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# SECTION 1 EXECUTIVE SUMMARY

#### 1 EXECUTIVE SUMMARY

Alberta Newsprint Company is a 100% Canadian owned forest products company that employs approximately 211 full time permanent staff and produces around 269,000 metric Tonnes of saleable newsprint annually.

Using state of the art environmental technology ANC has world class results relative to effluent treatment. ANC is currently certified under the AFPA Forest Care Program for both its Woodlands and Mill operations. The Woodlands operations are also ISO 14001 certified.

#### **Company Mission Statement:**

"We will consistently provide our customers with the best newsprint and service by working together as an efficient, safe and publicly responsible team."

Under a Forest Management Agreement with the Province of Alberta, ANC Timber Ltd. is authorized to grow and harvest timber off of the FMA area. Using an adaptive management approach the company will focus on a strategy that is intended to reduce the consequences of a major Mountain Pine Beetle infestation. Central to the Company forest management approach is a commitment to involving the public in decisions relative to the management of the public resource.

The Detailed Forest Management Plan describes, through a Landscape Assessment, the current status of a suite of measurable conditions within the FMA area. It describes the current status of previous Forest Management commitments made by the Company and lists, through a series of Values, Objectives, Targets, and Indicators what forest values are considered important to the public.

A series of potential scenarios for harvest sequencing were considered. Several of those scenarios are summarized in the DFMP and the preferred scenario is described in more detail.

Reforestation approaches that the Company uses on its harvested areas in described.

The Company commitments to monitoring are also described.







A COMPREHENSIVE DESCRIPTION OF THE DFA

#### 2 A COMPREHENSIVE DESCRIPTION OF THE DFA

#### 2.1 CORPORATE OVERVIEW

Alberta Newsprint Company is a 100% Canadian owned forest products company. Employing approximately 211 full time permanent staff Alberta Newsprint produces, on average, 747 metric Tonnes of saleable newsprint daily. Annual production is approximately 269,000 Tonnes.

First production from Alberta Newsprint's paper machine was in 1990 as Alberta first (and still only) newsprint manufacturing facility.

Using state of the art environmental technology in its paper making processes ANC is currently tied for first in the Forest Products Association of Canada Effluent Quality Assessment.

ANC is currently certified under the Alberta Forest Products Association Forest Care Program for both its Woodlands and Mill operations. The Woodlands operations are also ISO 14001 certified.

#### 2.1.1 ALBERTA NEWSPRINT MISSION STATEMENT

"We will consistently provide our customers with the best newsprint and service by working together as an efficient, safe and publicly responsible team."

#### **OBJECTIVES:**

- 1. Cost Effectiveness: Be the lowest cost producer in the industry in North America.
- Customer Focus: Be every customer's first choice:

**Service:** Continuous measurable improvement of our ranking with each customer.

**Quality:** Continuous measurable improvement in the quality of our product each quarter.

- 3. **Team Work:** We are an involved group of people who treat each other with trust and respect and have the right and opportunity to grow and improve.
- 4. **Safety:** ANC is a safe and accident free environment.
- **5. Corporate Citizenship:** ANC will be trusted by the public to act responsibly with our resources, our environment and within our community.

THE SILVACOM

GROUP — TM

#### Alberta Newsprint Company

### **DETAILED FOREST MANAGEMENT PLAN**

#### 2.1.2 FIBRE SUPPLY

ANC's Forest tenure allocations, in conjunction with independent Alberta sawmills, provide a reliable supply of quality fibre.

The paper machine requires approximately 250,000 Bone Dry Tonnes of wood fibre annually. The vast majority of that wood fibre is obtained indirectly from forest tenure allocations through saw log / woodchip trade agreements with various Alberta sawmills. Saw logs harvested from Company tenure allocations are provided to Alberta Sawmills and, in return, woodchips, derived as a secondary product from the sawmill's lumber making process, are provided to ANC. This supply strategy ensures optimum utilization of Alberta's timber resources.

#### 2.2 FOREST MANAGEMENT APPROACH

ANC Timber Ltd. was granted a Forest Management Agreement (FMA# 8900026) in June of 1999. This detailed forest management plan (DFMP) outlines ANC Timber Ltd.'s management plan for the next tenyear period. The DFMP will describe the commitments by ANC Timber with respect to how the FMA area is managed over the period of this plan. It provides a framework within which lower level plans and policies are developed. Much greater detail will be provided in documents developed after the approval of the DFMP: Operating Ground Rules, General Development Plans, Annual Operating Plans, Alberta Government policy, and Company policies and procedures.

ANC is committed to an adaptive management approach to providing a sustainable level of goods and services from the forest. Using this approach management activities are modified using experience gained from previous activities. Performance monitoring and analysis provide feedback for future management decisions, and the process is repeated during each planning phase, resulting in better strategy development.

The detailed forest management plan is a requirement of FMA #8900026. The Forest Management Agreement defines the roles and responsibilities of ANC Timber Ltd. and the Alberta Government with respect to the management of the forest management area. It is the intent of this plan to follow the direction of that agreement in terms of management goals, objectives, and strategies.

The FMA Agreement gives ANC Timber Ltd. the right to establish, grow, and harvest timber within the forest management area. It defines ANC's rights with regards to the land and our management obligations including reforestation and forest protection. It outlines our harvest reporting procedures, dues payment requirements and mill development requirements. The intent is to renew the agreement in perpetuity.



#### Alberta Newsprint Company

### **DETAILED FOREST MANAGEMENT PLAN**

This DFMP establishes the sustainable level of harvest for coniferous and deciduous tree species for both ANC Timber and the quota holders who operate within the FMA area.

This Detailed Forest Management Plan replaces the October, 2002 DFMP and subsequent Pine Strategy DFMP Amendment (January, 2007). It should be considered a continuation of those plans in that it maintains many of the strategic intents of those plans while taking advantage of new knowledge and changes that have occurred since those plans were written.

The 2007 MPB Amendment strove to create a framework that was consistent with the Alberta government's objectives with respect Mountain Pine Beetle Management namely:

- 1. Effectively detect, accurately survey and aggressively control infested trees,
- 2. Reduce the number of highly susceptible trees,
- 3. Minimize the impact of a major outbreak,
- 4. Establish SRD policies and procedures to facilitate efficient and timely MPB management,
- 5. Conserve all the long term forest values and maintain and protect public health, safety and infrastructure,
- Maintain a project management structure that ensures effective planning and implementation of mitigation measures among all land managers and adjacent jurisdictions, and
- 7. Communicate to all clients and stakeholders.

Those same objectives are the key drivers in the writing of this DFMP. Mountain Pine Beetle threat remains the single most significant factor influencing how the forest will change over the life of this plan. By executing this plan it is felt that the devastation done by the MPB will be reduced and the forest will recover to a healthy, vigorously growing state sooner.

One significant difference exists between this DFMP and its predecessors. Alberta has committed to take on much more responsibility with respect non-timber forest analysis as required by the Alberta Forest Management Planning Standard than they did in the previous plans. Alberta Sustainable Resource Development (ASRD) has committed to complete the following analyses:

- 1. Coarse filter biodiversity assessments,
- 2. Fine filter wildlife habitat modeling,
- 3. Wildfire threat analyses, and
- 4. Watershed analyses.

To that end ANC Timber Ltd. received whatever analyses were completed and incorporated them into the plan as much as possible.





Three statements of intent describe how ANC Timber Ltd. approaches the management of the FMA area.

**COMPANY MISSION STATEMENT:** "We will consistently provide our customers with the best newsprint and service by working together as an efficient, safe and publicly responsible team."

**COMPANY CORPORATE CITIZENSHIP OBJECTIVE:** "ANC will be trusted by the public to act responsibly with our resources, our environment and within our community."

**COMPANY FOREST MANAGEMENT PHILOSOPHY:** "ANC Timber Ltd. will adaptively manage the Forest Management Agreement Area based on best available knowledge while being responsive to public desires."

One of the things that ties these three statements together is the word "public". In particular, the term "publicly responsible" provides the basis of ANC Timber Ltd.'s approach to forest management. To be publicly responsible, ANC must conduct its operations in a manner that is sustainable in every area of influence. This includes not only ANC's responsibility to its shareholders, but also to the environment, to the local community, and to future generations.

ANC takes these obligations very seriously, and we intend to put into place operating procedures that will protect society's interests, while fulfilling the economic benefits that ANC brings to the communities within and adjacent to the FMA area. We will do this by adopting procedures based on current industry and provincial guidelines and by developing new procedures based on current developments in scientific literature. This DFMP is a reflection of our commitment to the public in the form of a responsible forest management plan.



#### 2.3 LANDSCAPE ASSESSMENT

#### 2.3.1 INTRODUCTION

The purpose of this landscape assessment is to provide a description of current landscape conditions, which may then be used to evaluate the effects of future management activities on the Forest Management Agreement (FMA) area. The documentation and the process for determining the landscape assessment were completed with the goal of meeting the provincial forest management planning requirements (Alberta Forest Management Planning Standard, version 4.1, April, 2006).

The following broad categories have been evaluated and summarized in appropriate text, tabular, and map format:

- Administrative boundaries
- Physical conditions
- Forest landscape pattern and structure
- Forest landscape disturbance and succession
- Landscape fire assessment
- Wildfire threat assessment
- Fire regime analysis
- Land use

Some of the summaries and analysis will be completed by Alberta Sustainable Resource Development (SRD). It is assumed that these sections will be inserted into the document following submission (Appendix A through Appendix G).

#### 2.3.2 ADMINISTRATIVE BOUNDARIES

#### 2.3.2.1 FOREST MANAGEMENT AGREEMENT

The Forest Management Agreement of interest in this landscape assessment is the one between the Government of Alberta and Alberta Newsprint Company (ANC) Timber Ltd., otherwise known as FMA # 8900026. The Defined Forest Area (DFA), or FMA area, is 374,055 ha.

#### 2.3.2.2 DEFINED FOREST AREA

The DFA is comprised entirely of FMU W15. It is spread across approximately 62 separate townships. The DFA boundary is marked by Range 5 in the east, Range 17 in the west, Township 55 in the south, and Township 63 in the north (see Map 2-1).





Within the exterior FMA boundary (the FMU W15 boundary) there are areas that have been excluded from the DFA for conservation and recreation purposes. Map 2-22 in section 2.3.7.5 shows their locations. As these areas have been removed from the DFA, they have no management unit/sustained yield unit or compartment assigned to them. However, ANC has collected inventory for these areas and as such they are included in certain maps, tables and figures within this document, where appropriate. Table 2-1 summarizes the total gross area inventoried, the area excluded from the DFA and the DFA itself.

**TABLE 2-1: DEFINED FOREST AREA** 

LANDBASE CATEGORIES	AREA (HA)
Gross Area (FMU W15)	378,397
Exclusions	4,342
Defined Forest Area (DFA)	374,055

#### 2.3.2.3 FOREST MANAGEMENT UNITS, SUSTAINED YIELD UNITS, AND COMPARTMENTS/ SUBUNITS

In the past the FMA area was divided into 4 different sustained yield units. However, since the last DFMP submission, the sustained yield units have been dissolved into FMU W15. Table 2-2 provides a summary of the former sustained yield unit areas within the current DFA.



TABLE 2-2: FORMER SUSTAINED YIELD UNITS AREA SUMMARY

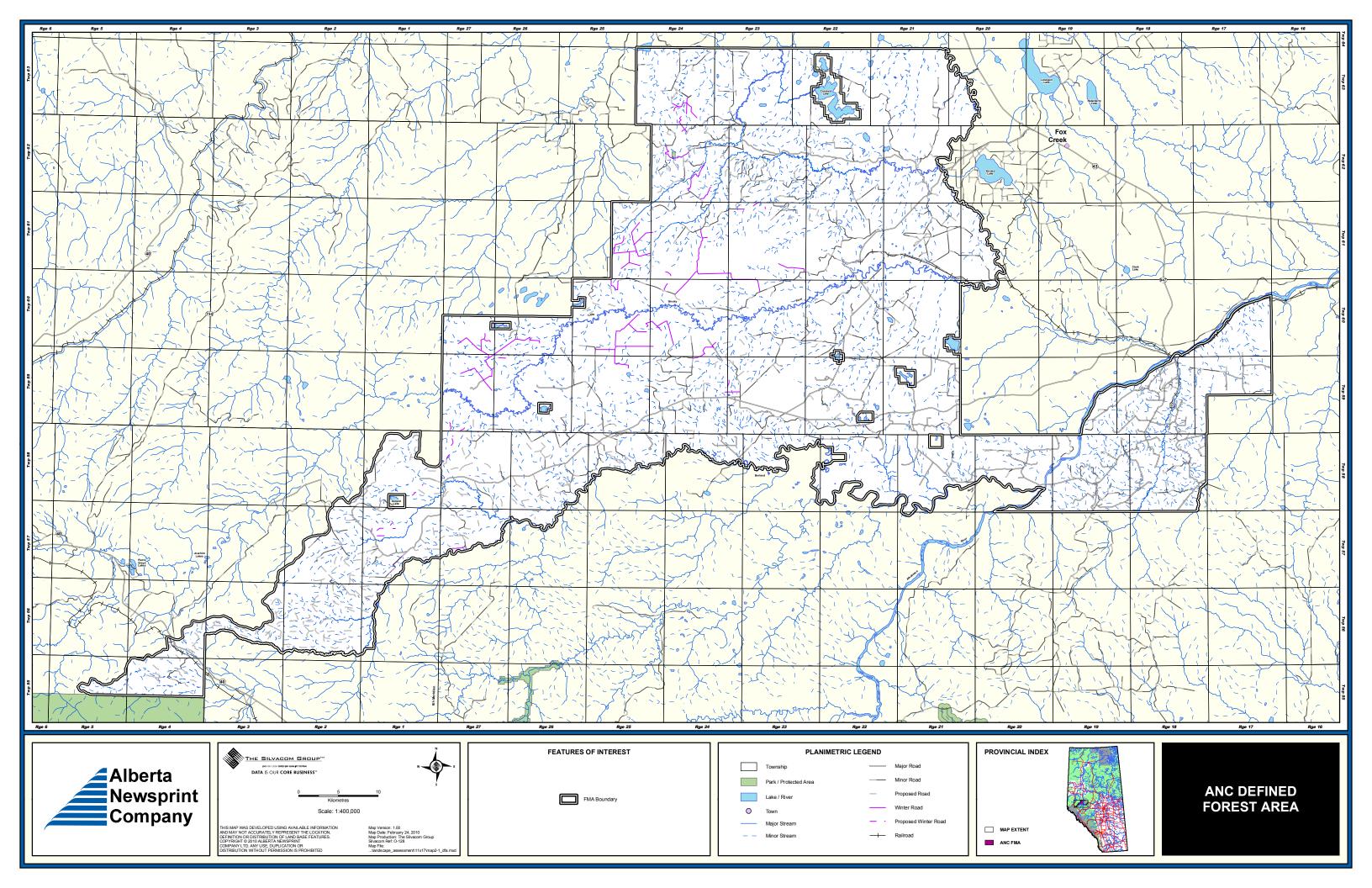
SUSTAINED YIELD UNIT	AREA (HA)
Berland	24,322
Foothills	86,221
Little Smokey	228,667
Pine	34,845
TOTAL	374,055

There are 54 compartments that subdivide the DFA with an average area of 6,927 ha. The compartment areas range from 836 ha (CPA# W8-7) to 25,049 ha (CPA# W1-25). A summary of the area of each compartment, excluding any parkland, may be found in Table 2-3.

**TABLE 2-3: COMPARTMENT AREA SUMMARY** 

COMPARTMENT	AREA (HA)	COMPARTMENT	AREA (HA)	COMPARTMENT	AREA (HA)	COMPARTMENT	AREA (HA)
E6-1	19,396	E7-14	6,254	W1-12	8,837	W1-31	3,207
E6-3	4,925	W1-0	7,039	W1-13	4,320	W1-32	3,090
E7-1	6,085	W1-1	6,973	W1-14	12,339	W8-1	4,067
E7-2	6,890	W1-2	15,525	W1-15	9,325	W8-3	2,728
E7-3	3,858	W1-3	9,732	W1-16	9,840	W8-4	4,310
E7-4	3,587	W1-4	4,107	W1-17	6,561	W8-5	3,691
E7-5	3,497	W1-5	20,687	W1-18	7,006	W8-6	3,773
E7-6	7,771	W1-6	1,894	W1-19	3,881	W8-7	836
E7-7	15,476	W1-7	2,521	W1-22	11,261	W8-8	4,399
E7-8	10,291	W1-8	6,898	W1-25	25,049	W8-10	3,396
E7-10	5,766	W1-9	6,674	W1-26	8,984	W8-12A	3,795
E7-11	5,847	W1-10	5,639	W1-28	2,925	W8-12B	3,851
E7-12	4,167	W1-11	1,579	W1-29	6,673		
E7-13	6,734	W1-11A	10,606	W1-30	5,497		
TOTAL				374,055			

Because the sustained yield unites have been dissolved and the compartments are so numerous, natural subregions were selected for use as the DFA subunits for the purposes of this Landscape Assessment. A description of the natural subregions that exist in the DFA can be found in Section 2.3.2.4.



#### 2.3.2.4 NATURAL SUBREGIONS

The ANC DFA covers four natural subregions belonging to three natural regions (*Natural Regions and Subregions of Alberta*, Natural Resources Committee, 2006). The majority of ANCs FMA area is located within two natural subregions: the Upper Foothills (173,946 ha; 46%) and Lower foothills (172,951 ha; 46%). The remaining area is located in the Central Mixedwood natural subregion (16,247 ha; 4%), and the Subalpine natural subregion (15,253 ha; 4%).

An area summary of the natural subregions across the total gross area (including the islands excluded from the DFA) is provided in Figure 2-1. The distribution of the natural subregions throughout the DFA is illustrated in Map 2-2.

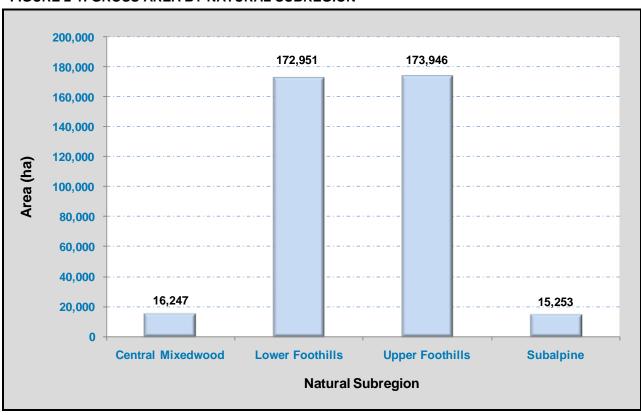


FIGURE 2-1: GROSS AREA BY NATURAL SUBREGION

#### **Central Mixedwood**

The Central Mixedwood is the second smallest subregion overlapping the ANC DFA. The forested landscape on upland sites is characterized by a mosaic of aspen (*Populus tremuloides*) dominated stands, white spruce (*Picea glauca*) dominated stands, aspen-white spruce stands, or white spruce and jack pine (*Pinus banksiana*) stands. On lowland sites or wetland sites, vegetation is often dominated by black spruce (*Picea mariana*), fens, and bogs.





Soils on well drained upland till sites are often Gray Luvisols of medium to fine texture, Dystric Brunisols, and Eutric Brunisols on coarse-textured sandy uplands. Many of the Luvisols on these low-relief landforms are imperfectly drained and gleyed, and Solonetzic intergrades are associated with some of the glaciolacustrine sediments. Mesisols are the dominant Organic soils occurring within fens and bogs, with Terric subgroups commonly occurring. Fibric Mesisols, Fibrisols and sometimes Cryosols are associated with bogs.

The Central Mixedwood natural subregion spans nearly 8° of latitude, and several climatic trends are present. The climate of the Central Mixedwood subregion is sub-humid and continental with short, cool summers and long, cold winters. While the average temperature ranges between minus 2.6 °C to 3.1 °C, the average frost-free period is about 97 days in length, ranging from a minimum or 74 days to a maximum of 116 days. Annual precipitation averages about 477 mm with a range of 333 mm to 634 mm.

#### Lower Foothills

The Lower Foothills natural subregion is the second largest subregion overlapping ANC's DFA. The Lower Foothills natural subregion has the most diverse forests in Alberta in terms of forest types and tree species. Aspen, balsam poplar (*Populus balasmifera*), white birch (*Betula papyrifera* var. *papyrifera*), lodgepole pine (*Pinus contorta* var. *latifolia*), black spruce, white spruce, balsam fir (*Abies balsamea*) and tamarack (*Larix laricina*) grow as pure stands or stands with three or four tree species mixtures. Pure deciduous stands are more common at lower elevations. Shrubby grasslands occur on the driest sites, and poor to rich fens dominated by black spruce, tamarack, shrubs and herbs occur on low, wet sites.

On the medium and fine textured materials of uplands sites Orthic Gray Luvisolic soils are often found. They are accompanied by Brunisolic subgroups, particularly at higher elevations. Brunisolic Gray Luvisols and Dystric Brunisols are typical of sandy terrain, and Eutric Brunisols and Regosols are often associated with calcareous, recently deposited aeolian and fluvial materials. Most upland soils in these materials are well to imperfectly drained, but there may be imperfectly to poorly drained Gleysolic soils and seepage in lower slope positions. The wetland organic deposits associated with poor to rich fens are mainly Mesisols, and include an approximately equal representation of Typic and Terric subgroups. Some Fibric Mesisols are associated with relatively uncommon bog vegetation. Orthic and Peaty Gleysols often occur adjacent to wetlands and are more common in the gently undulating areas.

The Lower Foothills natural subregion has a longer growing season than the higher elevation Upper Foothills natural subregion, with an average frost free period of 94 days, ranging from a low of 40 days to a high of 118 days. The average annual temperature ranges from 0.1 °C to 2.9 °C with an average of 1.8 °C. The Lower Foothills natural subregion also receives less winter precipitation than the upper Foothills natural subregion. Historically, the total annual precipitation has ranged from 472 mm to 742 mm with an





average of 588mm. The available moisture is sufficient to support the growth of lodgepole pine as pure stands and as components of mixedwood stands.

#### **Upper Foothills**

The Upper Foothills natural subregion is the largest subregion that overlaps with ANC's DFA. Forests are typically even-aged fire origin lodgepole pine stands, often with an understory of black spruce. Deciduous and mixedwood stands are restricted to southerly and westerly slopes where conditions are similar to those found at lower elevations. Shrubby grasslands occur on the driest sites, and poor to rich fens dominated by black spruce, tamarack, shrubs and herbs occur on low, wet sites. The upland forests of the Upper Foothills Subregion are nearly all coniferous and dominated by white spruce, black spruce, lodgepole pine, and, occasionally, subalpine fir (*Abies bifolia*). Some introgressive hybridization between white spruce and Engelmann spruce (*Picea engelmannii*) occurs at the upper limits of the Upper Foothills natural subregion, as does hybridization between the lowland balsam fir and the higher-elevation subalpine fir.

Well to imperfectly drained Brunisolic Gray Luvisolic soils are typical throughout most of the area. Orthic Gray Luvisols are associated with moderately well drained sites, and are usually associated with stands having a deciduous component. Brunisols are typical of less stable colluvial and weathered residual materials. Wetlands are a complex of Terric and Typic Mesisols along with Peaty and Orthic Gleysols.

Compared to the Lower Foothills natural subregion, the Upper Foothills natural subregion is on average cooler year-round with cooler summers and slightly warmer winters. The Upper Foothills has a shorter growing season, and receives heavier summer and winter precipitation. It has the highest July precipitation of any natural subregion with the annual averages ranging from 452mm to 992 mm, with an average of 632 mm of precipitation over the course of a year. The average temperature ranges between minus 1.6 °C to 2.5 °C with an average annual temperature of 1.3 °C, while the average frost free period ranging from a low of 33 days to a high of 116 days, with a mean value of 79 days. In general, evergreen species are favoured because they begin photosynthesis earlier in the spring and continue late into the fall. Pure deciduous stands are usually restricted to the warmer microclimates created by south and west facing aspects that lose their snowpack and remain warmer later into the fall.

#### Subalpine

The Subalpine natural subregion is the smallest subregion that overlaps with ANC's DFA. The lower Subalpine zone is characterized by closed fire-origin lodgepole pine forests with Engelmann spruce and subalpine fir. Engelmann spruce/white spruce hybrids are common in this lower portion of the subregion. The upper Subalpine is forested by closed Engelmann spruce and subalpine fir forests that become more open near the forest line and include subalpine larch (*Larix lyallii*) and whitebark pine (*Pinus albicaulis*).



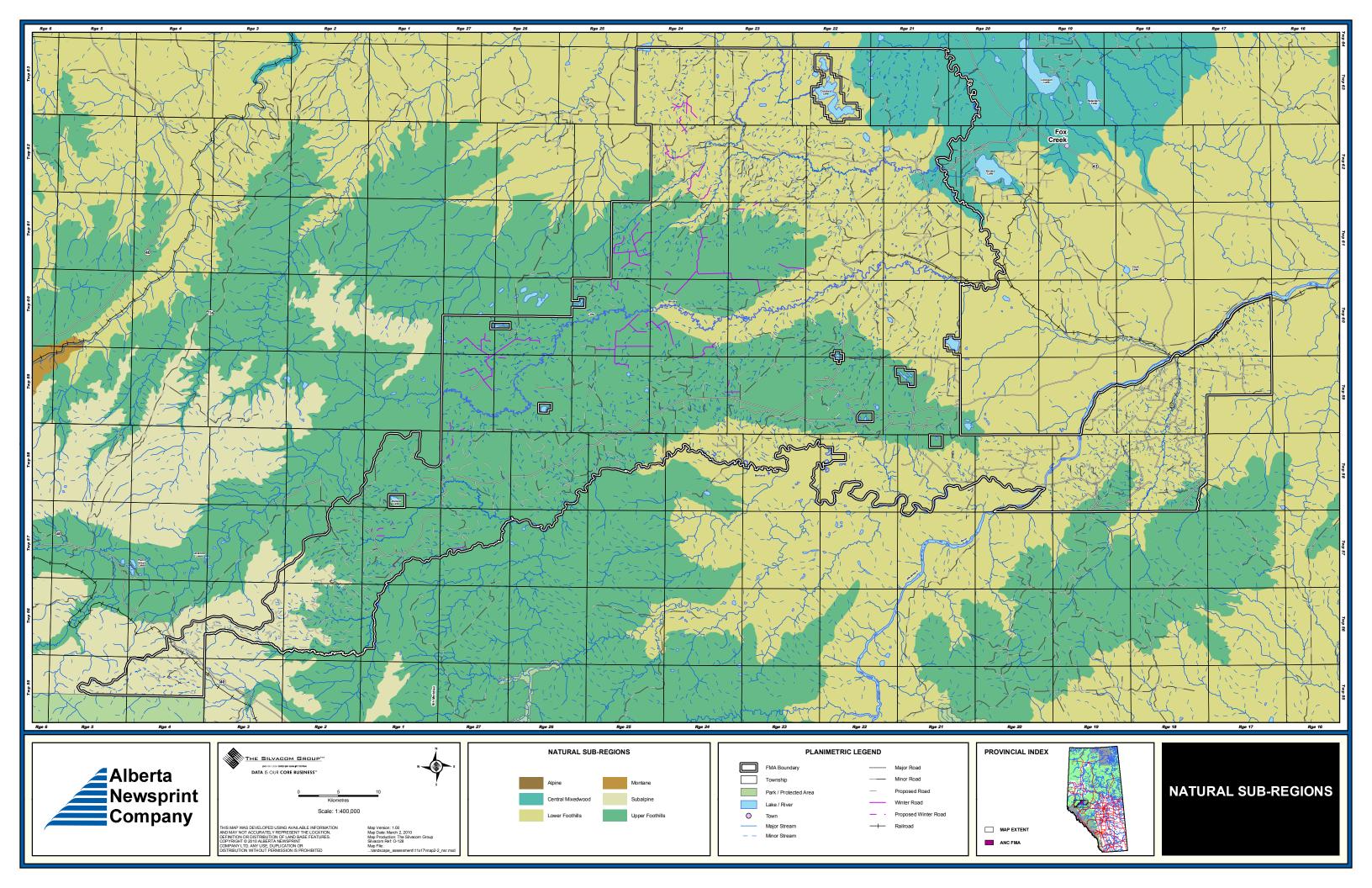


Krummholz islands (dense clumps of stunted and twisted trees) define the upper limits of the Subalpine natural subregion.

