysis of the impact of each scenario on long-term water yields, using ECA-Alberta model which is a Cumulative Watershed Disturbance and Hydrologic Recovery Simulator, developed by Dr. Uldis Silins (University of Alberta). The ECA-Alberta hydrologic model projects average streamflow changes over time by considering the amount and type of area disturbed within a watershed, average precipitation and streamflow of the area in question. Precipitation and streamflow assume average climatic conditions, and growth rates of disturbed areas assume average provincial rates of stand growth. Therefore, it is important to note that deviation of climate, stand growth and regeneration from long-term averages will affect results. Map 3-3 displays watershed boundaries and Figure 3-12 summarizes and compares the potential impacts of the DFMP management strategy and the Pine Strategy on the streamflow of the watersheds.

NOTE:

- Streamflow gauging station(s), with at least 5 years of data, representing a watershed with like topography and vegetation to those of a given operating area were used to derive the long term streamflow averages;
- Precipitation station(s) within close proximity to a given operating area were used to derive the long term precipitation averages;
- Most streamflow gauging stations are shut down during certain times of the year and therefore, the gaps in data must be estimated to determine a year round average;

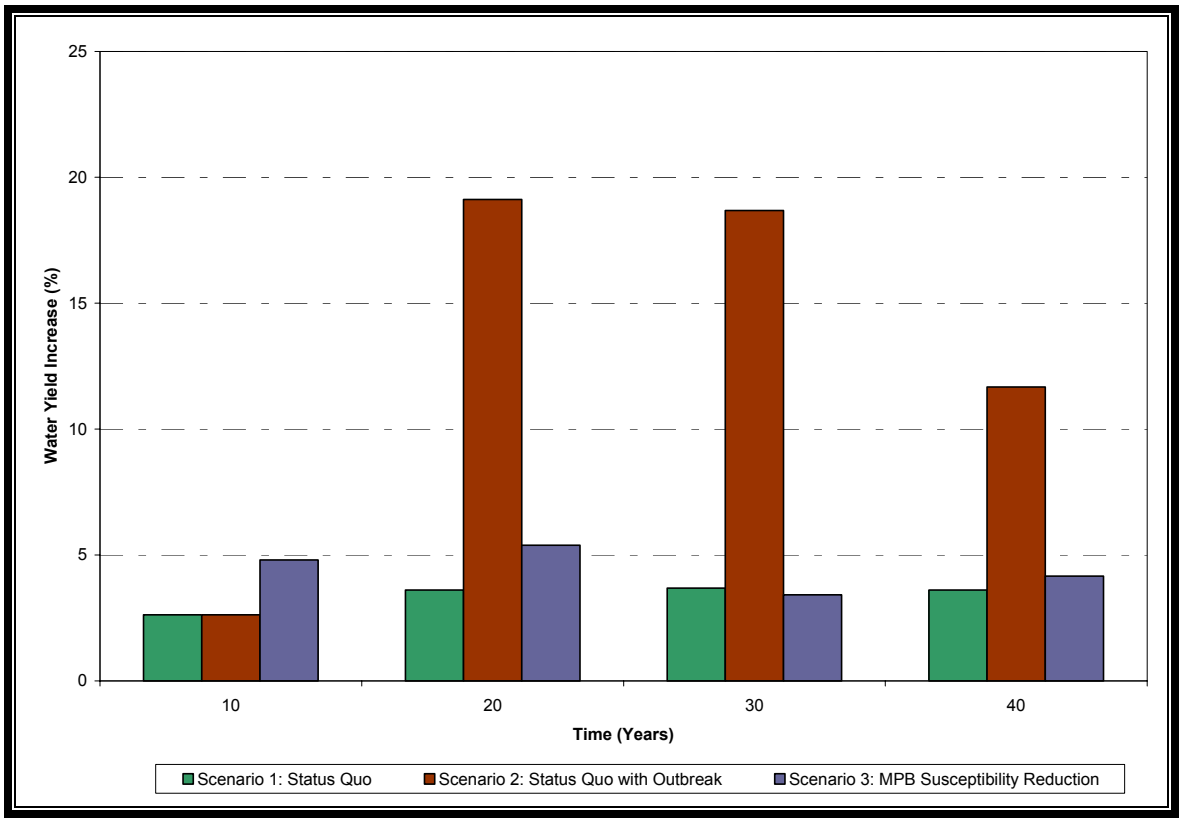
[1] *1999 Effective Date*

- Model accuracy depends primarily on accurate hydrologic recovery information of forest stands after disturbance, as well as representative regional streamflow and precipitation data;
- Hydrologic recovery of mixedwood stands is not simulated by this model;
- Model assumes that maximum volume growth rate represents the age at which full hydrologic recovery is obtained;
- Model calculations reflect provincial averages for unmanaged (primarily fire origin) stands;
- Deviation of regional forest growth from provincial averages may produce unreliable results for some regions;
- This analysis only represents the incremental cumulative effect of harvesting;
- Watersheds having only small fractions within the FMA may be inaccurately represented and therefore not included in this analysis;
- The objective of this model is not to produce a detailed, highly accurate simulation of streamflow, but rather a projection of streamflow changes over time assuming average climatic conditions in the region;
- ECA-Alberta describes how disturbance will affect streamflow based on long-term climatic conditions and may not represent actual changes in any given year.

WATERSHED ANALYSIS DISCLAIMER

The intent of this analysis is to provide an approximation of the potential implications to watersheds due to MPB and the pine management strategy. Assumptions on stand recovery after MPB infestation, extent of infestations, timing of the infestation etc. are required in order to complete the analysis. These assumptions have been made in consultation with SRD and are based on limited, existing information. It should be noted that this is an evolving process being constantly updated with new research findings on a regular basis. ANC will incorporate such knowledge in future analysis as they move towards their next DFMP.