Cold temperatures, high precipitation and coarse, often unstable parent materials over steeply sloping bedrock contribute to the development of Eutric and Dystric Brunisols; Regosols and nonsoils (e.g., colluvium, exposed bedrock) are also common. About 25% of the area is occupied by less pronounced terrain and somewhat finer textured soils on which Orthic and Brunisolic Gray Luvisols have developed. Wetland soils are usually Gleysols, but Organic soils also occur.

Short, cool, wet summers and long, cold winters with heavy snows are typical of the Subalpine natural subregion. The mean annual temperature ranges from minus 5.1°C to plus 4°C with a mean temperature of negative 0.1°C. Average winter temperatures in the Subalpine natural subregion and the adjacent Upper Foothills natural subregion are slightly higher than the Lower Foothills natural subregion because the influence of continental polar cold air masses does not last as long. Below freezing temperatures can occur in all months with the average frost free period ranging from a low of 13 days to a high of 97 days, with a mean value of 55 days. It receives more year-round precipitation on average than any natural subregion except for the Alpine. Total annual precipitation ranges from 440 mm to more than 1400 mm with a mean of 755mm.





#### 2.3.2.5 MUNICIPAL DISTRICTS/COUNTIES

The majority of the ANC DFA is covered by the municipal district of Greenview no. 16 with the remainder being covered by Yellowhead County and Woodlands County, as illustrated in Map 2-3. Spatial data for the map was obtained from AltaLIS, government of Alberta and was updated in 2007.

#### 2.3.2.6 FEDERAL GOVERNMENT LANDS

There are no Federal Lands within ANC's DFA.

#### 2.3.2.7 INDIAN RESERVATIONS

There are no Indian Reservations (I.R.) within ANC's DFA. I.R. 134A is in close proximity to the eastern section of the DFA, but it does not cross the FMA boundary.

#### 2.3.2.8 PROTECTED AREAS AND PARKS

There are no officially designated provincial parks that overlap with ANC's DFA. However, the Upper Waskahigan Falls protected area is located in township 62 and range 24 which is within the DFA. Its location can be observed in Map 2-1. Additionally, there are dispositions that identify where harvesting is excluded. Refer to Map 2-18 for more details.

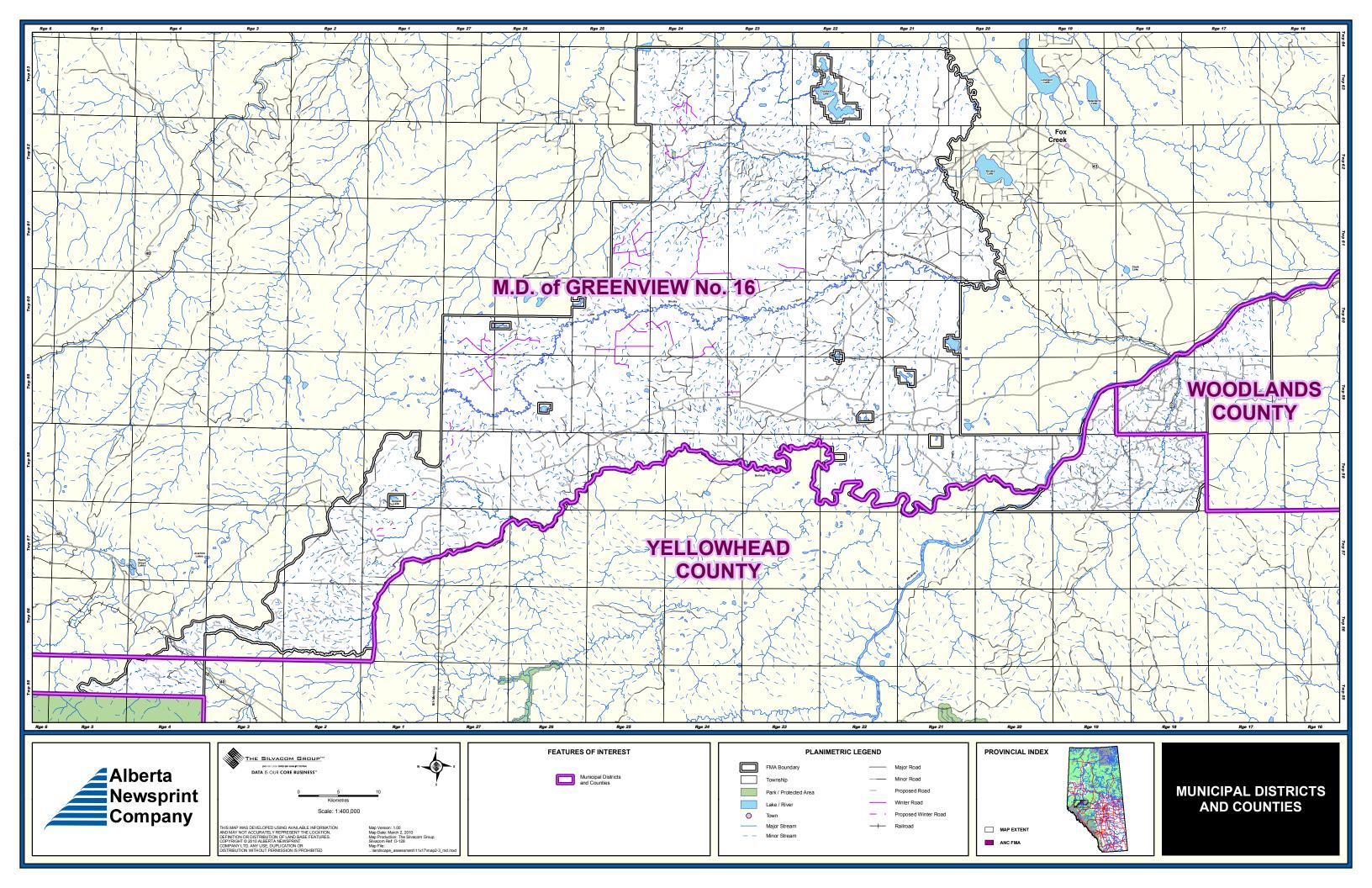
Willmore Wilderness Park is adjacent to the most westerly portion of the southern boundary of the ANC DFA. Willmore Wilderness Park was established under its own legislation in April 1959 with the intent to preserve and protect natural heritage and provide opportunities for backcountry recreation.

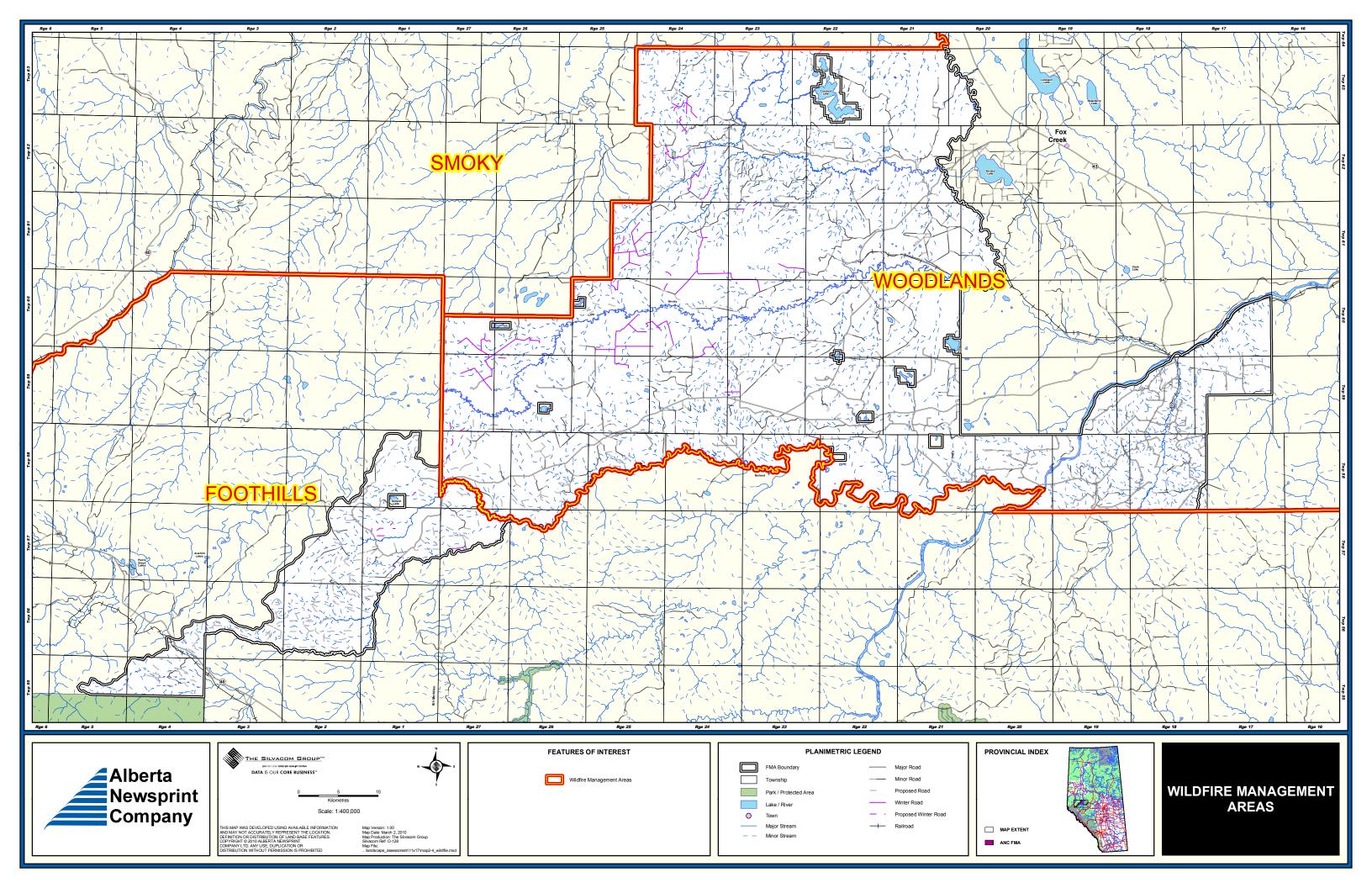
#### 2.3.2.9 WILDFIRE MANAGEMENT AREAS

The Woodlands wildfire management area covers most of ANC DFA. In addition, the Foothills wildfire management unit covers that area of the DFA that is west of the sixth meridian. The wildfire management areas are displayed on Map 2-4.

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#### 2.3.3 PHYSICAL CONDITIONS

#### 2.3.3.1 TOPOGRAPHY

With majority of the DFA being in the Upper Foothills and the Lower Foothills natural subregions, there is obviously a wide variety of terrain present. Map 2-5 shows the landforms within the DFA. Spatial data for the map was obtained from the Government of Canada.

#### 2.3.3.2 SOILS AND LANDFORMS

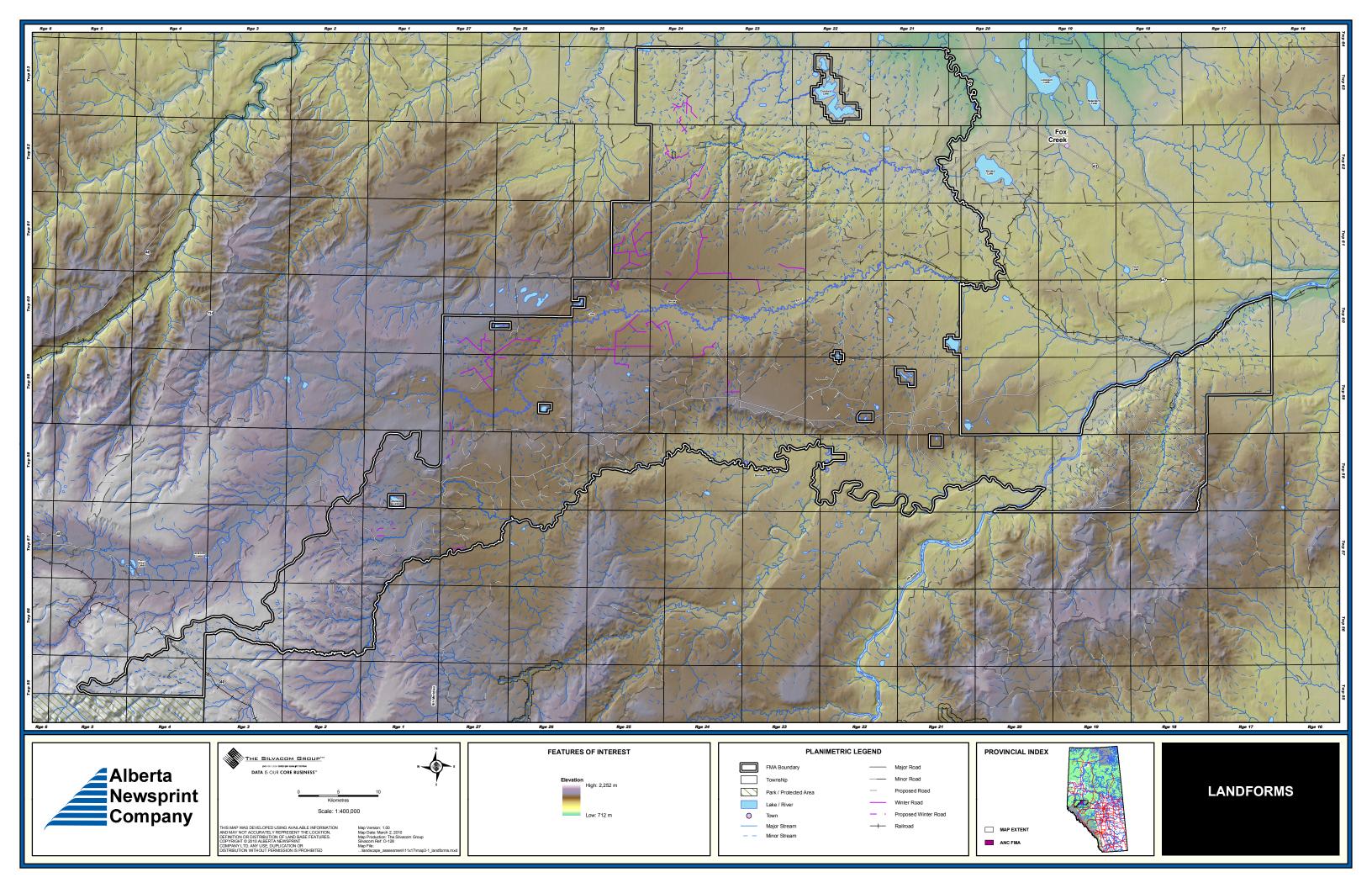
Soil is fundamental to the productivity and health of forest ecosystems. Soils provide a medium for plant growth, as well as most of the nutrients a plant requires. In addition, soils store and release water for both plant use and for streams and rivers. Inherent soil characteristics play a major role in determining the effects forestry operations have on site productivity. Therefore, a good understanding of soil properties is essential when developing forest management plans at all levels.

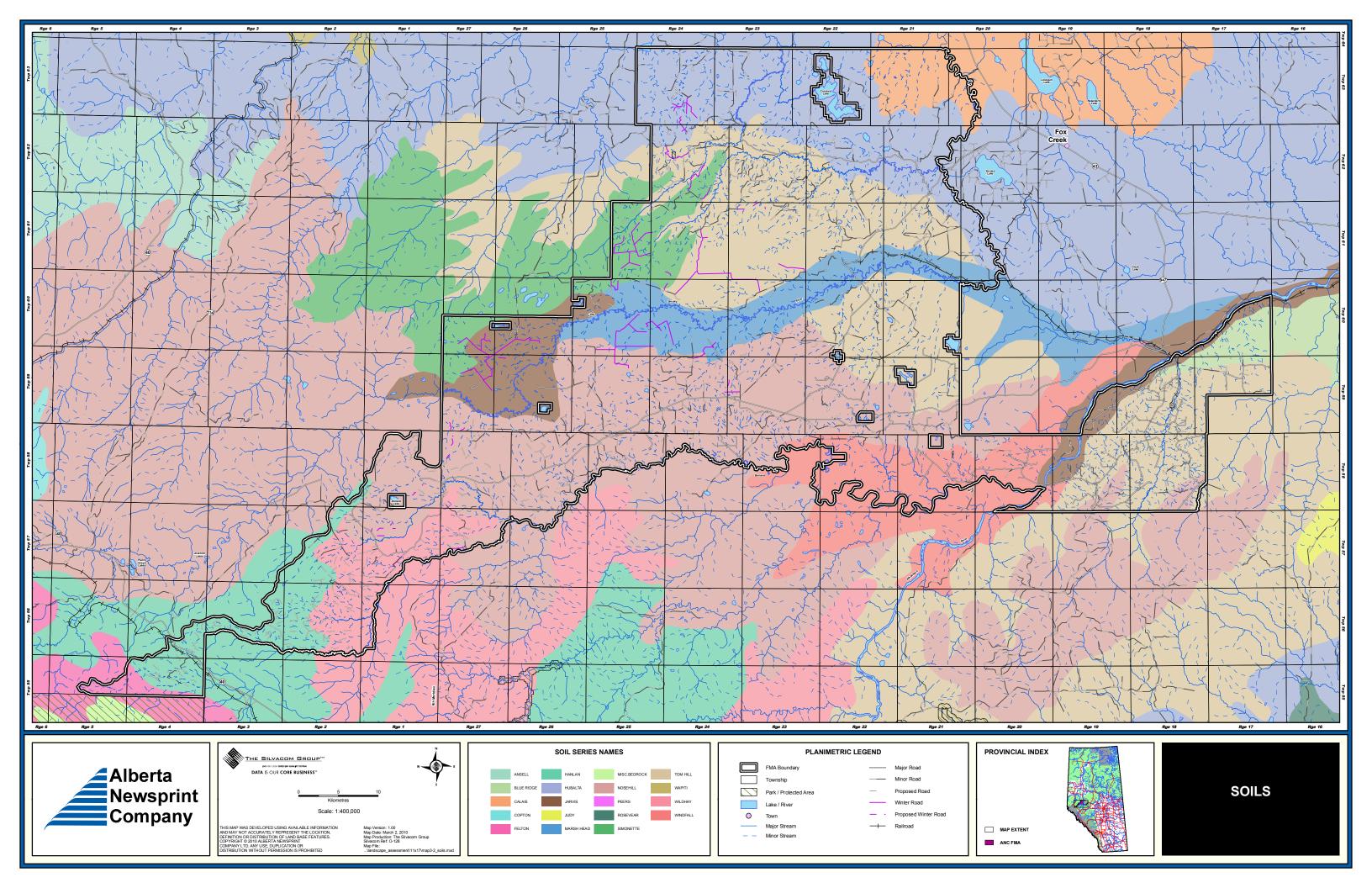
The soils in ANC's DFA area have been described in two documents:

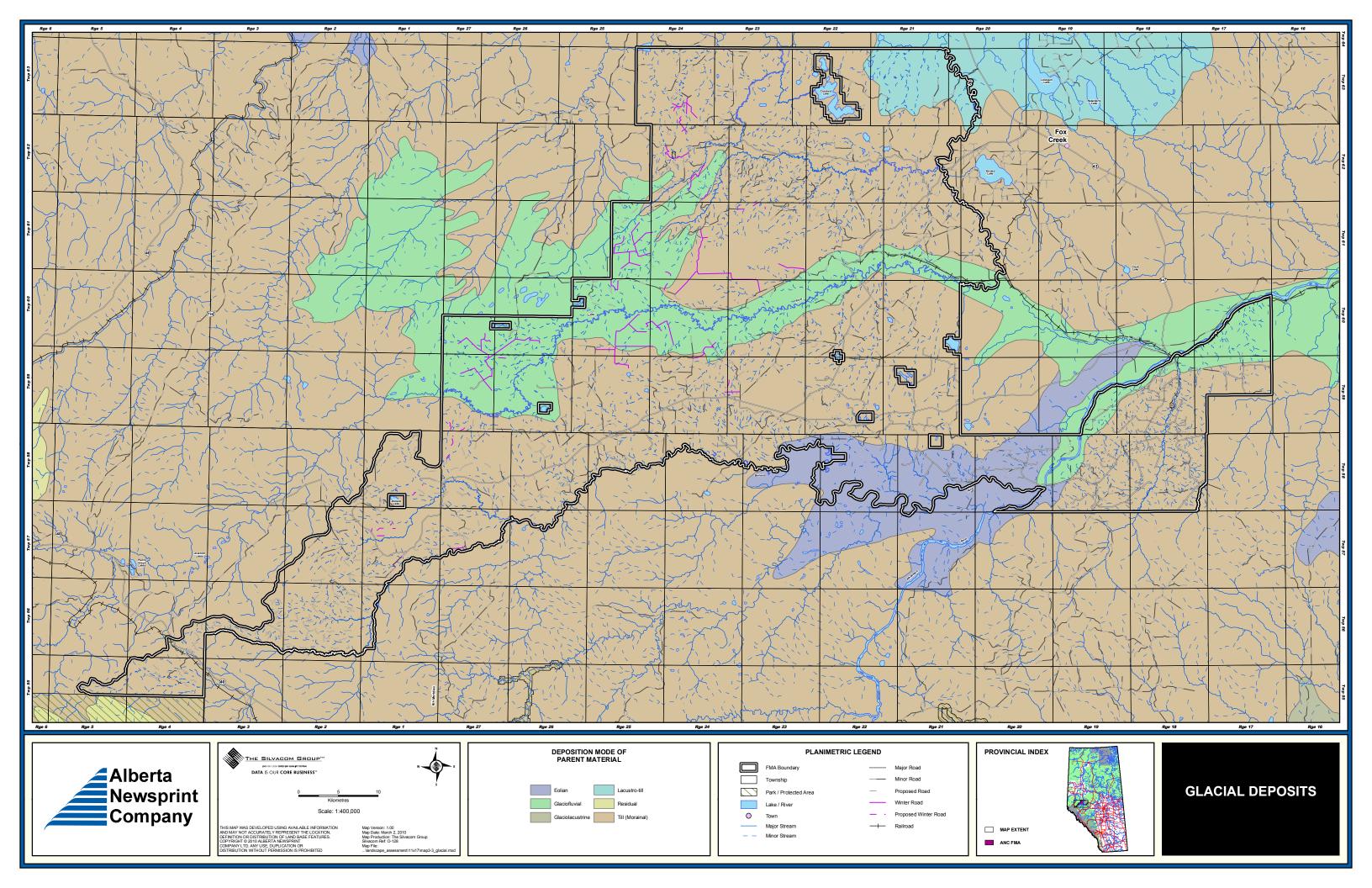
- The Reconnaissance Soil Survey of the Iosegun Lake Area, Alberta (Knapik and Lindsay, 1983). This survey describes most of the soils in the DFA area.
- Soil Survey and Land Evaluation of the Hinton-Edson Area (Dumanski et al., 1972).
   Some of the southern region of the DFA area is described in this survey.

The common soil units and the glacial deposits for the ANC DFA are illustrated in Map 2-5 and Map 2-6. Information for the maps was obtained from the National Soil DataBase (NSDB). Additionally, Section 2.3.3.2 describes the common soils found in the natural subregions present in the ANC DFA.









#### 2.3.3.3 HYDROGRAPHY (PROVIDED BY SRD)

Please refer to Appendix A.

#### 2.3.3.4 CLIMATE

The climate of the ANC DFA area has a strong continental influence. It is characterized by short, cool summers and long, cold winters. The Kaybob 3 weather station is located within the ANC defined forest management area at 54° 6.600′ N and 116° 37.800′ W and a elevation of 1002.8 m. At this weather station for the years of 1971-2000, the average daily temperature for the year is 2.8 °C. Average annual rainfall is 443.4 mm, average annual snowfall is 160.8 cm and total precipitation is 603.6(mm). Weather data was obtained from Environment Canada.

(http://climate.weatheroffice.gc.ca/climate\_normals/index\_e.html)

Further information (Table 2-4) regarding the DFA's climate is based on the *Natural Regions and Subregions of Alberta* (Natural Regions Committee, 2006). However, because the natural subregions extend well beyond the DFA boundaries, the climatic information may not be representative of the DFA in all cases.

In all four subregions present in ANC's DFA the warmest month (the month with the greatest average monthly temperature) and the wettest month (the month with the most precipitation) is July. Figure 2-2 shows the average monthly temperature for each of the subregions that overlap with the DFA. Figure 2-3 displays the average annual precipitation by natural subregion.

TABLE 2-4: CLIMATE AVERAGES FOR THE NATURAL SUBREGIONS IN THE DFA

CLIMATE ATTRIBUTE	CENTRAL MIXEDWOOD	LOWER FOOTHILLS	UPPER FOOTHILLS	SUB-ALPINE
Temperature Averages				
Mean Annual Temperature	0.2	1.8	1.3	-0.1
Mean Temp Warmest Month (°C)	15.9	14.7	13.4	11.3
Mean Temp Coldest Month (°C)	-18.9	-12.8	-11.6	-11.7
Precipitation Averages				
Mean Annual Precipitation	478	588	632	755
Growing Season Precip. (Apr-Aug)	336	430	450	419
Percent of Total Annual Precip that falls during the Growing Season.	70%	73%	71%	55%
Vegetation Growth Averages				
Mean Frost Free Period (days)	97	94	79	55
Mean Date of Last Spring Frost	30-May	03-Jun	13-Jun	30-Jun
Mean Date of First Fall Frost	02-Sep	02-Sep	28-Aug	22-Aug
Growing Degree Days (>5°C)	1240	1145	949	668



FIGURE 2-2: AVERAGE DAILY TEMPERATURE BY MONTH FOR EACH NATURAL SUBREGION

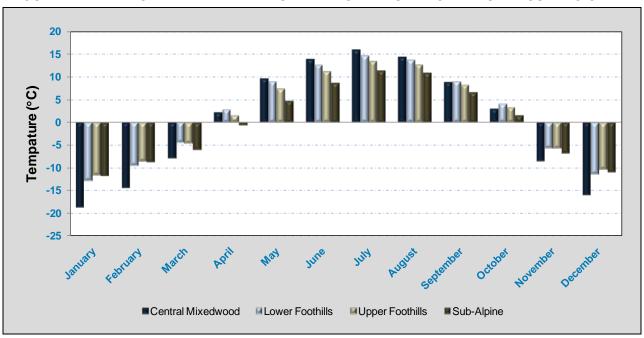
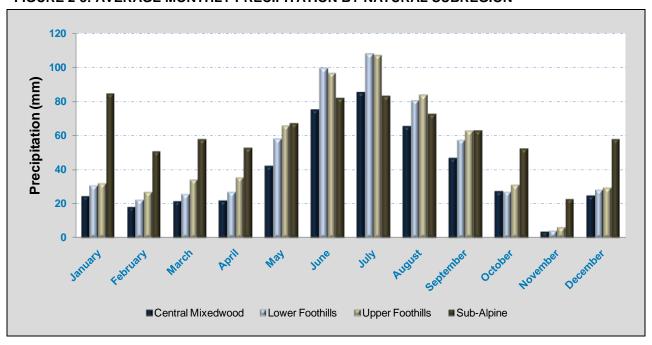


FIGURE 2-3: AVERAGE MONTHLY PRECIPITATION BY NATURAL SUBREGION





#### 2.3.4 FOREST LANDSCAPE PATTERN AND STRUCTURE

Within the gross area (the entire inventoried area of FMU W15: 378,397 ha), there are areas that have been removed from the DFA for conservation and recreation purposes. These exclusion areas are discussed later, in section 2.3.7.5, and illustrated in Map 2-22. Since ANC has collected inventory for the entire gross area including the DFA exclusions, the total gross forested area was used for all of the Forest Landscape Pattern and Structure analysis, descriptions and summaries. Table 2-5 identifies the amount of gross forested and non-forested area.

Alberta Sustainable Resource Development provided ANC Timber Ltd. the parameters used in defining and describing forest landscape pattern and structure. These parameters are used under; forest wildlife species, forest cover types, forest age classes, seral stages, forest patches and interior forest.





Figure 2-4 breaks down the gross forested area by natural subregion.

## **TABLE 2-5: GROSS FORESTED AREA**

CATEGORY	AREA (HA)
Gross Area (FMU W15)	378,397
Non-forested Area (including non-forested portions of the DFA exclusions)	29,430
Gross Forested Area	348,967



2-24

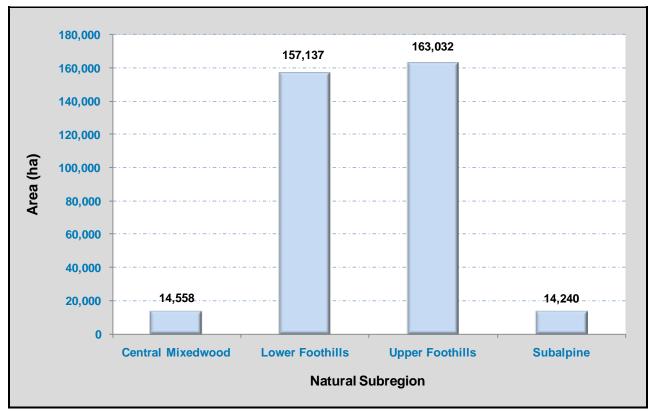


FIGURE 2-4: GROSS FORESTED AREA BY NATURAL SUBREGION

### 2.3.4.1 FOREST SPECIES (PROVIDED BY SRD)

Please refer to Appendix B.

## 2.3.4.2 FOREST COVER TYPES

The cover types as used for the purposes of this document are defined in Table 2-6. The predominant cover type on ANC's DFA is the conifer-pine cover group(C-P), followed by conifer-black spruce (C-SB), conifer-white spruce (C-SW), deciduous (D), deciduous dominated mixedwood with a spruce leading conifer component (DC-S), conifer dominated mixedwood with a pine leading conifer component (CD-P), conifer dominated mixedwood with a spruce leading conifer component (DC-S) and finally deciduous dominated mixedwood with a pine leading conifer component (DC-P). The pine component of C-P, CD-P and DC-P is primarily lodgepole pine (*Pinus contorta* var. *Latifolia*). The leading species in the D cover type is primarily trembling aspen (*Populus tremuloides*). All cover type assignments are consistent with the assignments made in the net landbase determination document. A summary of the area of these cover types by natural subregion across the gross forested area is provided in Table 2-6.





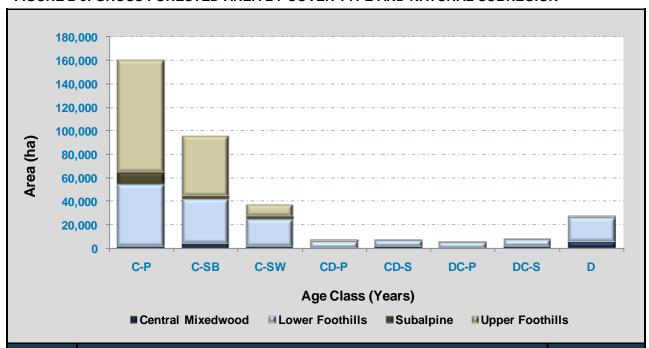
## **TABLE 2-6: COVER TYPE DEFINITION**

COVER TYPE	DESCRIPTION	CONIFER CROWN CLOSURE (%)	LEADING CONIFER SPECIES CODE
С-Р	Conifer – pine	80 – 100	PL, PJ, P
C-SB	Conifer – black spruce	80 – 100	SB, LT
C-SW	Conifer – white spruce	80 – 100	FB, FA, SW
CD-P	Conifer dominated mixedwood – pine leading conifer component	50 – 79	PL, PJ, P
CD-S	Conifer dominated mixedwood – spruce leading conifer component	50 – 79	FB, FA, SW SB, LT
DC-P	Deciduous dominated mixedwood – pine leading conifer component	20-49	PL, PJ, P
DC-S	Deciduous dominated mixedwood – spruce leading conifer component	20-49	FB, FA, SW SB, LT
D	Deciduous	0 – 20 (also requires >0% Deciduous Crown Closure)	ANY

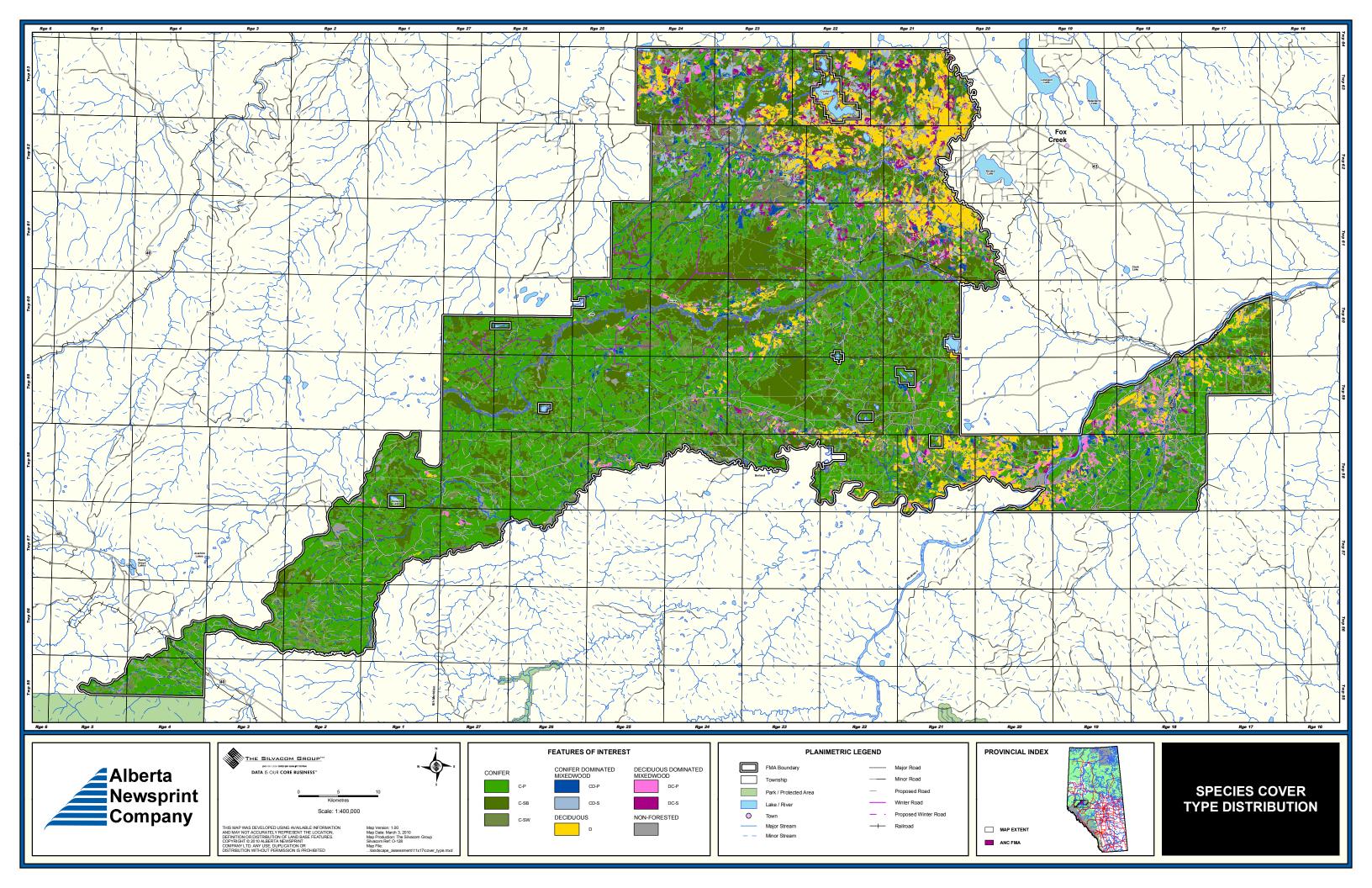




FIGURE 2-5: GROSS FORESTED AREA BY COVER TYPE AND NATURAL SUBREGION



COVER	COVER AREA (HA) BY NATURAL SUBREGION						
TYPE	CENTRAL MIXEDWOOD	LOWER FOOTHILLS	UPPER FOOTHILLS	SUB-ALPINE	TOTAL		
С-Р	970	53,454	95,843	9,884	160,152		
C-SB	3,700	38,314	51,098	1,895	95,006		
C-SW	1,460	23,098	10,308	2,453	37,319		
CD-P	416	5,436	1,723	8	7,582		
CD-S	1,073	5,948	379	0	7,399		
DC-P	5,467	20,288	2,181	0	27,936		
DC-S	146	4,598	1,098	0	5,842		
D	1,326	6,003	401	0	7,730		
TOTAL	14,558	157,137	163,032	14,240	348,967		

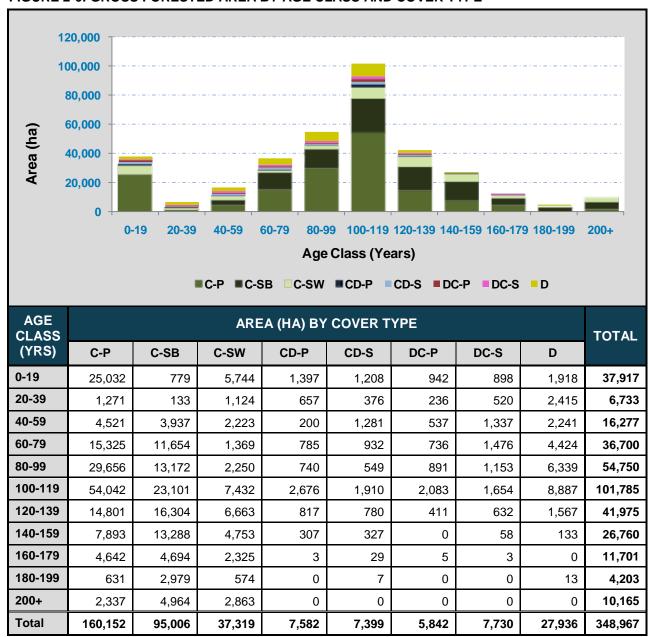


### 2.3.4.3 FOREST AGE CLASS

### Age Class Structure

Stand ages were determined using 2009 as the base year and the AVI stand origin along with other information records. Figure 2-6 indicates the current age class structure by cover type in the DFA.

FIGURE 2-6: GROSS FORESTED AREA BY AGE CLASS AND COVER TYPE







## Age Class Distribution by NSR

This analysis is based on the entire gross forested area subdivided into the four natural subregions present within the DFA:

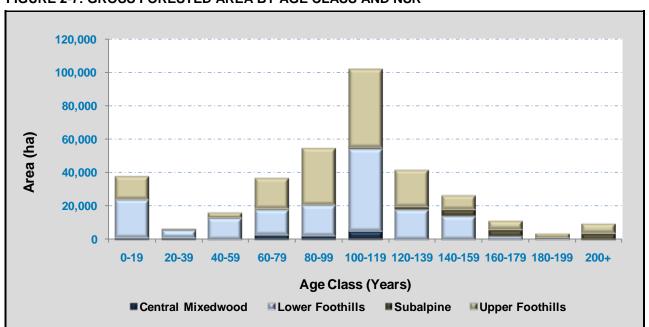
- Central Mixedwood
- Lower Foothills
- Upper Foothills
- Subalpine

Stands over 200 years old and older were assigned into a single '200+' age class. Figure 2-7 summarizes the gross forested area by age class and natural subregion. The age class distribution across the DFA is illustrated on Map 2-9.



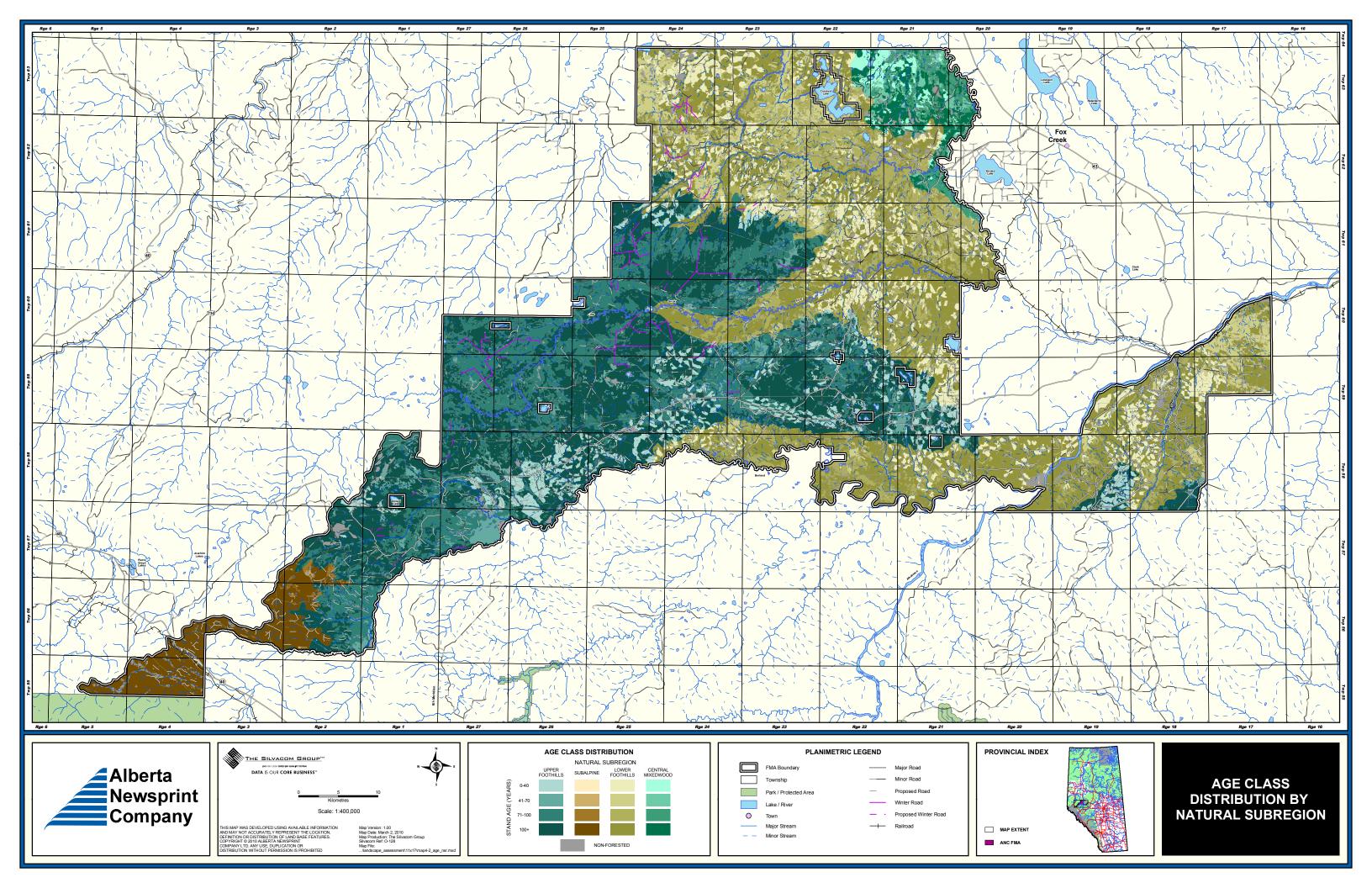


FIGURE 2-7: GROSS FORESTED AREA BY AGE CLASS AND NSR



AGE	,				
CLASS (YRS)	CENTRAL MIXEDWOOD	LOWER UPPER SUB-ALPINE FOOTHILLS		TOTAL	
0-19	1,180	22,732	13,935	70	37,917
20-39	1,319	4,904	507	3	6,733
40-59	862	12,155	3,209	50	16,277
60-79	2,723	15,077	18,374	527	36,700
80-99	2,193	18,440	34,044	73	54,750
100-119	5,197	48,663	47,243	682	101,785
120-139	330	17,560	22,546	1,538	41,975
140-159	753	13,291	8,549	4,167	26,760
160-179	0	2,386	5,524	3,791	11,701
180-199	0	1,196	2,681	326	4,203
200+	0	732	6,419	3,013	10,165
TOTAL	14,558	157,137	163,032	14,240	348,967





### 2.3.4.4 SERAL STAGES

The classification of seral stages on ANC's DFA was consistent with the age ranges provided by Sustainable Resource Development (see Table 2-7 for the age range breakdown). The gross forested area by seral stage and cover type is summarized in Figure 2-8. The gross forested area by seral stage and natural subregion is summarized in Figure 2-9.

**TABLE 2-7: SERAL STAGE DEFINITION** 

SERAL STAGE	AGE RANGE (YEARS)
Young	0-19
Immature	20-79
Mature	80-119
Old	120-179
Very Old	≥180

FIGURE 2-8: GROSS FORESTED AREA BY SERAL STAGE AND COVER TYPE

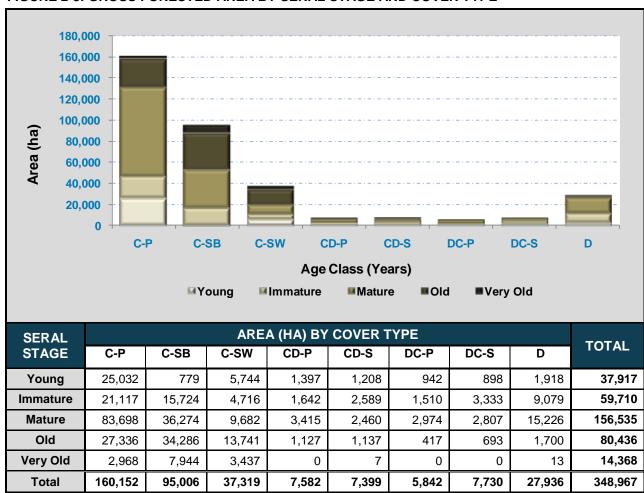
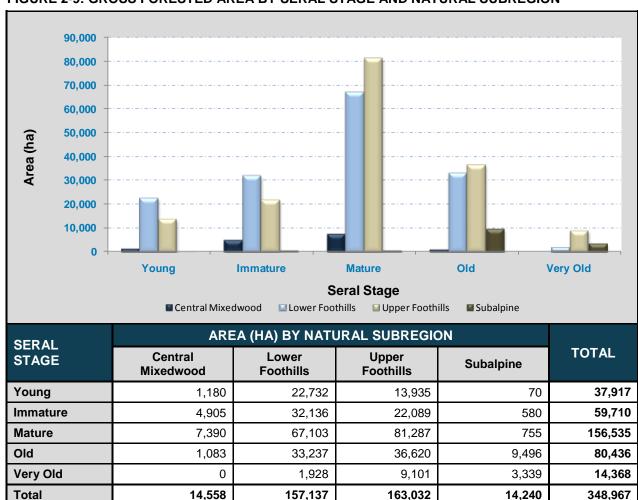
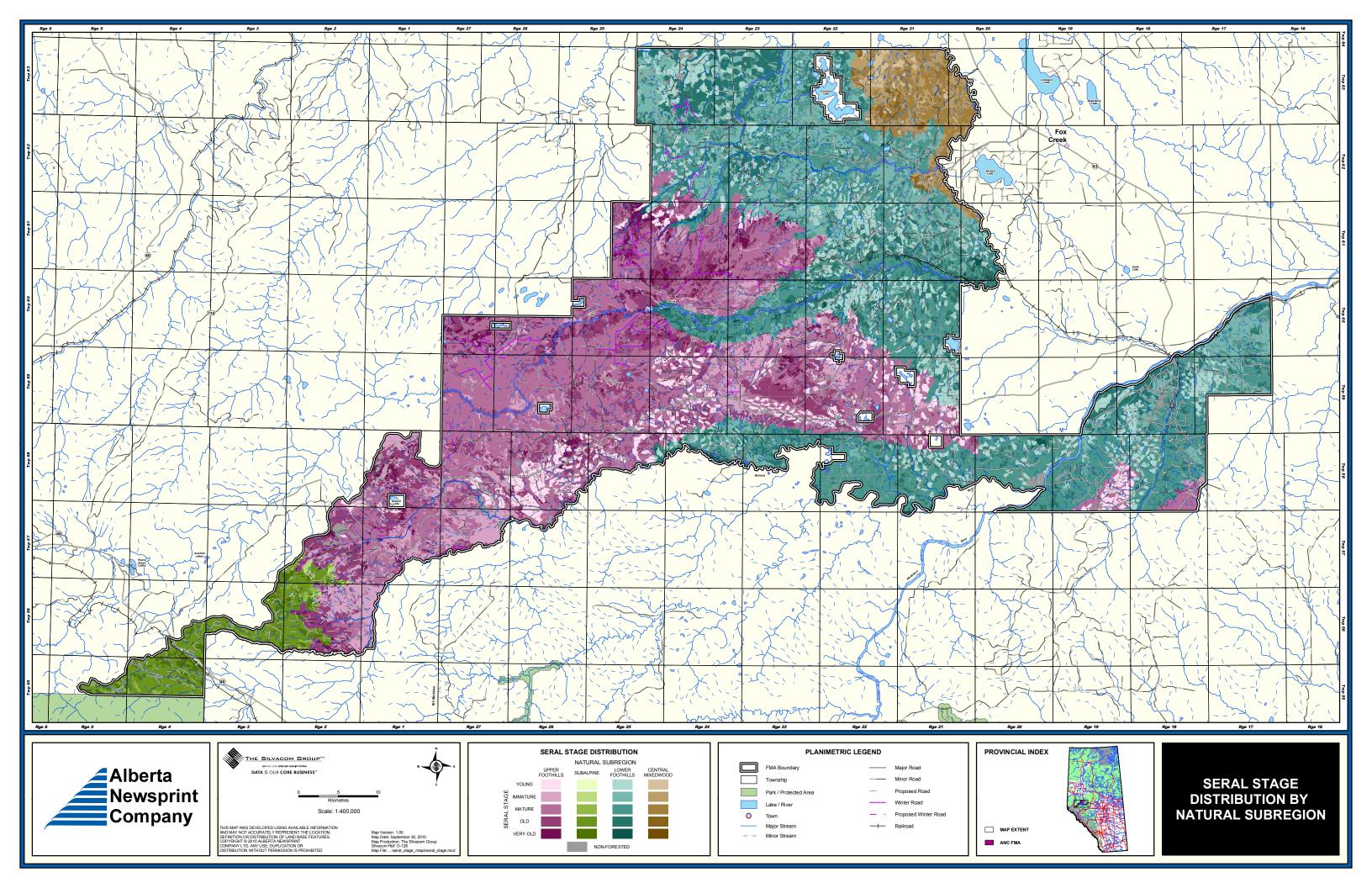






FIGURE 2-9: GROSS FORESTED AREA BY SERAL STAGE AND NATURAL SUBREGION





### 2.3.4.5 FOREST PATCHES

The Alberta Forest Management Planning Standard (version 4.1, April, 2006) defines a forest patch as "a stand of forest in the same seral stage and not split by a linear feature greater than 8 meters wide". Linear features in this definition include roads, pipelines, power lines, and rivers, but do not include seismic lines. The seral stages used are the same as was defined in Table 2-7 and the patch classes used are defined according the course filter biodiversity assessment. The patch class are outlined in Table 2-8 below.

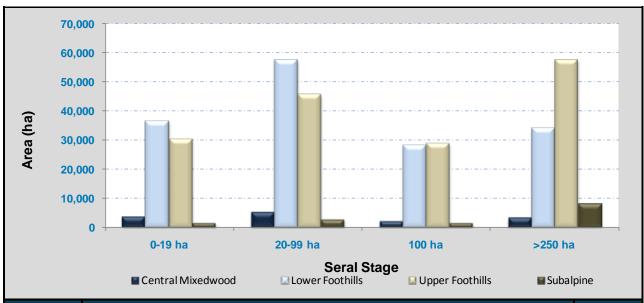
**TABLE 2-8: PATCH SIZE CLASSES** 

PATCH CLASS	AREA RANGE
1	0-19 ha
2	20-99 ha
3	100-250 ha
4	>250 ha

The current patches distribution across the gross forested area is summarized in Figure 2-10 and illustrated in Map 2-11.

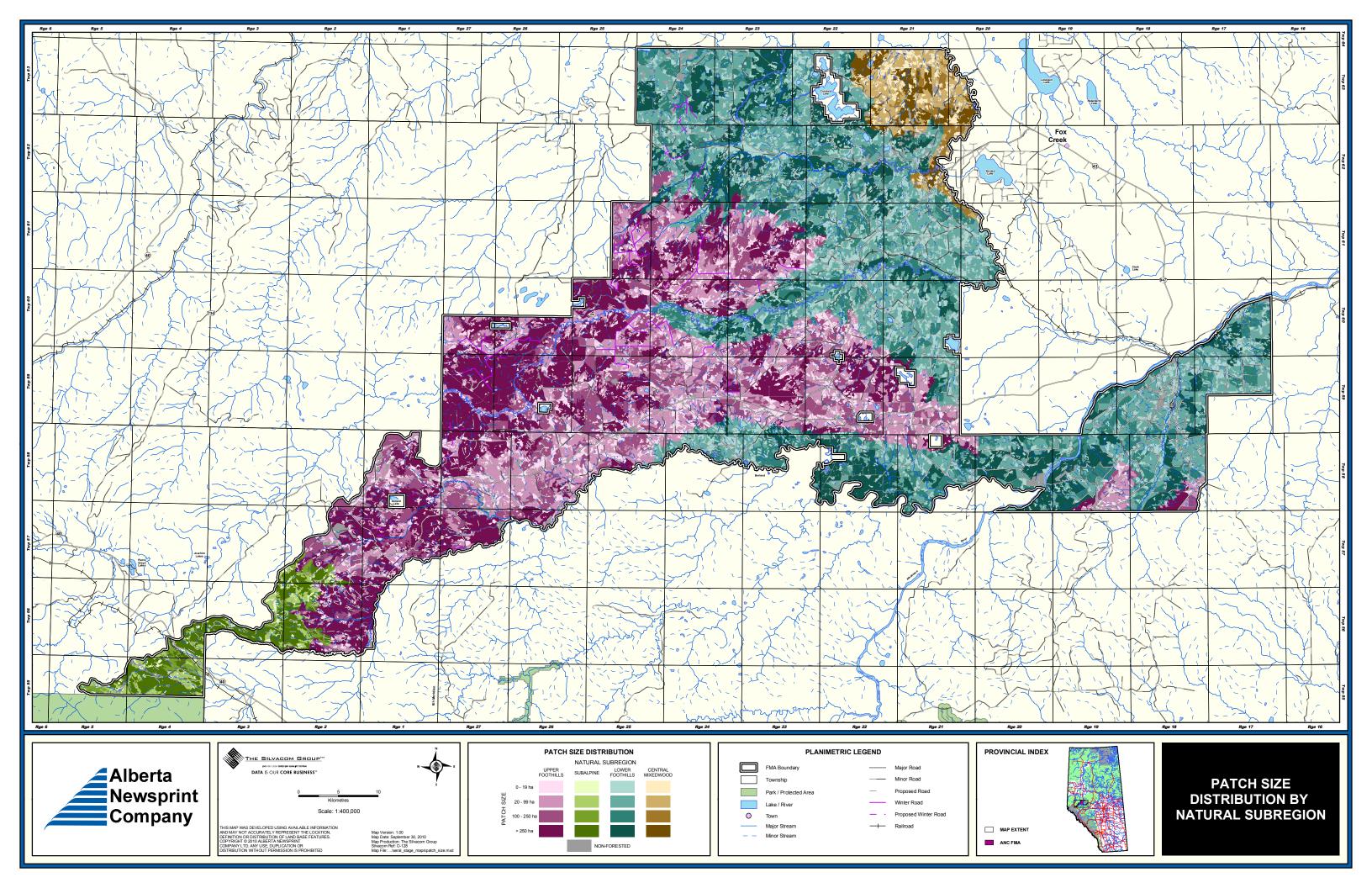


FIGURE 2-10: GROSS FORESTED AREA BY PATCH SIZE CLASS AND NATURAL SUBREGION



NATURAL SUBREGION									
PATCH	Central Mixedwoods		Lower Foothills		Upper Foothills		Sub-Alpine		TOTAL
CLASS	Area (ha)	% of NSR Forested Area	Area (ha)	% of NSR Forested Area	Area (ha)	% of NSR Forested Area	Area (ha)	% of NSR Forested Area	Area (ha)
0-19 ha	3,709	25%	36,683	23%	30,551	19%	1,650	12%	72,594
20-99 ha	5,285	36%	57,650	37%	45,773	28%	2,760	19%	111,468
100-250 ha	2,273	16%	28,469	18%	29,035	18%	1,585	11%	61,362
>250 ha	3,291	23%	34,334	22%	57,672	35%	8,245	58%	103,543
TOTAL	14,558	100%	157,137	100%	163,032	100%	14,240	100%	348,967







### 2.3.4.6 INTERIOR FOREST

According to the *Alberta Forest Management Planning Standard (version 4.1, April, 2006)* interior forest is defined as "a forested area greater than 100 hectares in size located beyond edge effect buffer zone along forest edge". The interior forest area builds on the results from the patch size analysis in Section 2.3.4.5. The procedure used for defining forest edge and edge effect buffers was consistent with information received on non-timber assessments, as provided by SRD. Forest edges are defined as either a linear disturbance in forest cover greater than 8m in width or the line along with which seral stage class changes. The buffer associated with the edge effect is based on the adjacent stand types and is outlined in Table 2-9.