Figure 3-12: Scenario Comparison of Long Term Average Yield Increases



NOTE: All pine mortality in the outbreak scenario (scenario 2) was assumed to occur at year 20. An area killed by MPB was assumed to have a hydrologic response similar to a cutblock (with a 15 year regen lag applied).

3.5.1.5 Access

The amount of access necessary to implement this MPB plan is an important consideration, particularly for Grizzly Bear habitat. Table 3.7 was drawn from the Caribou Land Management Associations Integrated Industry Access Plan (IIAP). The table depicts the current amount of roads within the West Central Caribou Zone. The Foothills Model Forest Grizzly Bear research and the 1999 DFMP suggest that 0.3km/km^2 of permanent all-weather road is a critical threshold for Grizzly Bear habitat. As can be seen from the table, the total road density from all roads presently in the Caribou Zone is 0.345 km/km^2 (which is slightly above the threshold). A road density of 0.153 km/km^2 currently exists for all weather roads, well below the threshold.

In terms of future roads the IIAP suggests a net increase of 16% will be necessary. This results in a total all weather road density of 0.177 km/km^2 . This total is well below the permanent all weather road threshold for grizzly bear habitat. An accelerated level of timber harvesting in response to a Mountain Pine Beetle emergency will not result in the need for more roads. It may mean certain roads will be needed sooner than they would have been needed in the absence of MPB but the amount of road required remains the same.

CMLA IIAP Map 5 Access Corridors by Planning Horizon provides an overview of the existing and planned main corridor access.

Table 3-7: Current Access within Woodland Caribou Zone

Disturbance	Length (km) or Number of Sites	Density Total Area= 4954 km2	Source	Date of Data
Roads/Class				
Class 1 Gravel - 2 lane	229	0.046	CLMA Technical	Sept. 22, 2006
Class 2 Gravel – 1 lane	531	0.107	CLMA Technical	Sept. 22, 2006
Class 3 Unimproved	376	0.076	CLMA Technical	Sept. 22, 2006
Class 4 Truck Trail	49	0.010	CLMA Technical	Sept. 22, 2006
Class 5 Winter Road	301	0.061	CLMA Technical	Sept. 22, 2006
Class 6 Unclassified/Unknown	37	0.007	CLMA Technical	Sept. 22, 2006
Class 7 Deactivated	104	0.021	CLMA Technical	Sept. 22, 2006
Class 8 Reclaimed	36	0.007	CLMA Technical	Sept. 22, 2006
Class 9 Overgrown ROW	17	0.00	CLMA Technical	Sept. 22, 2006
Roads/Class Total	***1680***	***0.345***	**CLMA Technical**	
Railways	58	0.012	AB Gov	Unknown
Highways (Paved)	46	0.009	AB Gov	Unknown
Powerlines	31	0.006	AB Gov	Unknown

Map 3-4: CMLA IIAP Map 5 Access Corridors by Planning Horizon Provides an Overview of the Existing and Planned Main Corridor Access