**TABLE 2-9: EDGE EFFECT BUFFER ZONES** 

STAND AGE (YEARS)	BUFFER
Non- Forested	60 m
< 40	60 m
40-79	30 m
≥80	0 m

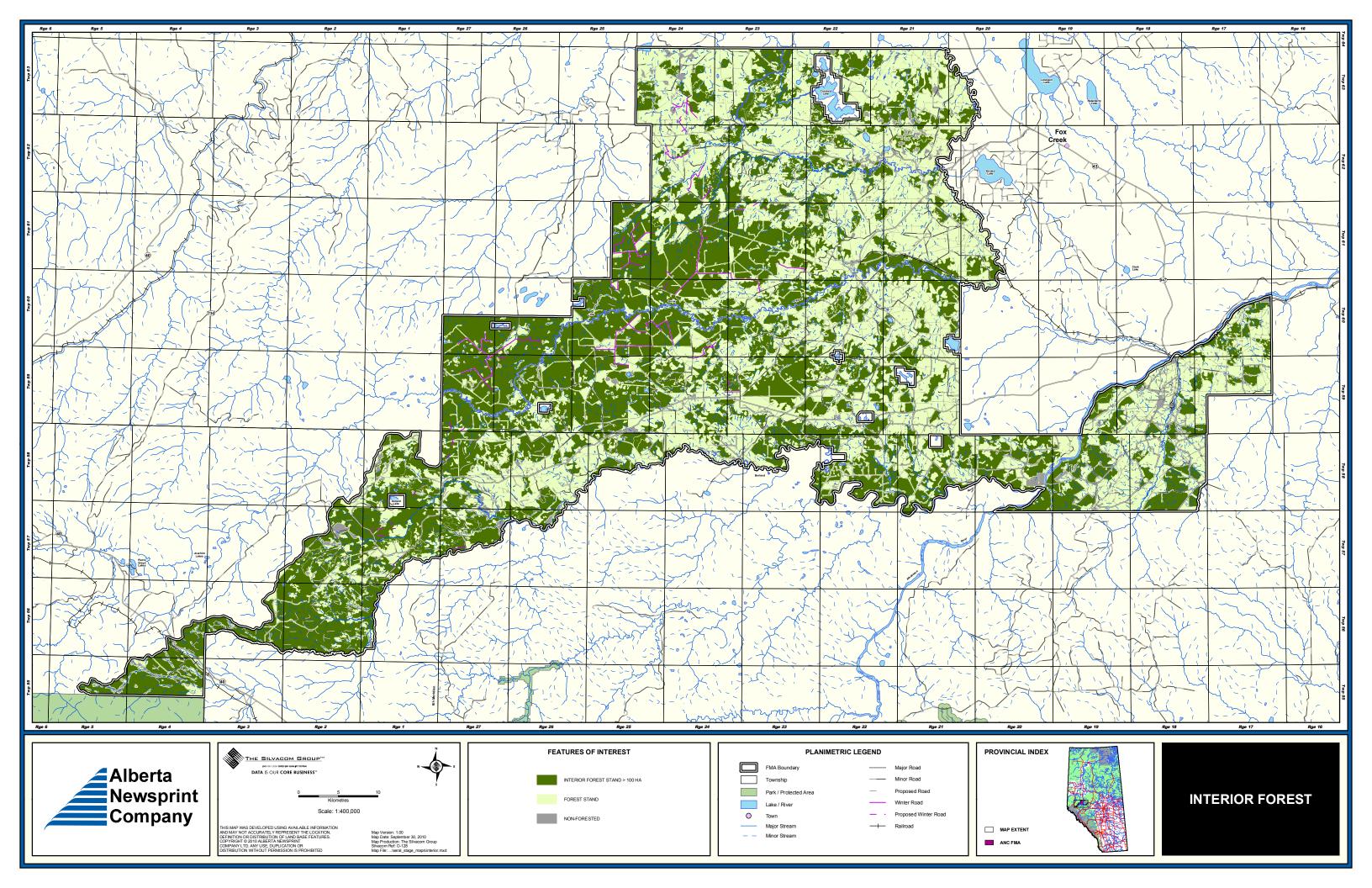
The current interior forest within the gross forested area is summarized in Figure 2-11 and displayed in Map 2-12.



FIGURE 2-11: INTERIOR FOREST AREA BY SERAL STAGE AND NATURAL SUBREGION



	NATURAL SUBREGION										
SERAL		Central Mixedwoods		Lower Foothills U		Upper Foothills		Sub-Alpine		TOTAL	
STAGE	Interior Forest Area (ha)	% of NSR Forested Area	Interior Forest Area (ha)	% of Gross Forest Area							
Young	145	1%	1,965	1%	1,072	1%	0	0%	3,182	1%	
Immature	746	5%	8,947	6%	8,109	5%	301	2%	18,103	5%	
Mature	2,309	16%	26,521	17%	52,885	32%	576	4%	82,292	24%	
Old	492	3%	12,674	8%	24,183	15%	7,895	55%	45,245	13%	
Very Old	0	0%	882	1%	6,568	4%	2,459	17%	9,909	3%	
Total	3,693	25%	50,989	32%	92,817	57%	11,231	79%	158,731	45%	



### 2.3.4.7 STANDING RESIDUAL STRUCTURE

The following table provides a summary of the several categories of potential residual structure that exist within the net landbase. Once an area is harvested, the residual structure is likely to come from one of these pools. The average stems per hectare for each category were calculated using TSP data.

TABLE 2-10: RESIDUAL STRUCTURE SOURCES BY CATEGORY AND YIELD STRATA

YIELD	YIELD	RESIDUAL	RESIDUAL STRUCTURE CATEGORY (STEMS/HA)					
CURVE NUMBER	STRATA	Poplar and Birch	Dead Conifer	Dead Deciduous	Small Trees (< 13 cm DBH)			
1	C-P-AB-GM	19	134	5	641	800		
2	C-P-AB-F	9	183	6	1,315	1,514		
3	C-P-CD-GM	47	137	2	438	624		
4	C-P-CD-F	1	156	0	876	1,033		
5	C-SW-AB	34	75	3	284	396		
6	C-SW-CD	44	76	4	229	353		
7	C-SB	25	114	4	681	824		
8	CD-P	132	57	8	272	469		
9	CD-S	104	38	8	346	497		
10	DC-P	280	56	31	320	687		
11	DC-S	230	81	29	548	888		
12	D-G	341	10	35	141	527		
13	D-MF	319	32	54	379	783		

### 2.3.5 FOREST LANDSCAPE DISTURBANCE AND SUCCESSION

## 2.3.5.1 INHERENT DISTURBANCE REGIME (PROVIDED BY SRD)

Please refer to Appendix C.

## 2.3.5.2 INSECTS AND DISEASES

In Canada, insects and diseases can account for more lost timber than that caused by forest fires (Hall and Moody 1994). All forests have endemic insects and diseases that limit tree growth, cause abnormal growth, weaken and even kill trees. Currently, the general strategy taken by ANC is to ensure that fibre lost to insects and disease is reduced as much as possible while at the same time not reducing the rates of insect and disease occurrence below those rates necessary to ensure other natural processes are not disrupted.

The following insects and diseases should be noted, as they are known to have a significant impact on forests in Alberta (Alberta Timber Harvest Planning and Operating Ground Rules 1994):





- Dwarf mistletoe (Arceuthobium americanum, Nutt. ex Englmn.);
- Spruce beetle (Dendroctonus rufipennis, Kirby);
- Mountain pine beetle (*Dendroctonus ponderosae*, Hopk.);
- Spruce budworm (Choristoneura fumiferana, Clem);

Other insects and diseases are noted to be of importance on ANC's DFA:

- Armillaria (*Armillaria* spp.)
- Blister rust (Cronartium comandrae)
- Western gall rust (Endocronartium harknessii).
- Warren root collar weevil (Hylobius warreni)

Table 2-11 provides more implications regarding insects and diseases that may significantly affect commercial tree species on the ANC DFA. Information for this table was taken from the Sustainable Resource Website

(http://www.srd.alberta.ca/BioDiversityStewardship/Forests/ForestHealth/CommonTreeInsectsAndDiseas es/Default.aspx)

**TABLE 2-11: FOREST PESTS WITHIN ANC DFA** 

AGENT	TARGET SPECIES	TARGET SPECIES AGE	DAMAGE CAUSED	HISTORICAL OCCURRENCE	MANAGEMENT IMPLICATIONS
Armillaria Root Disease	All Species But more prevalent in Conifer	All ages but most impact in stands <15 years old	Growth Loss and Mortality caused by tree girding and root rot	Low to Moderate	The fungus spreads by root to root contact and rhizomorphs. The main impact are the reduction of productivity of a site and the stocking levels in plantations possibility to be NSR Status
Blister Rust	Two and three needled Pine spp.	All ages	Malformation, reduced vigour and death of trees and seedlings	Low	Outbreaks of this disease are sporadic, due to variations in the distribution of the alternate host and the periodicity of environmental conditions necessary for infection. The most serious damage has been observed in nurseries and plantations where rapid stem girdling results in high mortality.





AGENT	TARGET SPECIES	TARGET SPECIES AGE	DAMAGE CAUSED	HISTORICAL OCCURRENCE	MANAGEMENT IMPLICATIONS
Dwarf Mistletoe	Pine	Almost all ages	Branch swellings can physically affect wood quality in severe cases trees lose vigor, have reduced growth and may eventually die.	Med	Dwarf mistletoe can affect aesthetic, recreational and economical value of our forests. Although the brooms can be used as nesting sites for birds, the very large brooms may break off, causing hazardous conditions in campground and recreation areas. This disease can spread and cause large-scale tree death.
Spruce Beetle	Spruce Sp.	80+	Mortality of tree after 1 year.	Low	Although somewhat similar to mountain pine beetle, this insect prefers stressed/dying trees to healthy trees. Healthy trees can be attacked and killed once a population built.
Spruce Budworm	Firs', Tamaraks' and Spruces'	All Ages	Growth loss, top kill and mortality caused by defoliation.	Low	If a population of budworm increases significantly salvage operations may be requires.
Mountain Pine Beetle	All Pines	80-120 years	Tree death as a result of girdling by the larvae and the subsequent spread of a blue stain fungi carried by the mature beetle.  Mortality can occur in 1 year.	Low	This insect has the ability to kill a large number of healthy pine trees in a few years. There is a high occurrence of susceptible stands on the ANC FMA. A large outbreak may cause changes to a harvest sequence, increased salvage logging, and increased fire risk.
Western Gall Rust	All Pines	All Ages	Growth loss and possible mortality of young trees.	Low	Main stems infections often result in breakage in wind or snow events, and reduce the value of plantations.
Warren Root Collar Weevil	All pines Spruce, Tamarack and Firs'	All ages, but most damage to tree older than10 years	Mortality in young trees by girdling, and growth loss in older trees.	High	Can kill several seedlings and young trees and is often associated with Armillaria root disease. Few management options are available.



#### Mountain Pine Beetle

Western Canada is currently experiencing the largest Mountain Pine Beetle (MPB) epidemic in history. Although MPB is a naturally occurring insect in BC's forests and southern Alberta, historical forest management practices (fire suppression in particular) have created an uncharacteristically old forest that is more susceptible to MPB attack. Numerous MPB infestations have been confirmed throughout the ANC FMA area, some dating back to the 2005 flight. Following the initial discoveries over the summer of 2006, numerous surveys both within the ANC FMA area and neighbouring FMA areas have been carried out by various agencies with new infestations being identified on a regular basis. ANC is taking a proactive approach to MPB management. In 2007 ANC adopted a pine management strategy (prevention strategy) which

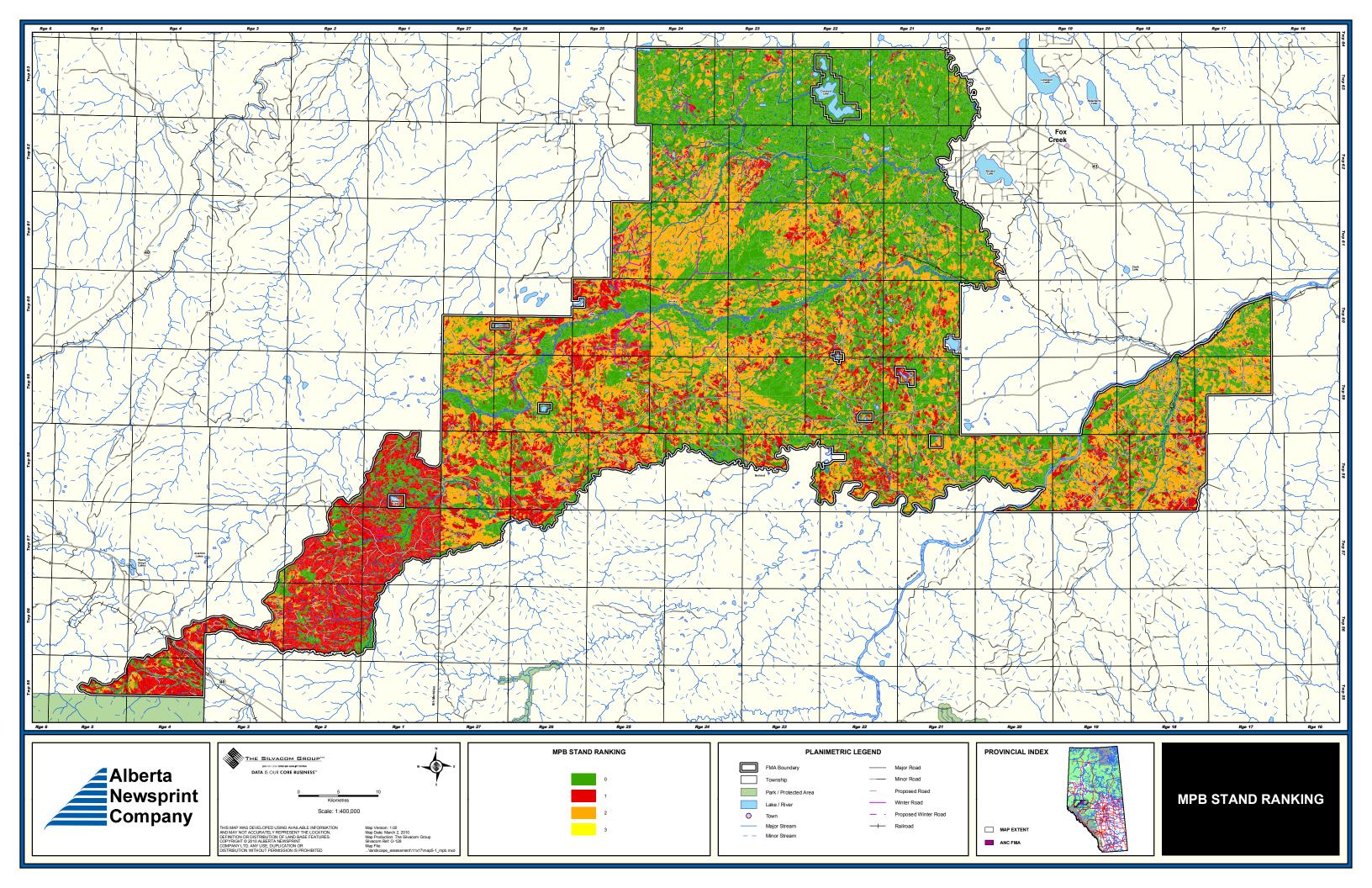
- 1) Results in a revised Preferred Forest Management Strategy (PFMS) from the previous Detailed Forest Management Plan (DFMP) for the ANC FMA;
- Implemented a new spatial harvest sequence (PFMS) with the objective of reducing the FMA susceptibility to MPB attack;

Map 2-13 highlights the 2009 Mountain Pine Beetle Stand Susceptibility Index on the ANC FMA. Ranking was done using the Mountain Pine Beetle Stand Susceptibility Index program (version: Sep 14, 2006) released by Alberta Sustainable Resource Development.

### Other Disturbances

Additional forest disturbances occur on the ANC DFA. Flooding, drought, wind and snow damage occur as a result of localized environmental factors. Forest damage associated with these events is often localized on the landbase. Wind events are often affected by both biotic and abiotic factors. Biotic factors include stand structure, density, age and vigor. Abiotic factors include stand aspect, topography and soil properties. The same is true for snow damage, while flooding and drought are influenced by regional climate factors.





## 2.3.5.3 INVASIVE EXOTIC SPECIES (PROVIDED BY SRD)

Please refer to Appendix D.

## 2.3.5.4 FOREST SUCCESSION TRAJECTORIES (PROVIDED BY SRD)

Please refer to Appendix E.

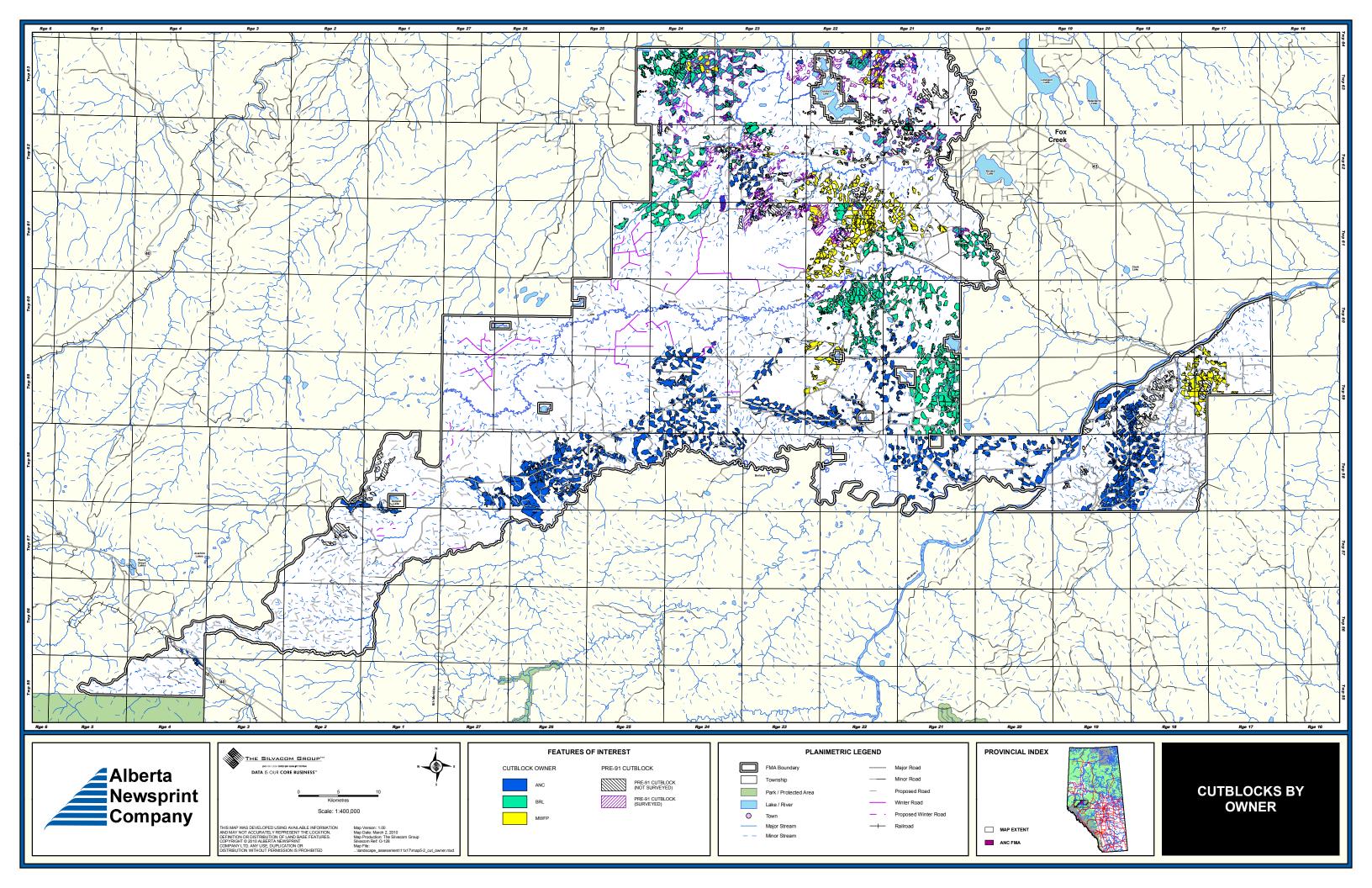
### 2.3.5.5 TIMBER HARVESTING

The total annual allowable cut for the Alberta Newsprint FMA is approved at 1,170,001 m³ of conifer volume and 97,500 m³ of deciduous volume. In addition to ANC, Blue Ridge Lumber and Millar Western Forest Products operate on the ANC landbase. Map 2-14 shows the distribution of cutblocks across the DFA by owner. As of 2009, 47,933 ha have been harvested from the landbase. Table 2-12 shows the cutblock area by owner.

## **TABLE 2-12 CUTBLOCK AREA BY OWNER**

ERA	OWNER	AREA (HA)
PRE – 1991	N/A	14,962
POST – 1991	Alberta Newsprint Company (ANC)	16,872
	Blue Ridge Lumber (BRL)	10,071
	Millar Western Fox Creek (MWFC)	2,793
	Millar Western Whitecourt (MWWC)	3,235
TOTAL		47,933



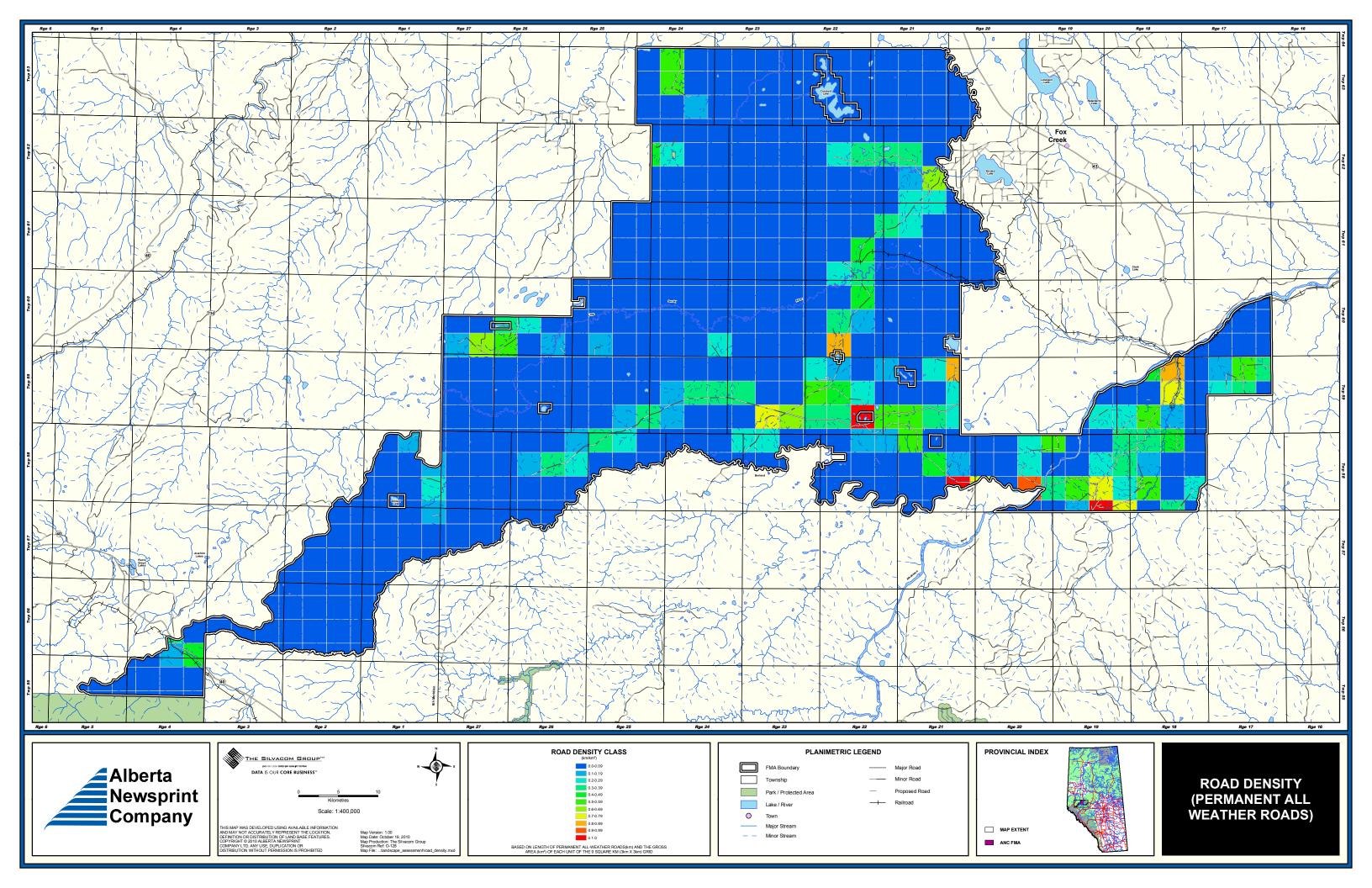




### 2.3.5.6 FOREST INDUSTRY ACCESS

There is an extensive road system in ANC's DFA, created and utilized by industrial operations for primarily timber harvesting and oil and gas activities. Other users include sand and gravel operators, trappers and recreational users.

Road density was measured using a 9 square km grid (3km by 3km) overlayed on the DFA to determine the kilometres of permanent all-weather roads (as tracked by ANC) per square kilometre of gross area. The overall road density for the gross area is 0.088 km/km², derived from the ratio of 334.53 km of permanent all-weather roads to the gross area of 3,783.97 km². The specific road density for each 9km² measurement unit is illustrated on Map 2-15.

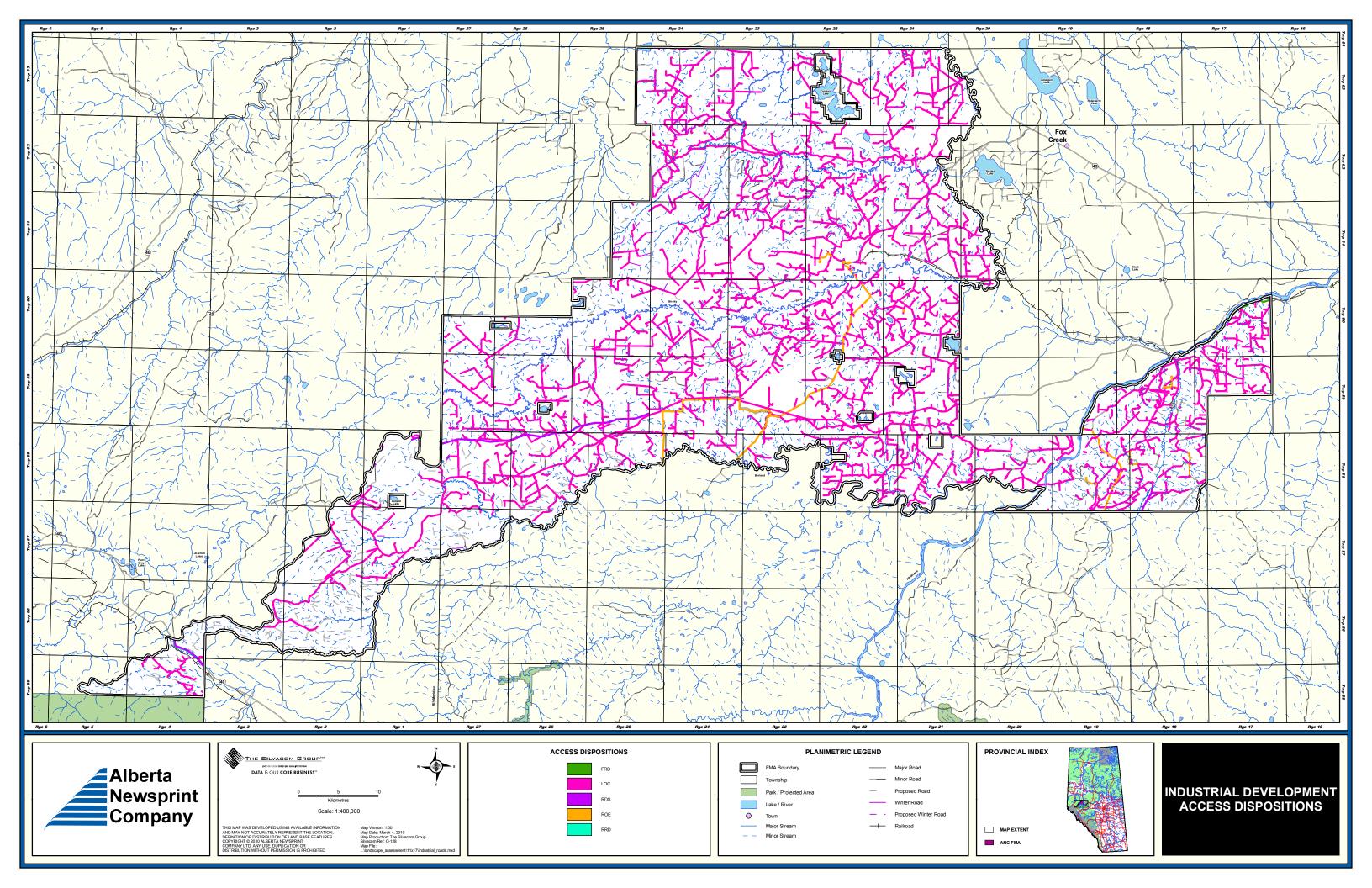


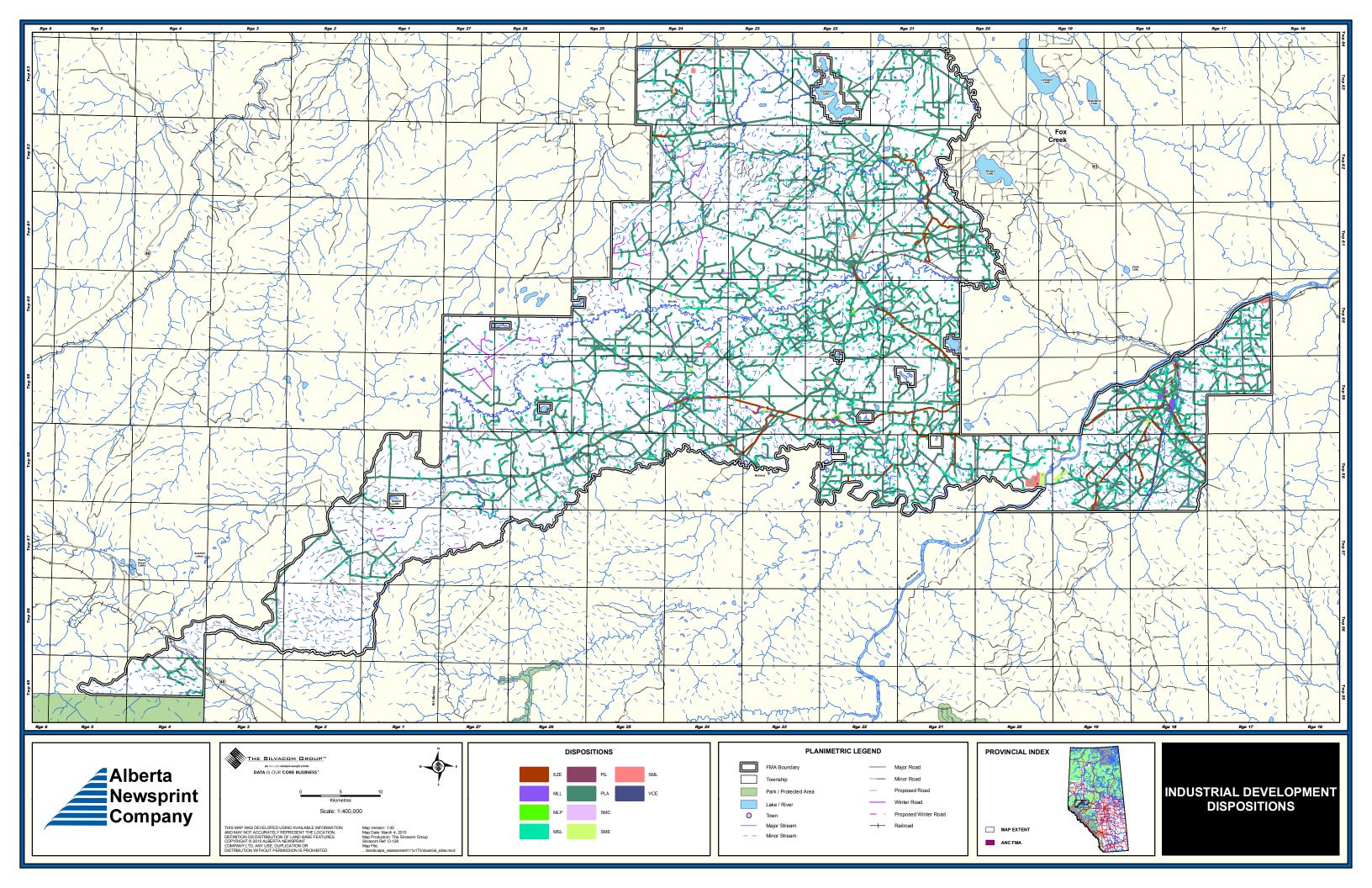


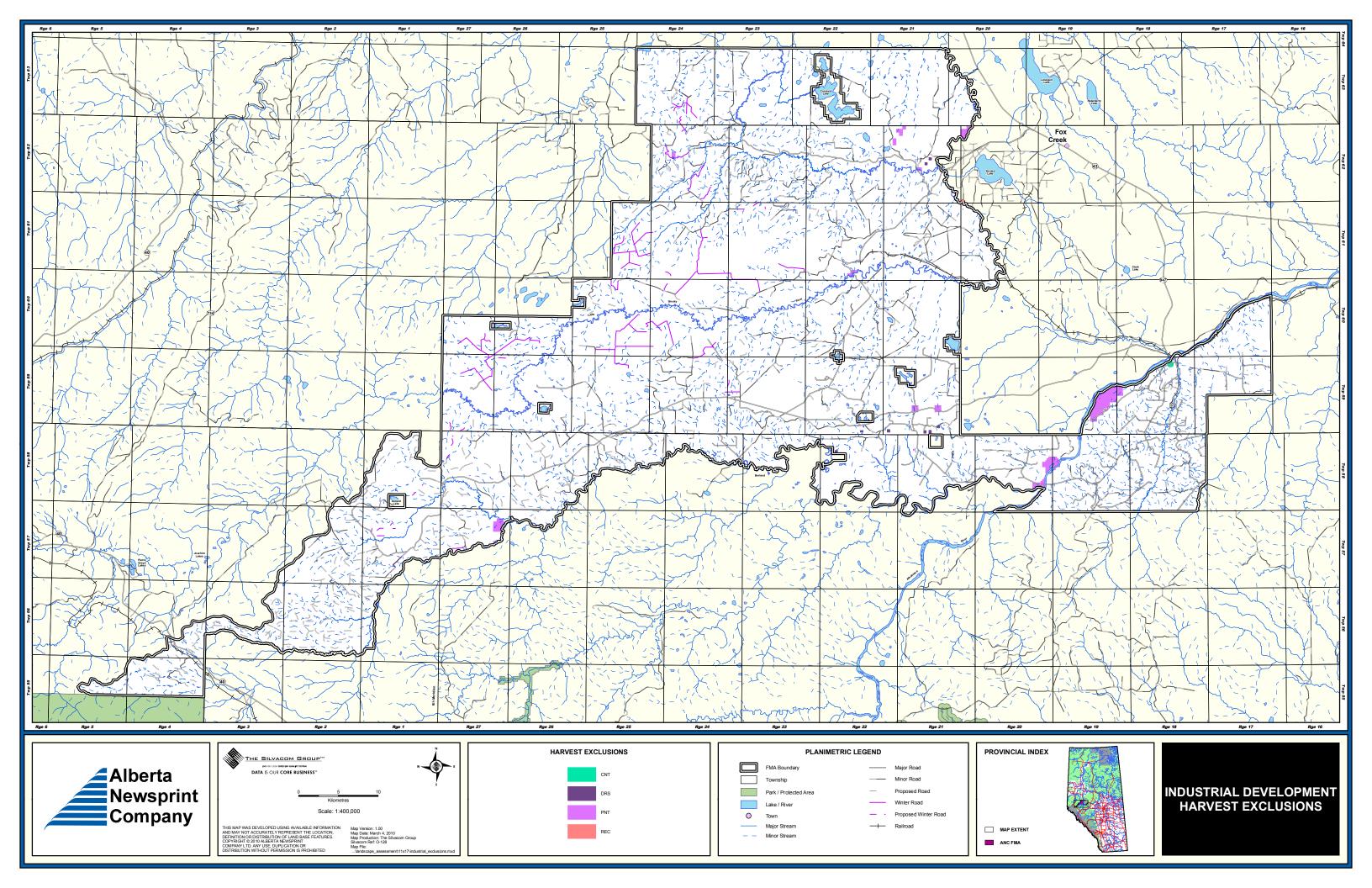
## 2.3.5.7 INDUSTRIAL DEVELOPMENT

On ANC's DFA there are many non-timber industrial users of the landscape. Map 2-16 to Map 2-18 show the dispositions on the DFA. Dispositions are mainly owned by energy companies, forestry companies as well as sand and gravel operators. Information was obtained from the Government of Alberta LSAS.









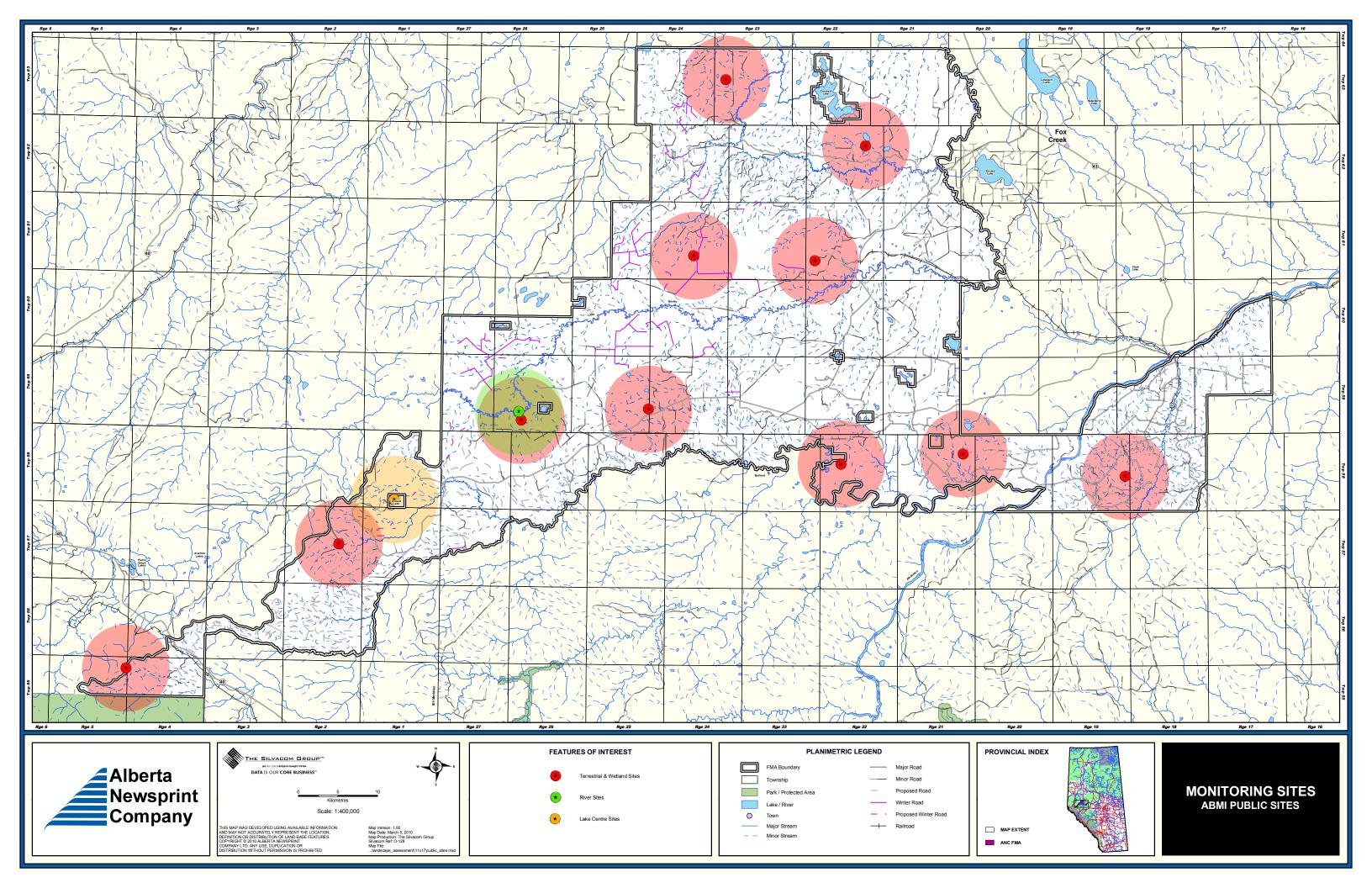


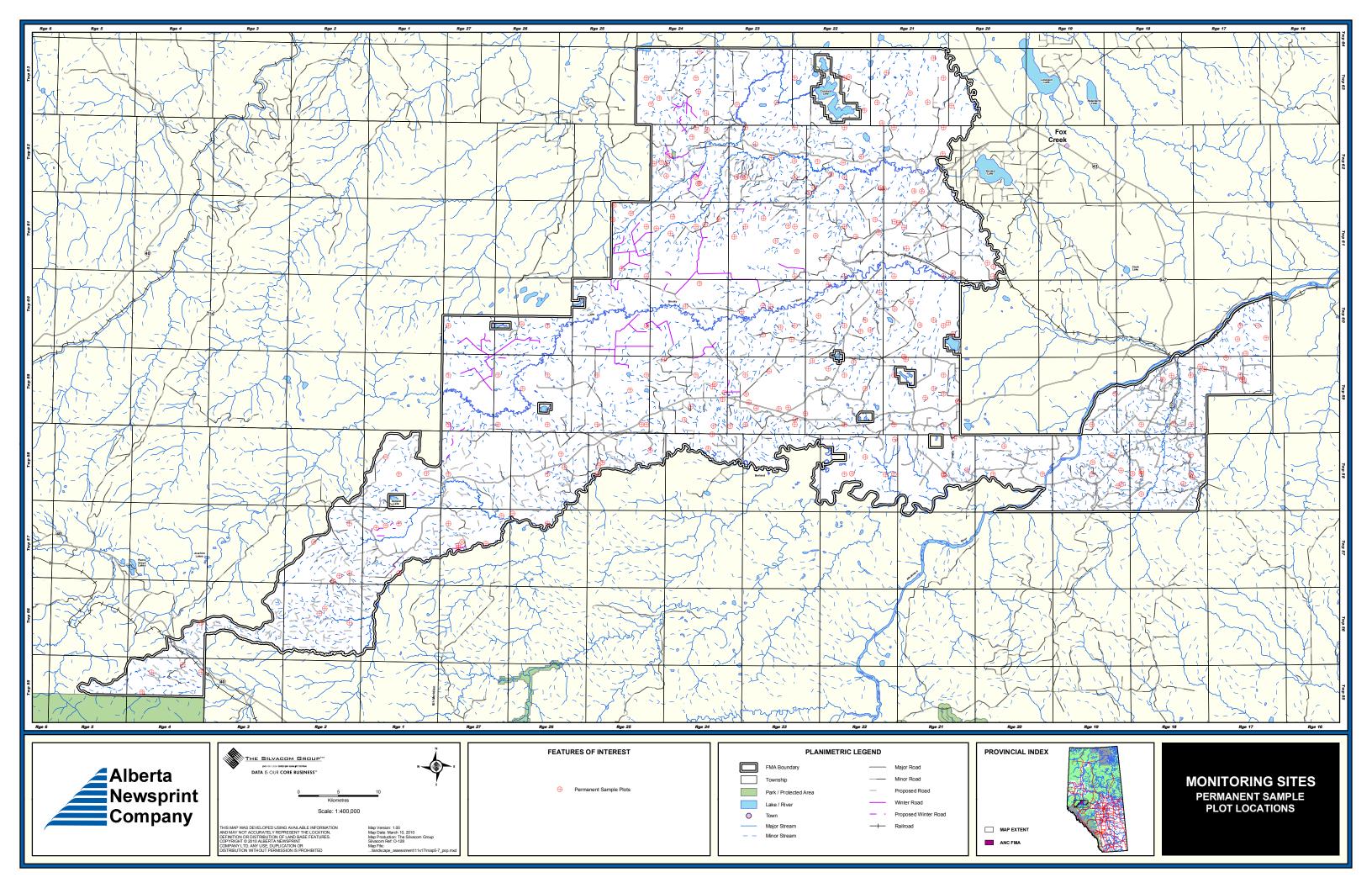
### 2.3.5.8 MONITORING SITES

Different monitoring sites have been set up on the DFA, Alberta Biodiversity Monitoring Institute (ABMI) has set up three different types of sites within the DFA, terrestrial and wetland sites, river sites and lake center sites. The precise geographic location of ABMI monitoring sites is confidential. Points are within a 5.5km radius of the given location. Map 2-19 displays the given location along with a 5.5 km (or 95 km²) buffer to indicate the possible location. Information about these public sites was obtained from the ABMI website (http://www.abmi.ca/abmi/home/home.jsp)

ANC has also set up and monitors permanent sample plots (PSPs) across the DFA. PSPs are used to acquire a better understanding of stand dynamics as well as growth and yield. Measurements are taken of the same trees and stand characteristics, such as vegetative cover, at periodic intervals. The locations of ANC's PSPs are displayed in Map 2-20.







## 2.3.6 LANDSCAPE FIRE ASSESSMENT (PROVIDED BY SRD)

Please refer to Appendix F.

### 2.3.7 LANDUSE

### 2.3.7.1 TIMBER

Commercial timber harvesting began in the area in the 1950s and since then the timber resources have provided many direct and indirect benefits to the surrounding communities and Alberta as a whole. As mentioned earlier in this document, Alberta Newsprint has a Forest Management Agreement (FMA # 8900026) with Alberta, enabling it to establish, grow and harvest timber within the agreement area (DFA). Additionally, Millar Western Forest Products and Blue Ridge Lumber also operate on the DFA under the authority of quotas. Section 2.3.5.5 provides more information regarding timber harvesting that has taken place on the DFA.

### 2.3.7.2 TRAPPING

There are 28 Registered Fur Management Areas (RFMA) located within the ANC's DFA. Map 2-21 shows the RFMA locations. An RFMA provides a qualified person with the authority to trap and harvest furs on his/her leased land. The RFMA boundaries were obtained from the Government of Alberta via AltaLIS.

### 2.3.7.3 **GRAZING**

There are no Grazing dispositions on ANC's DFA.

### 2.3.7.4 OIL AND GAS INDUSTRY

There are large oil and gas reserves present within and around the DFA and as result there are numerous oil and gas companies operating in the area. The level of activity (and the necessary infrastructure that goes along with it) has increased consistently along with the economic value of these resources over the past few years. Refer back to section 2.3.5.7 and Map 2-17 and Map 2-18 for more details on industrial development on the ANC DFA.

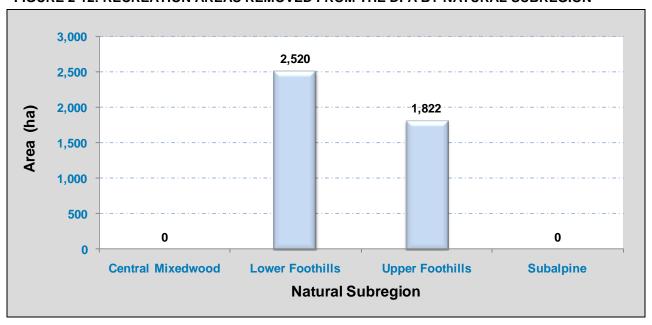
#### 2.3.7.5 RECREATION

Within ANC's DFA there is a wide variety of recreational opportunities. The primary activities are: wildlife viewing, hunting, random camping, riding of all-terrain vehicles, snowmobiling, horseback riding, cross-country skiing and hiking. The area also has numerous rivers, streams and lakes that offer fishing opportunities. Within the outermost DFA boundary, there are 4,342 ha of exclusions that have been removed from the FMA primarily for recreation/conservation purposes.

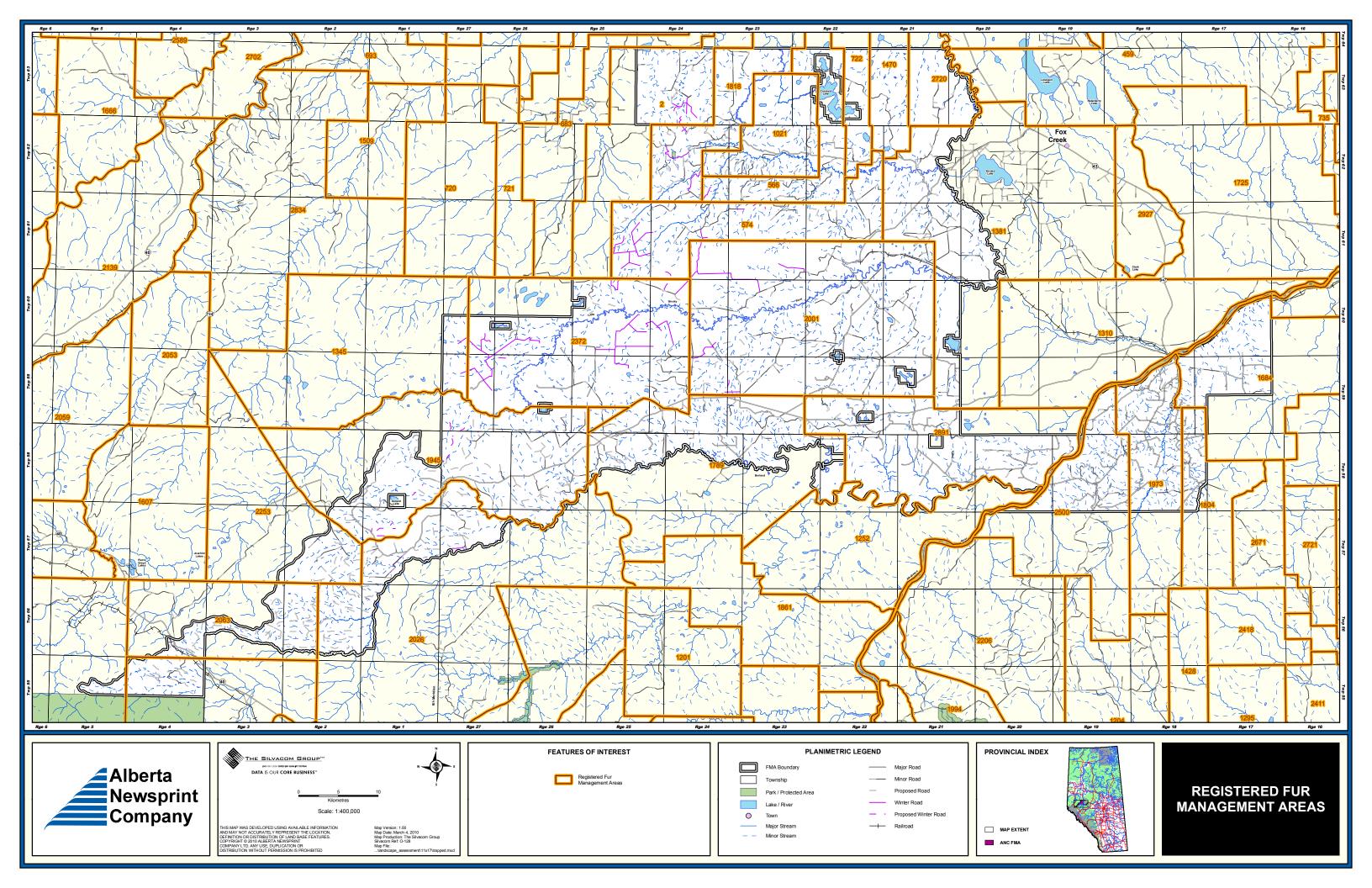


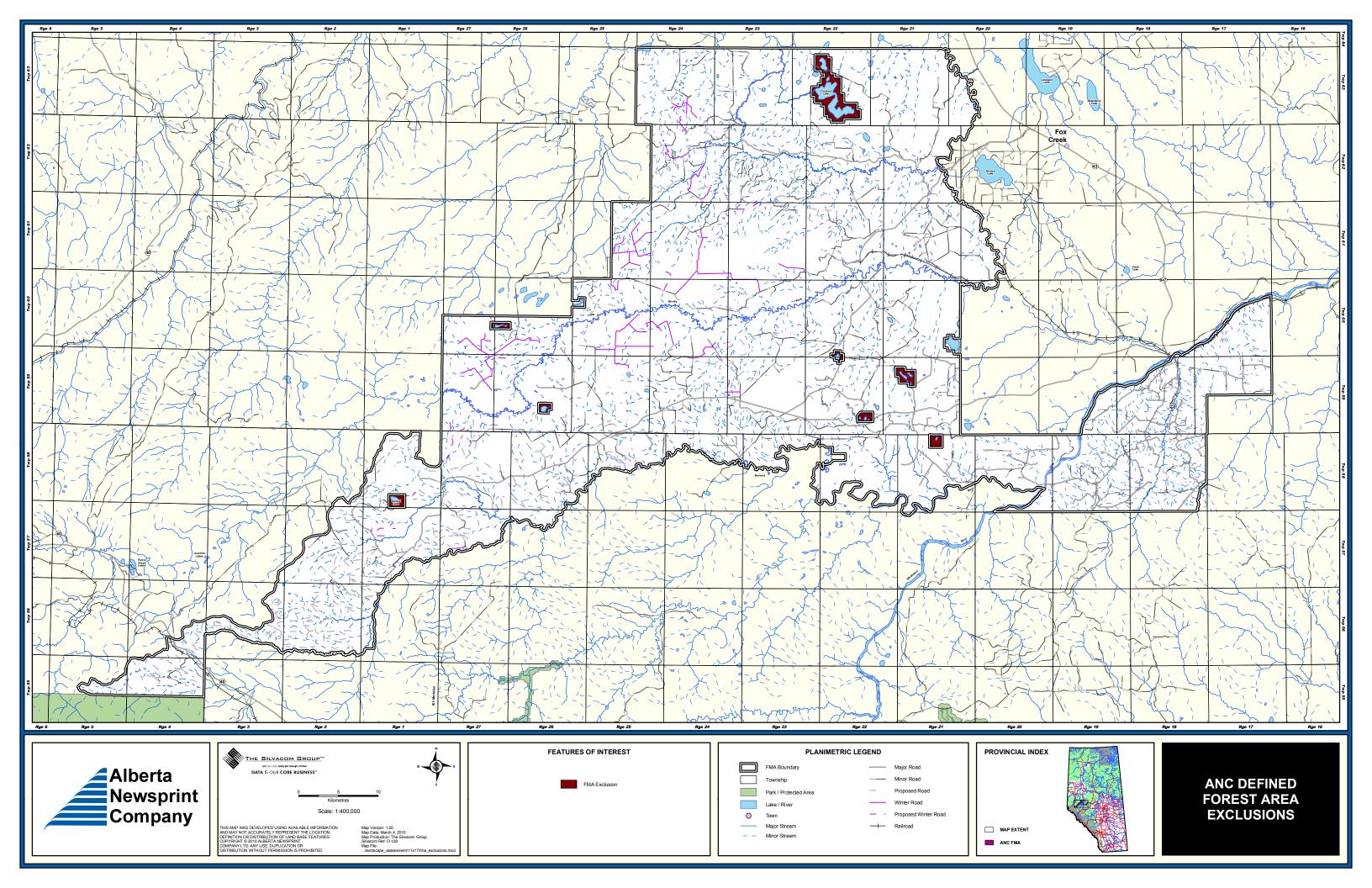
Figure 2-12 summarizes the exclusions by natural subregion and Map 2-22 displays their locations. Additionally, there is one recreation disposition that has not been excluded from the DFA. It is located in township 62, range 20, west of the 5<sup>th</sup>meridian, and its position is displayed in Map 2-18.

### FIGURE 2-12: RECREATION AREAS REMOVED FROM THE DFA BY NATURAL SUBREGION











### 2.3.7.6 TOURISM

Tourism within and around the DFA is closely tied to the many recreational opportunities available in the area (refer to section 2.3.7.5 for description of recreation area on the DFA). The majority of tourists are likely to come from the surrounding communities of Whitecourt, Fox Creek and Valleyview, as well as from more major urban centers such as Edmonton or Grand Prairie.

### 2.3.7.7 OUTFITTING

Outfitting rights are managed according to Wildlife Management Unit (WMU). There are 5 WMUs that overlap with the ANC DFA, including Deep Valley (WMU 353), Marsh Head (WMU 347), Shiningbank (WMU 346), Berland (WMU 352), and Adams Creek (WMU 440). According to the Alberta Professional Outfitter Society (APOS), a total of 25 registered outfitters have rights within the WMUs listed above. The primary species of interest for hunting on the DFA include black bear, mule deer, white-tailed deer, moose, and elk.

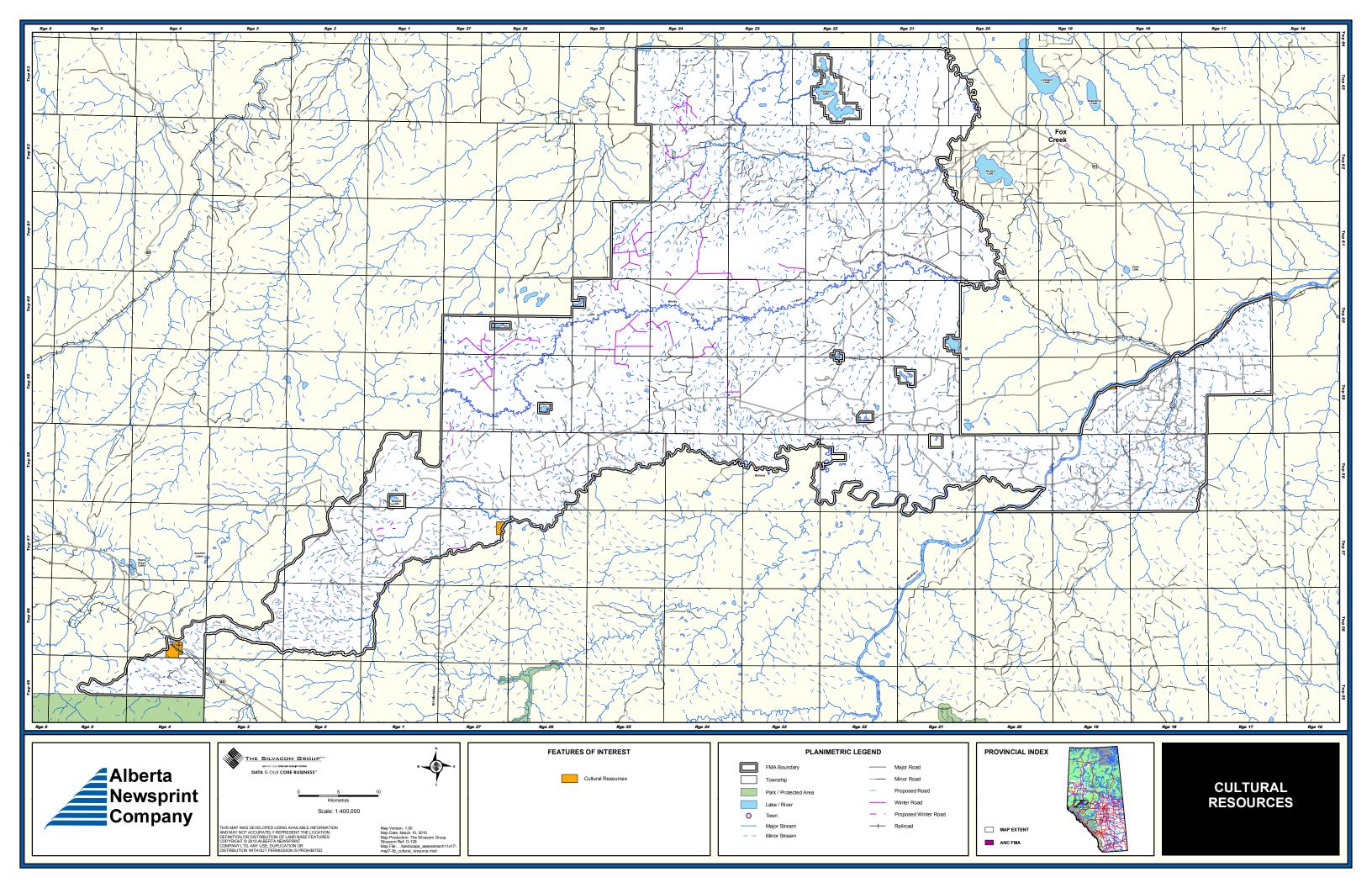
### 2.3.7.8 CULTURAL RESOURCES

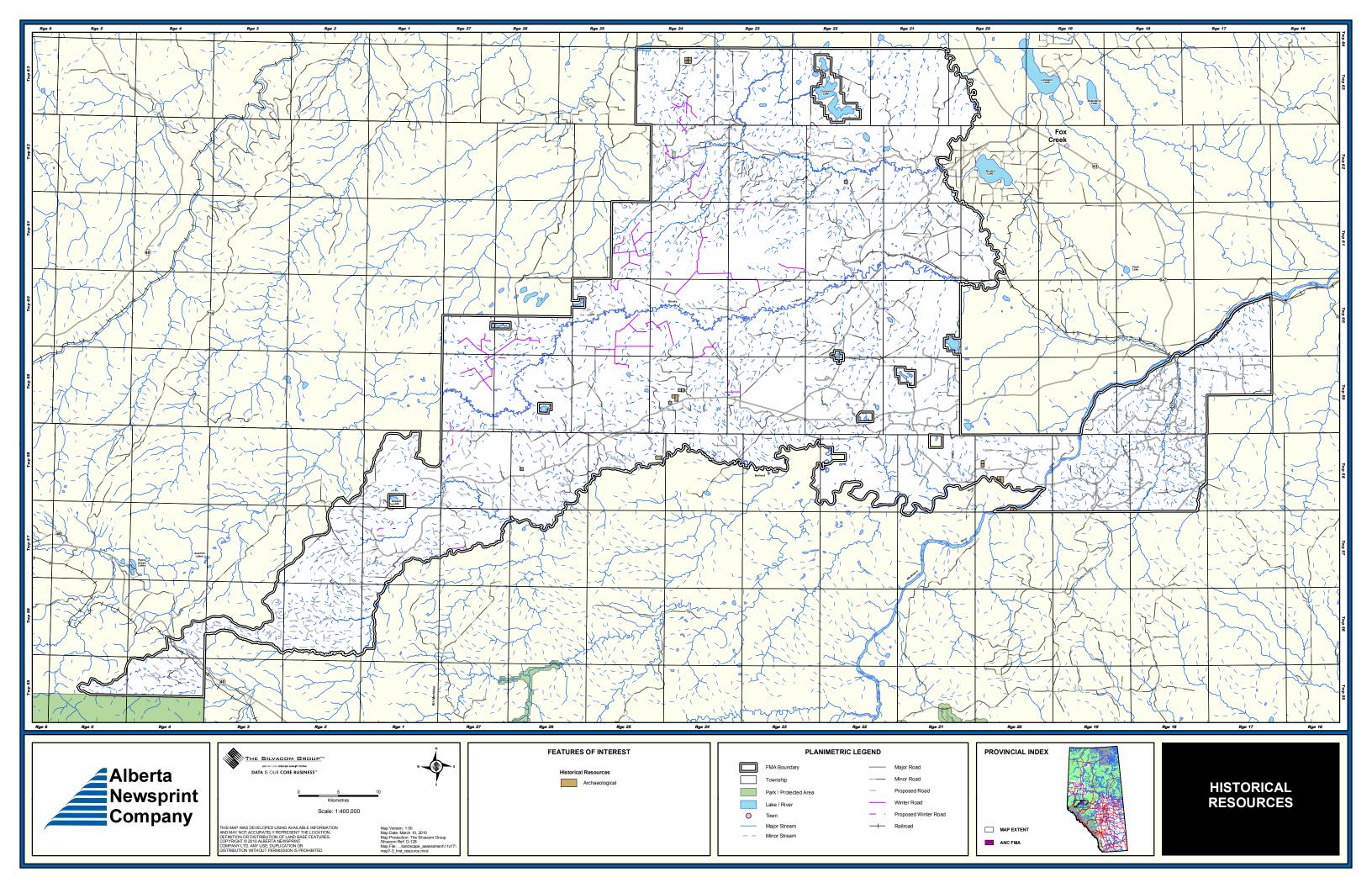
The listing of cultural resources located within the DFA was provided in the Listing of Significant Historic Sites and Areas that is a component of the Historic Resource Act. The listing identifies lands that contain or are believed to contain cultural resources. Map 2-23 shows the location of cultural resources within the DFA. Information was made available by Alberta Tourism Parks and Recreation via the Alberta Government Historic Resource Management web site (http://culture.alberta.ca/heritage/resourcemanagement/default.aspx).

### 2.3.7.9 HISTORICAL RESOURCES

As with cultural resources, the listing of historical resources is provided by the Alberta Government. The listing identifies lands that contain or are believed to contain historical resources. These areas are highlighted on Map 2-24. Information was obtained from the same source as the cultural resources, as listed above.







### 2.3.7.10 VISUAL RESOURCES

A visual inventory was completed for the main travel corridors that are in and around the DFA. An inventory was completed for areas that can be viewed from highway 40, highway 43 and secondary highway 947. Map 2-25 shows the results of this assessment.

### 2.3.7.11 FISH AND WILDLIFE RESOURCES (PROVIDED BY SRD)

Please refer to Appendix G.

### 2.3.7.12 GOVERNMENT

This section covers a variety of levels of government including Municipal, Counties, Federal, Indian Reservations and Provincial.

### Municipal

The Municipal District (M.D.) of Greenview overlaps ANC's DFA. Map 2-3 shows the location of M.D. of Greenview.

### **Counties**

There are small portions of Yellowhead County and Woodlands County that overlap with ANC's defined forest management area. Map 2-3 shows these two counties within the ANC DFA.

### Federal

There are no Federal Lands within the ANC DFA.

### Indian Reservations

There are no Indian reservations within ANC's DFA. However, Alexander reserve (I.R. 134) is located just east of the DFA boundary.

#### **Provincial**

There are two provincial roads that run through ANC's defined forest area: primary highway 40 and secondary highway 947. Their location can be observed in Map 2-1.

### 2.3.7.13 PROTECTED AREAS AND PARKS

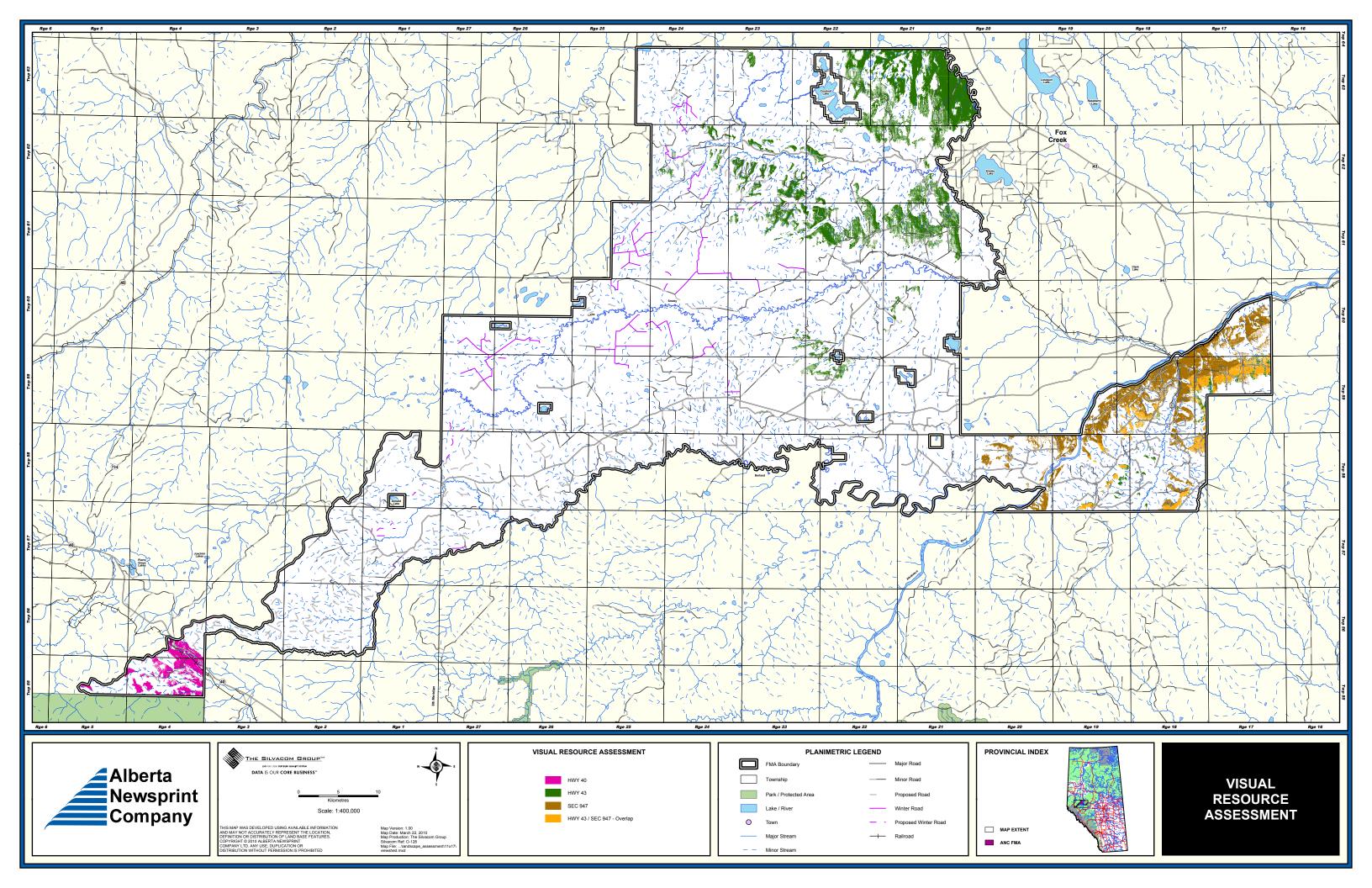
As previously mentioned, there are no official provincial parks that overlap with ANC's DFA. The Upper Waskahigan Falls protected area is located within the DFA in township 62 and range 24. Its location can





be observed in Map 2-1. Additionally, there are dispositions that identified where harvesting is excluded (refer back to Map 2-18).









SECTION 3

# PREVIOUS FOREST MANAGEMENT PLAN AND MANAGEMENT OUTCOMES





# 3 PREVIOUS FOREST MANAGEMENT PLAN AND MANAGEMENT OUTCOMES

At the time of writing this DFMP, ANC Timber was operating under the direction of the 1999 Detailed Forest Management Plan (Revised October 2002) which was approved on March 25, 2002. An amendment to that DFMP was submitted to Alberta on February 5, 2007. The amendment was approved on March 30, 2007.

The implementation of the Goals and Objectives defined in that DFMP and subsequent amendment critically depended on the strategies to be used by ANC for governing their activities on the landbase. The commitments documented in the 1999 DFMP came from a variety of sources. All of those strategies and commitments were organized according to the Goals that were defined.

As stated in the 1999 DFMP ANC remains committed to the use of sound, progressive forest management strategies to ensure a long-term wood supply required by the mill and the health of the lands under the Company's care. Extensive forest inventory and planning activities have been carried out since the signing of the Forest Management Agreement. All plans receive thorough review by regulatory agencies prior to implementation. Alberta Newsprint is fundamentally committed to integrating harvesting and reforestation activities with other significant resource values. Public involvement is sought during the development of all major plans. Key areas of potential concern, such as wildlife habitat maintenance, receive special study and funding by ANC to identify successful long-term options. ANC Timber is fully committed to an adaptive management approach.

To that end it is important to maintain continuity and connection between DFMP's through time. The following section lists the commitments made in section 5 of the 1999 DFMP, described as "Strategies" and provides a report on the current status of those commitments. The status reporting is brief in nature. More detail is available as required.





# 3.1 1999 DFMP GOAL 1 - CONSERVATION OF BIOLOGICAL DIVERSITY

### 3.1.1 FOREST STRUCTURE

### 3.1.1.1 AGE-CLASS DISTRIBUTION

### 1999 DFMP Strategy:

ANC will evaluate factors associated with modeling that are creating this bimodal age class distribution. Included in the evaluation will be TSA modeling approach, spatial data used for the TSA modeling, TSA policy constraints, and adopted forest management strategies.

### **Current Status:**

Subsequent to the development of the 1999 DFMP significant concern arose within Alberta around the potential infestation of Alberta's forest by Mountain Pine Beetle. The situation that unfolded in British Columbia created awareness that there was a legitimate possibility that a MPB infestation in Alberta would lead to dramatic losses of vast areas of pine forest. Because of those concerns ANC Timber Ltd. worked with Alberta Sustainable Resource Development on a revision to the 1999 DFMP. This revision was submitted to ASRD in February of 2007 and approved in March of that same year. The emphasis of that revision was an increase in Annual Allowable Cut (almost doubled) and a resequencing of harvesting into predominantly pine stands that were the most likely susceptible to Mountain Pine Beetle attack. As a result of the revision and refocusing of attention minimal action was taken on understanding the bimodal age class distribution the resulted from the 1999 harvest sequence.

### 1999 DFMP Strategy:

ANC will evaluate the effects of alteration of the proposed harvesting sequence on the future age class structure.

### **Current Status:**

There was minimal action on this strategy due to the MPB DFMP amendment.

### 1999 DFMP Strategy:

ANC will compare results from the FMF Modeling program with the bimodal distribution of the future forest structure to establish the deviation of the predicted structure from the natural range of variability.

### **Current Status:**

There was minimal action on this strategy due to the MPB DFMP amendment.

### 1999 DFMP Strategy:

Predicted age class structure created by following the proposed harvest sequence will be compared to the potential range of age class structures predicted for the FMA area assuming only natural disturbance events occur. If future age class structure created following the proposed harvest sequence does not lie within the limits of natural variation, then harvest simulations will be changed. This analysis is being done through the FMF and will be completed within 2 years of approval of this DFMP.

### **Current Status:**

Although there was minimal action on this strategy due to the MPB DFMP amendment ANC Timber worked through the Foothills Research Institute on the development of a model (Neptune) that is designed to allow the comparison of a given proposed harvest sequence against a suite of metrics related to natural disturbance outcomes.



### **DETAILED FOREST MANAGEMENT PLAN**

#### 3.1.1.2 FRAGMENTATION AND CONNECTEDNESS

### 1999 DFMP Strategy:

Through participation in the FMF Natural Disturbance Program, ANC will compare the levels of connectedness and fragmentation of the predicted future forest with levels of fragmentation and connectedness of the naturally disturbed forest. Adjustments will be made to proposed activities should these analyses determine that connectedness and fragmentation levels of the predicted forest vary from the potential range of natural patterns.

### **Current Status:**

Although there was minimal action on this strategy due to the MPB DFMP amendment ANC Timber worked through the Foothills Research Institute on the development of a model (Neptune) that is designed to allow the comparison of a given proposed harvest sequence against a suite of metrics related to natural disturbance outcomes.

### 1999 DFMP Strategy:

ANC will report annually the status of the Natural Disturbance Program as well as the status of required changes to current operating practices.

### **Current Status:**

Annual reports submitted by ANC Timber Ltd. indicate the continual commitment to the Natural Disturbance Program through the 1999 DFMP period.

### 3.1.2 TERRESTRIAL WILDLIFE BIODIVERSITY

### 3.1.2.1 HABITAT TYPE 1 - DECIDUOUS FOREST COMMUNITY

### 1999 DFMP Strategy:

ANC will begin to model cover group transitions caused by succession for the next DFMP.

### **Current Status:**

ANC Timber worked with several other companies on an Alternate Regeneration Standard (ARS). As part of that work was funded to modify and improve models that are intended to predict future forest yields including the potential for cover group transitions through stand development.

### 1999 DFMP Strategy:

ANC will evaluate the effect of alteration of the proposed harvesting sequence on the amount of deciduous habitat before the next DFMP.

### **Current Status:**

There was minimal action on this strategy due to the MPB DFMP amendment.

### 3.1.2.2 HABITAT TYPE 2 – YOUNG BURNT FOREST/NATURALLY DISTURBED FOREST COMMUNITY

### 1999 DFMP Strategy:

ANC will mimic natural disturbances with harvesting operations through such practices as stand-level structure retention practices to maintain some of the ecological values of burns in young harvested stands using dead deciduous, dead coniferous, un-merchantable trees and understory trees. These practices will be clearly defined in Operating Ground Rules to be developed with approval of the DFMP.

### **Current Status:**

ANC Timber's current ground rules define stand level structure retention practices employed by the Company.



### **DETAILED FOREST MANAGEMENT PLAN**

### 1999 DFMP Strategy:

ANC will learn more about the dynamics of the natural disturbance patterns and associated forest cover type alterations within the FMA area and integrate that new knowledge into the next DFMP.

### **Current Status:**

ANC continues to participate in the Forest Research Institutes Natural Disturbance Program. The mandate of that program is to gain new knowledge that will be of use in understanding natural disturbance processes and adjusting management practices accordingly.

### 1999 DFMP Strategy:

ANC will explore opportunities on a site-by-site basis for leaving some young burns unsalvaged.

### **Current Status:**

74.4 Hectares out of a total of 114.2 hectares (65%) within fire # DW1-009-94, the only fire of appreciable size since the writing of the 1999 DFMP, was left un-salvaged

### 3.1.2.3 HABITAT TYPE 3—POST-ROTATION FOREST COMMUNITY

### 1999 DFMP Strategy:

ANC will model and integrate the short- and long-term dynamics of post-rotation habitat for the next DFMP.

### **Current Status:**

The 2010 DFMP will address future forest condition to the satisfaction of Alberta Sustainable Resource Development.

### 1999 DFMP Strategy:

ANC will work with FWITC to develop ecologically meaningful and quantifiable targets for the appropriate amount of post-rotation forest prior to the development of the next DFMP.

### **Current Status:**

After approval of the 1999 DFMP FWITC was disbanded agreeably by ANC Timber and ASRD.

### 3.1.2.4 HABITAT TYPE 4—RIPARIAN AREAS

### 1999 DFMP Strategy:

The suitability of (an avoidance approach to managing riparian areas) will be examined prior to writing of the next DFMP, as it is recognized that a simple avoidance strategy could result in the creation of unacceptable future forest conditions the riparian areas.

### **Current Status:**

The 2010 DFMP will address future forest condition to the satisfaction of Alberta Sustainable Resource Development.

### 1999 DFMP Strategy:

Suitable operating guidelines will be developed as part of ANC's Operating Ground Rules.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 3.1.2.5 HABITAT TYPE 5 – THERMAL COVER

### 1999 DFMP Strategy:

ANC will develop ecologically meaningful and quantifiable targets for the appropriate amount of thermal cover needed.



### **DETAILED FOREST MANAGEMENT PLAN**

#### **Current Status:**

There was minimal action on this strategy due to the MPB DFMP amendment.

### 1999 DFMP Strategy:

ANC will evaluate the effects of alteration of the proposed harvesting sequence on the amount of thermal cover available in 100 years.

#### **Current Status:**

There was minimal action on this strategy due to the MPB DFMP amendment.

### 3.1.2.6 HABITAT TYPE 6 - RESIDUAL FOREST STRUCTURE

### 1999 DFMP Strategy:

As a general operational procedure, some trees will be left unharvested within cutblocks. A variety of tree sizes may be left with recognition that large trees are valuable for wildlife habitat. Trees that are crooked and heavily branched will be preferably left. Depending on block size and shape, a variety of clumps of more than three trees may be left. Clumps will be left in areas that have a steep slope, excessive moisture, or natural openings. Known nesting areas will be candidates for creating clumps, as well as patches of nonmerchantable vegetation and snags, provided worker or public safety isn't compromised.

#### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will work with FWITC on developing rules governing which types of residual forest structure are indices to this habitat type.

### 1999 DFMP Strategy:

ANC will design and employ harvest strategies that optimize the leaving of stand residual structure.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will continue working toward developing ecologically meaningful and quantifiable targets for the appropriate amount of residual structure needed. In the interim, an average of 32% of the landbase within the four SYUs will not be scheduled for harvest within the 180 year planning horizon.

### **Current Status:**

An average of 32% of the landbase within each of the four SYUs was scheduled for harvest within the 180 year planning horizon. In addition Operating Ground Rules were developed that are intended to ensure actual harvest adheres, within tolerances, to the modeled Spatial Harvest Sequence.

### 1999 DFMP Strategy:

ANC will leave coarse woody debris on the site following harvest in amounts that, at minimum, reflect pre harvest condition. Steps will not be taken to drastically reduce the amount of course woody debris remaining after harvest unless absolutely necessary for reforestation purposes. This woody debris may be in the form of downed material or as standing snags.

### **Current Status:**

Operating Ground Rules were developed that are intended to ensure adequate amounts of down woody debris are left after harvesting and reforestation is complete.





ANC will remove snags from areas within 50 m of all roads or landings for safety and fire protection purposes.

### **Current Status:**

Operating Ground Rules were developed to ensure appropriate harvesting techniques are employed relative to safety and fire protection objectives.

### 3.1.2.7 HABITAT TYPE 7—CARIBOU HABITAT

### 1999 DFMP Strategy:

ANC will develop species group succession transition models which affect shifts between species groups and available caribou habitat.

#### **Current Status:**

In lieu of this approach ANC Timber worked with other forest products companies and several Oil and Gas Companies on the creation of the Caribou Landscape Management Association (CLMA). The name of the CLMA was subsequently changed to the Foothills Land Management Forum (FLMF). The mandate of the FLMF is to work with ASRD on the development of management approaches suited to the maintenance and enhancement of Caribou habitat within west central Alberta.

### 1999 DFMP Strategy:

ANC will continue to participate in the West Central Standing Committee on Caribou (WCSCC) for as long as that Committee feels it relevant.

### **Current Status:**

ANC maintained participation in the West Central Standing Committee on Caribou through their Alberta Forest Products Association representative.

### 1999 DFMP Strategy:

ANC will continue to do research work on the habitat needs of caribou within the FMA area. The type of research, amount, questions to be answered, etc. will all be influenced by current discussions within the WCSCC and financial capabilities of ANC Timber.

### **Current Status:**

ANC Timber worked with other forest products companies and several Oil and Gas Companies on the creation of the Caribou Landscape Management Association (CLMA). The name of the CLMA was subsequently changed to the Foothills Land Management Forum (FLMF). The CLMA and FLMF have worked with ASRD and independently on several research initiatives related to Caribou and Caribou habitat protection.

### 1999 DFMP Strategy:

ANC is working with Alberta Sustainable Development on the development of Operating ground Rules for the ANC FMA for operations within the caribou ranges. These Ground Rules will follow the intent of the current *Operating Guidelines for Industrial Activity on Caribou Ranges in West Central Alberta* and *Alberta's Woodland Caribou Conservation Strategy* but will be specific to ANC Timber's FMA area.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will ensure that the amount of their open all weather roads will be kept to densities of less than 0.3 km/km<sub>2</sub>.

### **Current Status:**

Density targets were adhered to.



### 3.1.2.8 HABITAT TYPE 8—GRIZZLY BEAR HABITAT

### 1999 DFMP Strategy:

ANC will work with SRD through FWITC to validate the adopted grizzly bear model and adjust or update it as appropriate.

### **Current Status:**

The Forestry Wildlife Integrated Technical Committee (FWITC) was disbanded by mutual agreement. In lieu of that approach ANC Timber continued to contribute financially to the Grizzly Bear Program of the Foothills Research Institute.

### 1999 DFMP Strategy:

ANC will work with FWITC to develop ecologically meaningful and quantifiable targets for

the appropriate amount of habitat needed to meet the life requirements of grizzly bear.

#### **Current Status:**

The Forestry Wildlife Integrated Technical Committee (FWITC) was disbanded by mutual agreement. In lieu of that approach ANC Timber continued to contribute financially to the Grizzly Bear Program of the Foothills Research Institute.

### 1999 DFMP Strategy:

ANC will ensure that the amount of their open all weather roads will be kept to densities of

less than 0.3 km/km2.

### **Current Status:**

Density targets were adhered to.

### 3.1.3 AQUATIC BIODIVERSITY

### 1999 DFMP Strategy:

ANC will work with Alberta Sustainable Resource Development through the Forestry Wildlife Integrated Technical Committee to fill in some of the knowledge gaps with reference to aquatic species.

### **Current Status:**

After approval of the 1999 DFMP FWITC was disbanded agreeably by ANC Timber and ASRD.

### 1999 DFMP Strategy:

ANC Timber will participate in the development of management strategies for aquatic fauna, based on discussions with Alberta Environment through the Forestry Wildlife Integrated Technical Committee (FWITC). Action plans will be developed and reviewed through FWITC.

### **Current Status:**

After approval of the 1999 DFMP FWITC was disbanded agreeably by ANC Timber and ASRD. Operating Ground Rules, some of which are intended to protect aquatic fauna, were negotiated and signed by ASRD in June of 1991.

### 1999 DFMP Strategy:

ANC will continue to protect aquatic fauna through several management initiatives designed to protect soils, streams, and aquatic resources (see Section 5.2).

### **Current Status:**





Operating Ground Rules, some of which are intended to protect aquatic fauna, were negotiated and signed by ASRD and ANC Timber in June of 1991.

### 1999 DFMP Strategy:

ANC will continue monitoring current research (e.g., scientific journals and university research) in these areas and to support new research, if feasible.

#### **Current Status:**

ANC Timber continues to monitor research from a variety of sources.

### 3.1.4 PLANT BIODIVERSITY

### 1999 DFMP Strategy:

ANC harvesting operations will adhere to the Company's operating ground rules that protect rare and endangered plants within the FMA area. These include the use of buffer zones around lakes and wetlands, and the preservation of riparian areas, which are known to have a high potential for harbouring rare plants.

### **Current Status:**

No instances of damaging rare and endangered plants were noted since the 1999 DFMP approval either through company or ASRD monitoring programs.

### 1999 DFMP Strategy:

Adherence to sustainable levels of timber harvest also lends itself to the protection of rare plants. Through this strategy, a diverse representation of stand age and structure will be maintained throughout the FMA area. This will ensure the continued existence of forested habitat that is required by selected rare plant species.

### **Current Status:**

Production records and adherence to the Spatial Harvest Sequence within tolerances support that ANC operated within sustainable levels of harvest consistent with the 1999 DFMP.

### 1999 DFMP Strategy:

The protection of caribou habitat, particularly in the Little Smoky and Foothills SYUs, riparian zone buffering, and inoperable and non-productive stand exclusion from harvesting all will aid in the protection of rare plants.

### **Current Status:**

No instances of damaging rare and endangered plants were noted since the 1999 DFMP approval either through company or ASRD monitoring programs.

### 1999 DFMP Strategy:

In general, sites will be reforested to a similar species makeup as was present prior to harvest. This will be more conducive to maintaining habitat for specific rare and endangered plants.

### **Current Status:**

All harvested sites were reforested within th two year tolerances allowed by legislation.

### 1999 DFMP Strategy:

The locations of known rare and endangered plants within the FMA are listed in Section 2.3.2 These known locations will be buffered by a radius of the average canopy height to a minimum of 2 m in non-treed areas.

### **Current Status:**





Non of the known locations were harvested by ANC Timber.

### 1999 DFMP Strategy:

ANC will train woodlands personnel in the identification of rare plants that are known to occur, and those that are likely to occur within the FMA area. Through this process, personnel conducting PHAs will be able to accurately confirm the presence or absence of rare plants.

### **Current Status:**

ANC Timber woodlands staff are all registered practitioners within Alberta.



# 3.2 1999 DFMP GOAL 2 - MAINTENANCE OF FOREST ECOSYSTEM CONDITION AND PRODUCTIVITY

### 3.2.1 FOREST RENEWAL

### 3.2.1.1 BASIC REFORESTATION

### 1999 DFMP Strategy:

ANC will adhere to Alberta Government Acts and Regulations as they pertain to reforestation activities.

### **Current Status:**

All Acts and Regulations were adhered to.

### 1999 DFMP Strategy:

ANC will negotiate a set of operating ground rules with Alberta Sustainable Resource Development that ensure adequate measures are taken to protect soil productive capacity thereby ensuring site productivity is not reduced.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will report all reforestation activities as required under current policy.

#### **Current Status:**

ARIS submissions were provided to ASRD annually.

### 1999 DFMP Strategy:

ANC will negotiate the format of an annual report on the status of its operations relative to the Ground Rules and then submit that report annually.

#### **Current Status:**

Annual reports were submitted to ASRD for the six operating years between 2002 and 2008.

### 3.2.1.2 ENHANCED REFORESTATION

### 1999 DFMP Strategy:

ANC will continue with a genetics and tree improvement program by participating in the Lodgepole Pine Breeding Region BI, White Spruce Breeding Region I, and Black Spruce Breeding Region H.

### **Current Status:**

ANC Timber continued to participate in all of the breeding programs listed above.

### 3.2.2 PROTECTING THE FOREST FROM NATURAL DISTURBANCES

### 3.2.2.1 WILDFIRE PREVENTION AND SUPPRESSION

### 1999 DFMP Strategy:

ANC Timber will prepare an annual Emergency Response Plan (ERP) detailing how the above principles will be met. These obligations are established in the Forest Management Agreement and the Fire Control Agreement between ANC Timber and the Alberta government.



### **DETAILED FOREST MANAGEMENT PLAN**

#### **Current Status:**

ERP's were submitted annually as per ANC Timber's Operating Ground Rule requirements.

### **Current Status:**

### 1999 DFMP Strategy:

ANC Timber will maintain all equipment necessary to meet their obligations under the FMA, the Fire Control Agreement, the Annual Emergency Response Plan, in addition to any other commitments made.

### **Current Status:**

All equipment was maintained and inspected as per Company policies.

### 1999 DFMP Strategy:

ANC will ensure that all company woodlands staff, contractor and summer staff have the necessary training to report and effectively take initial action on any fire discovered. Current Status:

ANC Timber woodlands staff are all registered practitioners within Alberta. In addition annual fire training was conducted for appropriate staff and contractor personnel.

### 1999 DFMP Strategy:

ANC will train company staff to recognize fire hazards and to eliminate the hazard promptly.

### **Current Status:**

ANC Timber woodlands staff are all registered practitioners within Alberta. In addition annual fire training was conducted for appropriate staff.

### 1999 DFMP Strategy:

ANC will ensure that company personnel are equipped or have access to the necessary fire fighting equipment required to take initial action on a fire.

### **Current Status:**

All company personnel were issued equipment as per current Alberta legislated requirements.

### **Current Status:**

### 1999 DFMP Strategy:

ANC will supervise all winter burning sites and ensure that all ground fires are extinguished prior to the commencement of that year's fire season.

#### **Current Status:**

All winter burning was manged under company contract. All burn sites were scanned in the spring for hot spots.

### 1999 DFMP Strategy:

ANC will continue formalized communication of weather and fire hazard information to company field personnel.

### **Current Status:**

Company field staff is kept abreast of current fire condition information by the Woodlands Land Use Coordinator.

### 1999 DFMP Strategy:

ANC will maintain good communications with Alberta's Lands and Forest Service (LFS) to ensure that pre-suppression requirements are being met.





#### **Current Status:**

Company Woodlands Land Use Coordinator routinely communicated with appropriate ASRD staff including the ASRD Industry Liaison officer.

### 1999 DFMP Strategy:

ANC will maintain good communications with commercial stakeholders within the FMA area and with the public who are traveling through the FMA area, in order to convey the importance of fire prevention and reporting.

### **Current Status:**

Among other topics forest fire protection was communicated to the public via open houses, Regional Forest Advisory Committee and various other public communication initiatives.

### 1999 DFMP Strategy:

ANC will continue its annual reporting of the area and severity of fires by forest types. This report will made be available to Alberta Sustainable Development.

### **Current Status:**

All fire reporting requirements were adhered to.

### 3.2.2.2 WILDFIRE HAZARD REDUCTION

### 1999 DFMP Strategy:

ANC Timber will concentrate, rather than diffuse harvesting within the high-risk areas of the FMA area. Certain compartments will have a higher percentage of volume removed (Section 3.1) during the first entry. These compartments will have up to 80% of the merchantable volume removed in the first pass. Several of these compartments will be opened in the next ten years, while the remainder will be opened within the next twenty-year period.

### **Current Status:**

By adhering to the Operating Ground Rules the Spatial Harvest Sequence was adhered to within acceptable tolerances.

### 1999 DFMP Strategy:

In order to facilitate the removal of a higher percentage of volume, individual cutblocks will be larger. These approaches will be considered in the new operating ground rules to be negotiated with Alberta Sustainable Resource Development. Prior to any action being taken with regards to fire control through harvest strategies, the TSA will be consulted to ensure that all assumptions of the TSA are being met.

### **Current Status:**

By adhering to the Operating Ground Rules the Spatial Harvest Sequence was adhered to within acceptable tolerances.

### 1999 DFMP Strategy:

During the compartment design phase, specific high fire risk stands will be identified for early removal. In this way the highest risk stands will be replaced by younger, more fire resistant stand types.

### **Current Status:**

By adhering to the Operating Ground Rules the Spatial Harvest Sequence was adhered to within acceptable tolerances.

### 1999 DFMP Strategy:

ANC will develop a road infrastructure in the western portion of the FMA area. Section 5.3.1 describes how the LTADP will approach access planning and development. The use of a more developed road





network as part of the fire suppression strategy in this portion of the FMA area will also benefit other resource values.

### **Current Status:**

ANC developed a long Term Road Plan for the western portion of the FMA in collaboration with the Foothills Land Management Forum.

### 1999 DFMP Strategy:

ANC will investigate the use of fire as a tool in forest management and will explore this opportunity in future management plans.

### **Current Status:**

At the tiem of writing of this DFMP ANC Timber is working with ASRD staff on the development of a prescribed burn plan in the western portion of the DFMP.

### 1999 DFMP Strategy:

ANC Timber is committed to working with Alberta Land and Forest Service on developing, over the one-year period after approval of the DFMP, a comprehensive strategic approach to "cooling down" the forest through acceptable management activities. These activities may include specific harvesting strategies, road building strategies, and campsite or staging area establishment. This strategy will be contained in a report that will be submitted to Alberta Land and Forest Service.

### **Current Status:**

Although there was minimal direct action on this strategy the MPB DFMP amended spatial harvest sequence has resulted in the sequencing of significantly more area of high fire susceptible stands within the FMA.

### 3.2.2.3 INSECTS AND DISEASE

### 1999 DFMP Strategy:

Priority will be given to harvesting stands with a high incidence of disease or insects, or stands that are most at risk because diseases or insects are known to be present at above normal population levels. Over-mature stands are often the source of pest outbreaks.

### **Current Status:**

In 2002 the entire Spatial Harvest Sequence was adjusted to ensure stands that are most at risk of MPB attack are schedule for harvesting within the ensuing 20 year period.

### 1999 DFMP Strategy:

Harvest designs will minimize the risk of stand degradation and blowdown that might provide a refuge or be the centre for insect infestations or disease.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Harvesting methods will be used that encourage the natural control of pests, including the retention of cutover stands and maintaining minimum coarse woody debris levels where risks of insect and disease outbreaks are considered high.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.





Wherever possible, wildlife and protection buffers will be selected from stands free of disease or insect infestations.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Key ANC Timber staff will be trained in the identification of insects and diseases common to the FMA area.

### **Current Status:**

All ANC Woodlands staff are Registered Forest Practitioners within Alberta.

### 1999 DFMP Strategy:

Insect and Disease information updates will be circulated to all Woodlands staff.

#### **Current Status:**

The Woodlands Landuse Coordinator was responsible for the circulation of Insect and Disease information as appropriate

### 1999 DFMP Strategy:

Reporting of infestations or abnormalities will be made to ANC Timber's Forest Protection Coordinator noting the following: land location or AVI stand number, species affected, area affected (ha), suspected insect or disease type (if known).

### **Current Status:**

The Woodlands Landuse Coordinator was responsible for receiving information on any Insect and Disease abnormalities noted by field staff.

### 1999 DFMP Strategy:

Any areas of infestation seen during fire patrol flights made throughout the summer are to be reported to ANC Timber's Forest Protection Coordinator.

#### **Current Status:**

The Woodlands Landuse Coordinator was responsible for receiving information on any Insect and Disease abnormalities noted by field staff.

### 1999 DFMP Strategy:

If reported findings are judged to be serious, then experts will be consulted as to complete identification and possible control methods (Canadian Forest Service, Alberta Environmental Protection, University of Alberta, etc.).

### **Current Status:**

The Woodlands Landuse Coordinator was responsible for receiving information on any Insect and Disease abnormalities noted by field staff.

### 1999 DFMP Strategy:

ANC Timber will continue to participate in the Regional Integrated Pest Management Committee and share appropriate information with that group.

### **Current Status:**

The Woodlands Landuse Coordinator was ANC Timber's representative on the Regional Integrated Pest Management Committee.





ANC Timber will be supportive of any monitoring protocols developed by the Regional Integrated Pest Management Committee.

### **Current Status:**

The Woodlands Landuse Coordinator was ANC Timber's representative on the Regional Integrated Pest Management Committee.

### 1999 DFMP Strategy:

Areas infested will be described in the annual report.

#### **Current Status:**

Annual Reports were submitted fro years between 2002 and 2008.

### 1999 DFMP Strategy:

Any area treated due to an infestation, will be included in the annual report.

### **Current Status:**

Annual Reports were submitted fro years between 2002 and 2008.

### 1999 DFMP Strategy:

ANC Timber will review and consider, through the NES Integrated Pest Management Committee, a set of programs to further improve our insect and disease control strategy.

### **Current Status:**

The Woodlands Landuse Coordinator was ANC Timber's representative on the Regional Integrated Pest Management Committee.

### 3.2.3 LANDBASE WITHDRAWALS

### 1999 DFMP Strategy:

ANC Timber will keep accurate records of all industrial land withdrawals from its FMA area.

### **Current Status:**

By following company guidelines and Alberta government policy the Woodlands Landuse Coordinator maintains accurate records of all industrial land withdrawals from the FMA area.

### 1999 DFMP Strategy:

ANC Timber will keep accurate spatial and non-spatial records of all of their timber harvesting activities within the FMA area.

### **Current Status:**

All non-spatial harvesting records are maintained and reported to Alberta through the Alberta Governments timber production reporting policies. Spatial records are maintained in the Companies centralized Geographic Information System.

### 1999 DFMP Strategy:

ANC Timber will work with Alberta Sustainable Development on developing an acceptable way to ensure accurate spatial records of all quota holder harvesting activities are kept.

### **Current Status:**

As a result of ANC Timber requesting information regarding the tracking of quota holders harvesting records ASRD has begin the development of a process with that intent.





ANC will track all lands that are converted to non-forest land uses. ANC's Forest Management agreement will form the basis for establishing thresholds for acceptable levels of land withdrawals and the consequences of exceeding those thresholds.

### **Current Status:**

By following company guidelines and Alberta government policy the Woodlands Landuse Coordinator maintains accurate records of all industrial land withdrawals from the FMA area.

### 1999 DFMP Strategy:

ANC Timber will report annually the status of all land withdrawals to Alberta Sustainable Resource Development.

### **Current Status:**

By following company guidelines and Alberta governmet policy the Woodlands Landuse Coordinator maintioans accurate records of all industrial land withdrawals from the FMA area.

### 1999 DFMP Strategy:

Critical to many aspects of forest management including tracking land use activities is the maintenance of an accurate and current vegetation inventory. ANC will maintain an Alberta vegetation inventory (AVI) current to acceptable government standards by following the regular update schedule described in Figure 5.1.

### **Current Status:**

The 2010 DFMP will be submitted with and accurate, up t date AVI inventory.





# 3.3 1999 DFMP GOAL 3 - CONSERVATION OF SOIL AND WATER RESOURCES

### 3.3.1 IMPLEMENTATION OF LTADP

### 1999 DFMP Strategy:

ANC has worked closely with Alberta Sustainable Development and other industrial users of the FMA area in the development of a Long Term Access Development Plan. We will continue this open process as further refinements are made to the LTADP. As with any long term plan, the process is ongoing, because all future needs and conditions cannot be anticipated. Therefore, some flexibility must be inherent in the plan and in the processes that lead to the plan. With the current LTADP, ANC believes that it has created the framework that will address all present and future access issues.

### **Current Status:**

Through the FLMF ANC Timber, in collaboration with other FMA holders and oil and gas companies, has developed a long term access plan for western portions of the FMA. At the time of writing of this DFMP work is ongoing on expanding that plan to include more area and lower order roads.

### 1999 DFMP Strategy:

ANC will ensure that the amount of their open all weather roads will be kept to densities of less than 0.3 km/km².

### **Current Status:**

Road densities have been maintained below threshold amounts.

### 3.3.2 WATER PROTECTION STRATEGIES

### 3.3.2.1 WATER QUALITY

### 1999 DFMP Strategy:

ANC Timber will update the current Timber Harvest Planning and operating ground rules considering the following guiding principles:

- 1. Conditions in water-source areas may differ between sites. Therefore, buffers may be altered according to the potential of the source area within the buffer to produce surface water.
- 2. Harvesting on sustained steep slopes should be carefully considered, as the potential for soil erosion is high. Under these circumstances, consideration should also be given to harvest during the time of year and in manner that will minimize the potential for soil erosion. Detailed cutblock plans should also be prepared for these areas if harvesting is to proceed.
- 3. Timber operators should cooperate to plan and coordinate their reclamation activities when separate harvest operations are conducted on the same cutblocks. Plans should also be developed that would minimize or eliminate wheel or track ruts.
- 4. Improperly decked logs have the potential to cause damage to soils, watercourses or water-source areas. Attention should be given to ensure that logs are properly decked and that decks placed on water-source areas during frozen periods should be removed before the ground thaws.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.



### **DETAILED FOREST MANAGEMENT PLAN**

### 1999 DFMP Strategy:

Several types of hydrological and soils data from within the FMA area were organized in the development of this DFMP. This information includes suspended sediment data (collected for the Water Survey of Canada), tables and maps describing erosion risk levels, and ranks of individual stream-road crossings in terms of sedimentation events. This information will serve to establish a process for assessing the affects of ANC Timber's operations on water quality. ANC Timber will use this information to monitor and assess sedimentation events, particularly at road-stream crossings.

#### **Current Status:**

ANC Timber has worked with the Forest Watershed and Riparian Disturbance (FORWARD) research project to develop knowledge and information on the effects of road construction and timber harvesting on water quality.

### 1999 DFMP Strategy:

In order to protect the watersheds within the FMA area, ANC Timber will ensure that suitable buffers are established around riparian areas during harvesting operations. Details of watershed protection for the purpose of protecting water quality will be developed through the new operating ground rules.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will develop specific targets for water quality in the operating ground rules following the receipt from Alberta Sustainable Resource Development of water quality indices thresholds. This approach will ensure that ANC activities are not likely to cause these indices to exceed acceptable ranges. ANC will first negotiate the format of an annual report on the status of its operations relative to operating ground rules and then submit that report annually.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

As part of their monitoring program, ANC Timber will develop, with FWITC, a point source sampling procedure for streams. This procedure will serve to track any changes in sedimentation levels, and help to identify the causes of those changes.

### **Current Status:**

With mutual agreement between ANC Timber and ASRD FWITC was disbanded. No point sampling procedures were developed.

### 1999 DFMP Strategy:

ANC will ensure that the negotiated operating ground rules identify means for managing key areas for water protection.

#### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will prepare harvest plans, including maps and documentation for each harvest site, which will assist in minimizing negative watershed impacts.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.





ANC will maintain the amount of area currently managed for water protection. Regular AVI updates will be used to track any changes in the amount of area managed for soil and water protection (e.g., buffers, springs, and recharge areas), allowing for management adjustments if any significant negative trends are observed.

#### **Current Status:**

The net landbase determination process for the 2010 DFMP will be used to ensure adequate area is managed specifically for water quantity and quality protection.

### 1999 DFMP Strategy:

An inventory of water crossing densities within the FMA area is provided in Section 2.2.3. This information will be used by ANC to ensure that regulations and procedures are applied to each crossing, and that changes to these sites will be monitored.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991. Within these Ground Rules are commitments to monitor crossing installations.

### 1999 DFMP Strategy:

ANC Timber will adhere to the Guide to the Codes of Practice for Watercourse Crossings (Alberta Sustainable Resource Development).

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC Timber will ensure that all watercourse crossings are monitored for possible damage to crossings due to flooding. High risk watercourse crossing will receive added attention, as these areas are more likely to sustain possible damage, while lower risk crossings will be screened periodically.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991. Within these Ground Rules are commitments to monitor crossing installations.

### 3.3.2.2 WATER QUANTITY

### 1999 DFMP Strategy:

ANC will request data from Alberta Sustainable Resource Development regarding trends in timing of events in stream flows from forest catchments. Operating ground rules will be developed that will ensure ANC activities are not likely to cause these trends to exceed acceptable ranges.

### **Current Status:**

To date no trend data has been received by ASRD. Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

As part of our commitment to protecting the natural trends and timing of events in stream flows, ANC Timber will assess the value of a stream flow model, which can be applied to the FMA area's various catchments. This assessment will allow ANC Timber to select, or develop, a model that is appropriate for the type of operations being conducted within the FMA area.

#### Current Status:

ANC Timber has worked with the Forest Watershed and Riparian Disturbance (FORWARD) research project to develop knowledge and information on the effects of road construction and timber harvesting on water quality.





### 1999 DFMP Strategy:

All cutblocks will be replanted within 2 years following harvesting. This activity will reduce the potential increase in stream flow, as forested sites will retain more water than non-forested cutblocks.

### **Current Status:**

ANC Timber continued to reforest all blocks within two years of harvest.

### 1999 DFMP Strategy:

Through the use of buffers around lakes and rivers, soil erosion will be reduced and ground water retention will be maintained at levels that should not alter stream flows beyond the range of variability that would potentially result from natural processes. Current Status:

Operating Ground Rules were developed that define water course buffer requirements.

### 1999 DFMP Strategy:

ANC Timber will adhere to the company-specific ground rules governing watercourse crossings and operating beside watercourses. By following these guidelines, there will be minimal effects on stream flow, including unrestricted fish passage on fish bearing streams, protection of watercourse banks, and minimization of soil erosion.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC Timber will minimize the amount of permanent all weather roads within the FMA area. Although not directly tied to stream flow, by minimizing all weather roads within the FMA area, ANC Timber will also minimize road-stream crossings and sedimentation events. As a result, the potential impact on stream flow dynamics will be reduced.

### **Current Status:**

The 2010 DFMP will include a summary of road densities which have been maintained below critical threshold densities.

### 1999 DFMP Strategy:

ANC Timber has mapped and described the location and extent of existing surface water within their FMA area (Section 2.2.3), providing the basis for the future assessment of forest management activities on these areas. The amount of surface water will continue to be recorded on an ongoing basis. This will allow ANC Timber to compare current conditions to the past extent and location of water resources. Changes may then be tracked, allowing ANC to make future management decisions to limit any losses in surface water within its FMA area.

### **Current Status:**

At each DFMP renewal the amount of surface water within the FMA area will be mapped and summarized.

### 1999 DFMP Strategy:

ANC will adhere to operating ground rules to be negotiated with Alberta Sustainable Resource Development. These ground rules will ensure that the surface area of water within the FMA area will not be reduced below the range of natural variability as a result of ANC's activities.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.



### **DETAILED FOREST MANAGEMENT PLAN**

### 3.3.3 SOIL PROTECTION

### 1999 DFMP Strategy:

ANC will negotiate a set of operating ground rules with Alberta Sustainable Resource Development that ensure adequate measures are taken to protect soil productive capacity.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Cutblocks will generally be designed to follow natural terrain features and timber type boundaries to minimize the impacts on soil and water resources. Harvest designs will attempt to prevent or mitigate any changes that could reduce the site's capacity to regenerate and grow trees. Any harvesting on steeper slopes (i.e., more than 45 percent) will be done during a time of year and in a manner that will minimize the potential for soil erosion. More detailed cutblock plans will be developed for these types of areas.

#### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991. These Operating Ground Rules direct the design of cutblocks.

### 1999 DFMP Strategy:

Care will be taken during operations to minimize damage to the soil's structure, density, fertility, drainage or porosity particularly during times when it is water saturated. Planning for harvesting, reforestation, and/or reclamation activities will be coordinated between ANC staff and contractors, when operations are occurring in the same cutblock. Furthermore, ANC staff and contractors will be advised that activities causing wheel or track ruts during harvest, reforestation or reclamation operations should be avoided or stopped until conditions improve.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991. These Operating Ground Rules provide direction to field staff and contractors on conditions relative to rutting, soil degradation, etc.

### 1999 DFMP Strategy:

During harvest, logs will be decked in a fashion that minimizes damage to soils, watercourses or water-source areas. Decks located on water-source areas during frozen periods will normally be removed prior to the ground thawing. Furthermore, erosion control structures will be in place prior to decking timber on bared surface areas along road right-of ways.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Existing roads, trails, landings and campsites will be used wherever possible. Where new construction is required, roads, skid trails, landings and campsites will be located and constructed so that soil erosion, damage to streambeds and sedimentation of watercourses is minimized. Roads will generally be constructed during dry weather and using mineral soil and/or gravel materials. Roads, skid trails, landings and campsites will be located where they will avoid identified unstable areas, water-source areas, springs, and seepages. Attempts will be made to follow natural high points, moderate slopes and ridges, avoid steep or constant slopes, and diminish the amount of mineral soil disturbed, compacted or exposed during construction. Disturbance to the duff and organic soil will be minimized to reduce damage to the roots of bordering trees and to provide a protective soil cover whenever materials removed from the road right-of—way are not used for grade construction.

### **Current Status:**





Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

During road construction, the amount of bared surface area will be minimized during the period of time between subgrade construction and completion of erosion control activities. Permanent, all-weather roads will be maintained to reduce wheel or track ruts, and to minimize watercourse sedimentation from erosion and traffic during poor weather. Measures will be taken to ensure that water from roads, ditches and bared soil surfaces does not drain directly into watercourses.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Roads may initially be reclaimed in a way that allows ATV access, depending on erosion potential, reforestation plans, further management requirements (i.e., second pass), wildlife concerns, fire control requirements, trapper or other stakeholder needs, aesthetic concerns and recreation and tourism interests. Where it has been determined that skid trails, landings and roads are no longer required, they will be permanently reclaimed using appropriate methods. Any watercourse crossings, roads, skid trails and landings that have a high risk of soil erosion, will be reclaimed and their condition monitored on a periodic basis until they have stabilized.

#### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Should the capability of the soil to grow trees be reduced by operations, reclamation techniques will be utilized in order to restore site productivity.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Care will be taken to minimize potential damage to the soil's structure, density, fertility, drainage or porosity, particularly during periods when it is water saturated.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### **Current Status:**

### 1999 DFMP Strategy:

If the potential for the site to grow trees is reduced through operations, reclamation techniques will be employed to restore site productivity.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Care will also be taken to ensure that soil, logging debris, or other materials will not be deposited into any watercourse or water body during road construction, harvest, reclamation or reforestation operations.

#### Current Status:

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.





Measures will used to ensure that water from roads, ditches and soil surfaces do not drain directly into water bodies or watercourses. For example, roads, skid trails, landings and campsites could be located and constructed to minimize potential soil erosion, damage to streambeds, and potential sedimentation of watercourses.

#### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Vegetated buffers could be retained or a system of barriers (e.g. logs, rocks, and mounds) assembled to reduce the force of water, where buffers alone do not impede water and soil movement.

#### Current Status:

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Planning for harvesting and reforestation will be coordinated between ANC staff and contractors to minimize soil erosion, soil compaction, and watercourse sedimentation.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

Guidelines developed by the Land and Forest Service and the Alberta Forest Products Association to assist industry and government in the management of temporary roads, decking areas and skid trails, and to illustrate how these operations impact forest soil conditions will be followed. These guidelines are integrated and implemented within ANC's planning and operations.

#### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991.

### 1999 DFMP Strategy:

ANC will continue to monitor literature related to the impact of forestry operations on soil conditions. This will help to identify future trends in management practices. ANC is also committed to the monitoring guidelines listed in the Forest Soils Conservation Guidelines. The information obtained from monitoring programs will help to reduce the impacts of forestry operations on soil resources.

### **Current Status:**

ANC continues to monitor literature related to the impact of forestry operations on soil conditions. Key to this is ANC's continued membership in FP Innovations whose focus includes forest operations.

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# 3.4 1999 DFMP GOAL 4 - MULTIPLE BENEFITS OF FORESTS TO SOCIETY

### 3.4.1 ECONOMIC VIABILITY

### 1999 DFMP Strategy:

By remaining economically viable ANC will be able to ensure employment for local community people.

#### **Current Status:**

Alberta Newsprint Company continues to strive to maintain economic viability and was successful at that during the last 20 years.

### 3.4.2 TIMBER PRODUCTION TRACKING

### 1999 DFMP Strategy:

ANC will adhere to the cut control conditions defined in the Forest Management Agreement. ANC will ensure quadrant (5 year) removal of wood products does not exceed the amount determined to be sustainable. A quadrant allowable level is five times what is determined to be the allowable annual harvest level.

### **Current Status:**

ANC reported timber production quarterly to ASRD.

### 1999 DFMP Strategy:

ANC will regularly report harvest levels to Alberta Sustainable Resource Development through the Timber Return reporting system

### **Current Status:**

ANC reported timber production quarterly to ASRD.

### 1999 DFMP Strategy:

Annual harvest levels will be controlled by five-year, quadrant cut-control levels for each of the four sustained yield units (Pine, Smoky, Berland and Foothills).

### **Current Status:**

ANC reported timber production quarterly to ASRD.

### 1999 DFMP Strategy:

Timber harvested by other industrial land users is charged against the annual allowable cut. Volume harvested for these activities is calculated by determining the area cleared in hectares and multiplying that area by the average volume per hectare presently known to be present on the FMA area. Whichever forest products company receives, the salvaged wood has the AAC charged to their allocation. To date this has been exclusively ANC Timber.

### **Current Status:**

ANC reported timber production quarterly to ASRD. This reporting included production from other industrial users (with the exception of quota holders who report on their own).

### 1999 DFMP Strategy:

The Province of Alberta, through a quota certificate, grants quota holders within the FMA area a percentage of the annual allowable cut. The tracking and reporting of the volume harvested by the quota





holders is the responsibility of the Alberta Government through Land and Forest Service (LFS). ANC Timber Ltd. relies on the LFS to monitor the quota holders' annual level of harvest and to report those harvest levels to ANC Timber for stewardship reporting purposes. The LFS will notify ANC Timber in the event of discrepancies between quota holders' actual harvest levels and what has been determined to be sustainable.

### **Current Status:**

No discrepancies were reported by ASRD to ANC Timber during the last DFMP period.

# 3.4.3 BALANCING OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL FOREST VALUES

### 1999 DFMP Strategy:

ANC will continue their ongoing support of the Regional Forest Advisory Committee to solicit comments and suggestions on the extent to which the FMA area can support, in terms of land base and reduced conflicts with forest operations, an increase in non-market use of the forest.

### **Current Status:**

ANC Timber has continued to be an active member of the Regional Forest Advisory Committee.

### 3.4.4 SIGNIFICANT FEATURES INCLUDING RECREATION

### 1999 DFMP Strategy:

Areas within the FMA area with existing or potential recreational value will be identified for protection or enhancement in the preparation of Compartment harvest plans.

### **Current Status:**

Operating Ground Rules were negotiated and signed by ASRD and ANC Timber Ltd. in June of 1991. These Ground Rules include provision for the protection of significant recreation areas.

### 1999 DFMP Strategy:

Sources of information for determining where these significant areas are will include local community members through ANC Timber's public involvement processes (see Section 5.5.2), ANC staff knowledge gained through the development of various plans and activities, and government referrals.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 1999 DFMP Strategy:

ANC Timber will keep a running track of the spatial location of significant features within the FMA area. Typically, these features will be gathered through discussions with local publics.

### **Current Status:**

In its Geographic Information System ANC Timber maintains a record of significant features that have been brought to their attention.

### 1999 DFMP Strategy:

ANC will maintain dialogue at open houses, one-on-one contact, and through the Regional Forest Advisory Committee. In this way, recreational opportunities will be identified. These opportunities will be recognized and considered through planning and approval processes between ANC and Alberta Sustainable Resource Development.



### **DETAILED FOREST MANAGEMENT PLAN**

#### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 1999 DFMP Strategy:

ANC will maintain a significant features map that includes recreational opportunities and report the status of this map annually to Alberta Sustainable Resource Development.

### **Current Status:**

In its Geographic Information System ANC Timber maintains a record of significant features that have been brought to their attention.

### 3.4.4.1 PROTECTED AREAS

### 1999 DFMP Strategy:

ANC will work with the local community to ensure appropriate protection measures are developed for the entire FMA area.

#### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 3.4.4.2 NON-MARKET GOODS

### 1999 DFMP Strategy:

ANC will work with users of the FMA area to ensure their continued ability to access the FMA area for the purpose of utilizing non-market goods and services.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 1999 DFMP Strategy:

ANC will request annually a report from Alberta Sustainable Resource Development on the status of non-market goods and services uses of the FMA area.

### **Current Status:**

To date no report has been received by ASRD.

### 1999 DFMP Strategy:

By following legislation and policy and by maintaining an effective public communication, program ANC will ensure that opportunities for accessing non-market goods and services are not impaired.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 3.4.5 RESEARCH AND DEVELOPMENT

### 1999 DFMP Strategy:

Ensuring money necessary for research and development is available by continuing to be profitable.

#### **Current Status:**

ANC continued to fund research in a variety of areas.





### 1999 DFMP Strategy:

Continuing to be involved in the forestry community in Alberta to recognize opportunities for research and development expenditures that make economic as well as scientific sense.

### **Current Status:**

Mostly through the Alberta Forest Products Association and also through staff members' involvement with their respective professional colleges ANC continued to maintain connection to the forestry community.

### 1999 DFMP Strategy:

Investing in forest-based research, based on company-specific needs. It is assumed that these company-specific needs will be common with the needs of other forest products companies in Alberta.

### **Current Status:**

ANC continued to fund research in a variety of areas.

### 1999 DFMP Strategy:

Investigating means to increase ANC's cost effectiveness in such areas as harvesting, hauling, and reforestation will be researched over the next ten years. Ad hoc research will be undertaken as specific needs arise. Membership in the Forest Engineering Research Institute of Canada (FERIC) will ensure the delivery of new research and innovation in this area.

ANC maintained membership in FERIC (now called FP Innovations).

### 1999 DFMP Strategy:

Supporting research on aspects of forest renewal that continue to challenge the company. Through persistent research, improvements in forest renewal programs will be made. FERIC membership will continue to provide results in this area, as will an ad hoc approach to initiating new research and development programs. ANC also has a program of cooperation with academic institutes and we are continually seeking new partnerships in research and development.

### **Current Status:**

ANC maintained membership in FERIC (now called FP Innovations).

### 1999 DFMP Strategy:

Exploring several avenues of research in ecologically based forest management. The Foothills Model Forest, University of Alberta, and several private sector researchers with expertise in the area of ecosystem management are being considered as research partners for new projects.

### **Current Status:**

ANC continued to participate in the FRI's Natural Disturbance Program, Grizzly Bear Program, FORWARD and FP Innovations.

### 1999 DFMP Strategy:

Participating in cooperative research ventures with the Alberta Government and other industrial resource users to learn more about woodland caribou. ANC will continue to participate in the West Central Standing Committee on caribou because of its strong influence in guiding research that will best meet the needs of the companies, the government and, most importantly, the caribou.

### **Current Status:**

ANC maintained membership in the FLMF and participated in the West Central Standing Committee on Caribou through its AFPA representative.





## 3.5 1999 DFMP GOAL 5 - ACCEPTING SOCIETY'S RESPONSIBILITY FOR SUSTAINABLE DEVELOPMENT

### 3.5.1 SITES OF COMMUNITY SIGNIFICANCE

### 1999 DFMP Strategy:

ANC will identify the locations of unique or significant community social, cultural or spiritual sites through public involvement processes. By following legislation and policy, ANC will protect these sites. The locations of known significant community social, cultural and spiritual sites will be reported annually to Alberta Sustainable Resource Development.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 1999 DFMP Strategy:

By following current legislation and policy, ANC will ensure that land continues to be available for subsistence purposes. ANC will request annually a report from Alberta Sustainable Resource Development on the status of subsistence land uses within the FMA area.

### **Current Status:**

ANC received no report from ASRD on the status of subsistence land uses within the FMA area.

### 1999 DFMP Strategy:

The types and amount of various forest uses at the community level will be quantified through public involvement processes. Maintenance of the opportunity for those uses will be handled through adherence to current legislation and policy. ANC will annually report forest uses identified through public involvement.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy. An annual report was submitted to ASRD for every year between 2002 and 2008.

### 1999 DFMP Strategy:

At the time of writing of this detailed forest management plan, the Alberta Government is in discussions with the Alberta Forest Products Association to determine what management process would best meet the needs of all parties with respect to ensuring protection of heritage resource values These discussions are based, in large part, on an industry sponsored (ANC Timber, Slave Lake Pulp, Millar Western and Blue Ridge Lumber) heritage modelling study (Western Heritage Services Inc. 1999). It is ANC Timber Ltd.'s intent to wait until that process has been completed before deciding which approach will be taken.

### **Current Status:**

ANC followed a company specific process for protecting heritage resource values.

### 3.5.2 PUBLIC INVOLVEMENT

### 1999 DFMP Strategy:

ANC will maintain an open door policy and approach when dealing with local communities through the public involvement process. ANC will report annually the status and issues identified through the public involvement process.





### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 1999 DFMP Strategy:

ANC will continue with open houses, ad hoc meetings, open door policy and the Regional Forest Advisory Committee. ANC will report annually the status and issues identified through the public involvement process.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 1999 DFMP Strategy:

ANC will report annually a summary of both the public input received during the preceding year as well as an explanation of how that input influenced any Forest Management activities either planned or current.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 3.5.3 PUBLIC EDUCATION

### 1999 DFMP Strategy:

ANC will continue to participate in appropriate educational forums, as opportunities arise. Examples to date have been FEESA, local school talks, open houses, and community trade shows, etc. ANC will report annually to Alberta Sustainable Resource Development the types of public education forums that were participated in.

### **Current Status:**

ANC Timber has continued to solicit public input through open houses, Regional Forest Advisory Committee and an open door policy.

### 3.5.4 GOVERNMENT POLICY

### 1999 DFMP Strategy:

Through participation in the Alberta Forest Products Association, individual contacts, and discussions with the Alberta government on proposed laws and regulations, ANC will provide feedback through various channels. ANC will participate in appropriate AFPA committees and provide input to the government through separate company initiatives.

### **Current Status:**

ANC has maintained membership in the Alberta Forest Products Association and participated in numerous initiatives associated with influencing government policy as it relates to forest management in Alberta.

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# VALUES, OBJECTIVES, INDICATORS AND TARGETS



### **4** VALUES, OBJECTIVES, INDICATORS AND TARGETS

The mandatory Values, Objectives, Indicators and Targets (VOITs), identified by Alberta in Annex 4 of the Alberta Forest Management Planning Standard Version 4.1 – April 2006 were adhered to in the development of the following Values, Objectives, Indicators and Targets.

Quantitative targets were developed by ANC Timber Ltd. in consultation with stakeholders. These targets were rationalized based on social acceptance, sound science, credible analysis techniques, and clearly stated value trade-offs.

The Indicators and Targets presented in Alberta's Standard are less definite than the Values and Objectives.

It is recognized that several targets are not entirely under the control of the forest manager. For example, considerable emphasis is placed on access limitations, but the amount of access is largely affected by other industrial users. In these instances, the VOITs suggest reporting on the results with the view that the forest manager can be responsible for reporting on the target, but is not exclusively accountable for addressing the results.





### 4.1 VOIT TABLE

The red text is a verbatim representation of the "Alberta Forest Management Planning Standard – Version 4.1, April 2006"

**TABLE 4-1: VOIT TABLE** 

CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	MEANS TO IDENTIFY TARGET	MEANS OF ACHIEVING OBJECTIVE AND TARGET
1. Biological Diversity	1.1 Ecosystem Diversity Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the DFA	1.1.1 Landscape scale biodiversity	1.1.1.1 Maintain biodiversity by retaining the full range of cover types and seral stages	Area of old, mature, and young forest in each DFA subunit by cover class	Please refer to Appendix K: VOIT Target Analysis (pages 1-3) for the details of this target.	Targets and seral stage definitions shall be based on sound science, ecological considerations, wildlife zones, and disturbance regimes.  Target shall ensure representation of natural range of ecosystem attributes (e.g., productivity class)  Analysis was completed by Alberta Sustainable Resource Development. Please refer to Appendix K for more details.	Spatial Harvest Sequence
			1.1.1.2 Maintain biodiversity by avoiding landscape fragmentation	a) Range of patch sizes by subunit and entire DFA	Please refer to Appendix K: VOIT Target Analysis (p. 4) for the details of this target.	Targets shall be based on sound science, ecological considerations, wildlife zones, and disturbance Regimes.  Target shall ensure representation of natural range of ecosystem attributes (e.g. cover class and productivity class)  Analysis was completed by Alberta Sustainable Resource Development. Please refer to Appendix K for more details.	Spatial and temporal harvest planning.  Patch size distribution targets are set for forest patches less than 20 years old
				b) Area of old interior forest of each cover class by subunit and entire DFA	Please refer to Appendix K: VOIT Target Analysis (pages 5-6) for the details of this target.	Targets shall be based on sound science, ecological considerations, wildlife zones, and disturbance Regimes.  Target shall ensure representation of natural range of ecosystem attributes (e.g. productivity class)  Analysis was completed by Alberta Sustainable Resource	Spatial and temporal harvest planning
			1.1.1.3 Maintain biodiversity by minimizing access	Open all-weather forestry road density by subunit	Less than 0.6 km/km2 in compartments located in core grizzly bear habitat. Less than 1.2 km/km2 in compartments located in secondary grizzly bear habitat. Please refer to Appendix K (pages 7-11) for further details.	Development. Please refer to Appendix K for more details.  Targets shall be based on sound science, ecological considerations, harvest planning, wildlife zones, and social values.  Analysis was completed by Alberta Sustainable Resource Development. Please refer to Appendix K for more details.	Develop a strategy that coordinates access with other resource users, spatial/temporal sequencing of harvest, road closures and decommissioning. (SHS and long-term corridor access plan)
				Open seasonal / temporary forestry road length by DFA	Less than X km by Subunit  Targets will be developed cooperatively with ASRD.	Targets shall be based on sound science, ecological considerations, harvest planning, wildlife zones, and social values.  Targets will be developed cooperatively with ASRD.	Road construction, maintenance and reclamation activities
			1.1.1.4 Maintain plant communities uncommon in DFA or province	Area or occurrence of Each uncommon plant community within DFA	75% of identified communities will be maintained (separate target for each identified community)	GIS analysis, AVI, ecosite phases, Alberta Natural Heritage Information Centre (ANHIC) plant community classification and tracking list. Predict and identify occurrence of uncommon plant community	Coordinating with other resource users, spatial planning of harvest and road construction, OGR  Known locations of uncommon plant communities will be gathered and stored in Company data set.
							Current processes that could identify unique plant communities (e.g. regen surveys, PSPs, etc) will be used to identify new locations.  Solicit input from aboriginal communities.





CCFM CRITERIO	 VALUE	OBJECTIVE	INDICATOR	TARGET	MEANS TO IDENTIFY TARGET	MEANS OF ACHIEVING OBJECTIVE AND TARGET
		1.1.1.5 Maintain unique habitats provided by wildfire and blowdown events	Area of unsalvaged burned forest	Live trees: Retain all unburned trees in green islands and retained patches recognizing timber condition, access, non timber needs  Burned trees - Compartment Scale: Retain greater than 10% of merchantable black trees in patches greater than 100 ha  Burned trees - Harvest Area Scale: Retain greater than 10% of merchantable black trees in patches 10 -100 ha; and Retain greater than 5% of merchantable black trees in small patches, single trees	Targets based on "Fire Salvage Strategy: Forest Management Planning and Operations 2002"  Ensure consistency with FireSmart Objectives.	Salvage planning  The DFMP will recognize the value of unsalvaged burned forest.  Existing policy will be followed when determining salvage plans for post fire salvage operations.
		1.1.1.6 Retain ecological values and functions associated	Area of unsalvaged blowdown  Compliance with OGR	according to loggers choice  In areas of significant blowdown greater than 10% will be left unsalvaged  Consistent with OGR	Targets are to be based on sound science, ecological considerations and disturbance regimes.  OGR	Salvage planning  DFMP will recognize the value of unsalvaged blowdown sites.  Existing policy will be followed when determining salvage plans for post blowdown salvage operations.  Planning, TSA, OGR
	1.1.2 Local/stand scale biodiversity	with riparian zones  1.1.2.1 Retain stand level structure	a) % area/volume / stems residual structure (both living and dead), within a harvest area, representative of the status (live / dead), sizes, and species of the overstorey trees by subunit and entire DFA	a) A combination of single stems, clumps, and islands comprising up to 25% of a Compartment  Note: A wide range in variability in harvest area-level retention within a subunit is desired as long as the target level is achieved	Wildlife zones, roadside vegetation screens, recreational values, aesthetics, local knowledge, ANHIC, Biodiversity / Species Observation Database (BSOD).	Operating Ground Rules will define best practices to protect riparian zones.  Implement residual structure retention strategies and OGRs  The approach used in the current DFMP will be continued.
			b) Percentage of harvested area by subunit with downed woody debris equivalent to preharvest conditions	Post harvest condition will match or nearly match pre harvest condition with respect to down woody debris.	Assess preharvest downed woody debris condition by subunit or stand level average.  ANC will only reduce slash loadings on a small percentage of the DFA for reforestation purposes.	Organization developed standards  Operating Ground Rules will be negotiated that are sensitive to varying conditions and areas.
		1.1.2.2 Maintain integrity of sensitive sites	Sensitive sites (e.g. mineral licks, major game trails) by subunit and entire DFA	Strategies to maintain consistent with provincial guidelines / OGR	Local knowledge, ANHIC, Biodiversity / Species Observation Database (BSOD). Aboriginal community consultations.	Organization developed standards for sensitive site protection, OGRs 7.7.4  Sensitive sites will be protected by developing and following appropriate Operating Ground Rules.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	MEANS TO IDENTIFY TARGET	MEANS OF ACHIEVING OBJECTIVE AND TARGET
			1.1.2.3 Maintain aquatic biodiversity by minimizing impacts of water crossings	Forestry water crossings in compliance with Code of Practice for Water Course Crossings within each Subunit	Designs meet standards of the Code of Practice for Water Course Crossings	Code of Practice for Water Course Crossings: Sections 7 - 9 and Schedule 2.	Road construction, maintenance and reclamation activities  Impacts to aquatic biodiversity will be minimized by developing and following appropriate Operating Ground Rules.
	1.2 Species Diversity Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained throughout time	1.2.1 Viable populations of identified plant and animal species	1.2.1.1 Maintain habitat for identified high value species (i.e., economically valuable, socially valuable, species at risk, species of management concern)	Area (ha) of suitable habitat within the DFA or subunit  OR  Specific population parameter(s) (e.g. trends, distribution, absolute size, recruitment) for the DFA or subunit	GRIZZLY BEAR: Please refer to Appendix K: VOIT Target Analysis (pages 15-16) for the details of this target.  CARIBOU: Please refer to Appendix K: VOIT Target Analysis (p. 17) for the details of this target.	Based on sound science, ecological considerations, wildlife zones, Committee on the Status of Endangered Wildlife in Canada (COSEWIC) list, provincially listed species, BSOD, ANHIC, Recovery plans, Fish and Wildlife Division priorities, public consultation, habitat suitability analysis, literature review, observation data, local and traditional knowledge.  Analysis was completed by Alberta Sustainable Resource Development. Please refer to Appendix K for more details.	Harvesting plans, road construction, OGR, planning and implementation, adherence to provincial wildlife guidelines  ANC will approach this through maintenance of habitat as opposed to maintenance of populations.  Amount of habitat available will be assessed.
	1.3 Genetic Diversity Conserve genetic diversity by maintaining the variation of genes within species	1.3.1 Genetic integrity of natural tree populations	1.3.1.1 Retain "wild forest populations' for each tree species in each seed zone through establishment of insitu reserves by the organization or in cooperation with Alberta	Number and area (ha) of in situ genetic conservation areas	The number of genetic conservation areas for each seed zone will conform with Section 3 of the Green Area section of Standards for Tree Improvement in Alberta	Target is a portion of the required number of genetic conservation areas determined in consultation with other FMAs in the same seed zone and Alberta.	Conservation areas are designated by a notation (PNT, CNT)  The current Alberta policy/guidelines will be followed.
			1.3.1.2 Retain wild forest genetic resources through exsitu conservation	Number of provenances and genetic lines in exsitu gene banks and trials	Active conservation program for all Controlled Parentage Program plan species and other species in cooperation with Alberta	Proportion of projects and species.	Standards for Tree Improvement in Alberta and government / industry genetic cooperatives  The current Alberta policy/guidelines will be followed.
	1.4 Protected Areas - Respect protected areas identified through government processes	1.4.1 Areas with minimal human disturbances within managed landscapes	1.4.1.1 Integrate Trans-boundary values and objectives into forest management	Stakeholder consultation	Ongoing consultation with relevant protected areas agencies	Link to consultation objective in Planning Standard or other existing consultation processes.	Management planning  DFMP will commit ANC to ongoing consultation with our neighbors.
2. Ecosystem Productivity	2.1 Ecosystem resilience	2.1.1 Reforested harvest areas	2.1.1.1 Meet reforestation targets on all harvested areas	Annual % of SR regeneration surveys	Set target based on timber supply analysis 100% of area harvested will be reforested.	ARIS or equivalent reports.  The target will be 100% of area harvested will be reforested.	Silviculture program
				Cumulative % of reforested areas that meet reforestation target	As above	ARIS or equivalent reports and Stewardship Report.  The target will be 100% of cumulative area harvested will be reforested.	Silviculture program
		2.1.2 Maintenance of forest landbase	2.1.2.1 Limit conversion of productive forest landbase to other uses	Amount of change in forest landbase	A program to maintain the forest landbase  Landbase loss targets will be consistent with the Forest Management Agreement.	Forest inventory and land use data.  1% of the original net forest management area.	Maintain current forest cover inventory and land use updates  Improvements to current reporting processes between SRD and ANC will be proposed to improve tracking of land base losses and additions.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	MEANS TO IDENTIFY TARGET	MEANS OF ACHIEVING OBJECTIVE AND TARGET
			2.1.2.2 Recognize lands affected by insects, disease or natural calamities	Amount of area affected	Area (ha) affected by significant outbreaks, infestations, natural calamities	Forest health surveys, inventory updates.	Maintain up-to-date information  Current policy will be followed.
		2.1.3 Control invasive species	2.1.3.1 Control non- native plant species (weeds)	Noxious weed program	Noxious weed program in place and implemented	Field inventories.	Co-operative programs  Current policy will be followed.
3. Soil and water	3.1 Soil quantity and quality	3.1.1 Soil productivity	3.1.1.1 Minimize impact of roading and bared areas in forest operations	Compliance with OGRs	Less than 5%	Direction from Alberta.	Effective planning and supervision of operations  DFMP will commit to reforesting cutblock roads and bared areas.
			3.1.1.2 Minimize incidence of soil erosion and slumping	Incidence of soil erosion and slumping	Complete compliance	Direction from Alberta.	Effective planning and supervision of operations and adherence to relevant OGRs  Operating Ground Rules and other applicable operational guidelines will be followed.
	3.2 Water quantity and quality	3.2.1 Water quantity	3.2.1.1 Limit impact of timber harvesting on water yield	Forecast impact of timber harvesting on water yield	Zero Water Act penalties, Complete compliance with FMP	Water Strategy and local needs.  Analysis was completed by Alberta Sustainable Resource Development. Please refer to Appendix K for more details.	Adherence to forecast harvest sequence and relevant OGRs
		3.2.2 Effective riparian habitats	3.2.2.1 Minimize impact of operations in riparian areas	Riparian buffers maintained as outlined in OGRs	Complete compliance	Direction from Alberta.	Effective planning and supervision of operations  Operating Ground Rules will be developed and followed.
4. Global Ecological Cycles	4.1 Carbon uptake and storage	To be determined	To be determined	Results of carbon budget modeling	To be determined	Continued awareness and education and involvement.	Maintain contact with what is occurring with carbon issues policy, research, awareness, opportunities, regulations, committee work.
	4.2 Forest land conversion	See 2.1.2 above				A target for land base losses over time will be developed consistent with FMA agreement.	Improvements to current reporting processes between SRD and ANC will be proposed to improve tracking of land base losses and additions.
5. Multiple Benefits to Society	5.1 Timber and non timber benefits	5.1.1 Sustainable timber supplies	5.1.1.1 Establish appropriate AACs	Process described in Annex 1 is followed and standards are met	Complete compliance	Consultation in planning process	Effective implementation of planning process
	5.2 Communities and Sustainability	5.2.1 Risk to communities and landscape values from wildfire is low	5.2.1.1 To reduce wildfire threat potential by reducing fire behavior, fire occurrence, threats to values at risk and enhancing fire suppression capability	1) Percentage reduction in Fire Behavior Potential area (ha) within the FireSmart Community Zone  2) Percentage reduction in Fire Behavior Potential area (ha) across the DFA now and over the planning horizon	1) Reduce the area (ha) in the extreme and high Fire Behavior Potential rating categories by N/A% within the FireSmart Community Zone (no FireSmart Community zones in ANC FMA)  2) Reduce the combined area (ha) in the extreme, very high and high Fire Behaviour Potential rating categories by 9.4% at year 10, further reduced by an additional 10.4% at year 20 across the ANC FMA and reduced by a total of 7.82% at year 50.	Planning process, wildfire threat Assessment.  Analysis was completed by Alberta Sustainable Resource Development. Please refer to Appendices F and K for more details.	Spatial harvest sequence, thinning, partial harvest techniques, prescribed burns.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	MEANS TO IDENTIFY TARGET	MEANS OF ACHIEVING OBJECTIVE AND TARGET
		5.2.2 Provide opportunities to derive benefits and participate in use and management	5.2.2.1 Integrate other uses and timber management activities	Extent of various uses	To be determined in the planning process  No reduction in the number of uses as a result of Company activities.	Consultation and co-operation  The list in the right hand column represents the types and extent of various uses captured through RFAC, Open Houses, and various other public consultation occurrences.	Effective implementation of plans
		5.2.3 Forest Productivity	5.2.3.1 Maintain Long Run Sustained Yield Average	Regenerated stand yield compared to natural stand yield	No net decrease from the natural stand productivity	FMP Timber Supply Analysis	Effective implementation of plans  Alberta policy will be followed in calculating Annual Allowable Cuts.
6. Accepting society's responsibility for sustainable development	6.1 Aboriginal and treaty rights and aboriginal forest values	6.1.1 Compliance with government regulations and policies	6.1.1.1 Implement Public Involvement Program	Meet Alberta's current expectations for aboriginal consultation	Consult at the community level with designated representatives of affected aboriginal communities	Alberta to provide direction Alberta Sustainable Resource Development advised ANC Timber Ltd. that Alexis Nakota Sioux, Alexander First Nation, Aseniwuche Winewak Nation of Canada, and Sturgeon Lake Cree Nation are the aboriginal communities that would be consulted with	Effective implementation of Public Involvement Program  ANC will follow current Alberta legislation and policy.
	6.2 Public participation and information for decision-making	6.2.1 Meaningful public involvement is achieved	6.2.1.1 Implement public involvement program	Meet expectations of Section 5 of CSA Z809- 02	To be determined in the planning process  ANC will maintain a transparent public involvement process described in the DFMP.	Consultation	Effective implementation of public involvement program  ANC will seek approval of Public Involvement Program.

### 4.2 PUBLIC COMMENTS ON VOIT TABLE

Below is a list of public comments received during development of the VOIT table:

- Jan 10/09 public comment: Why are certain species on the SRD supplied list and others are not? ie; marten is on the list even though they are considered 'secure' and bull trout is not.
- Jan 10/09 public comment: Ensure leaving small top piles are scattered across cutblocks for small mammals.
- Jan 10/09 public comments: Would like to know more about the effects of spraying in general as they affect birds, mammals, people, vegetation. What are the reasons for using herbicides? What are the benefits, detriments of herbicides?
- What should a FMP describe with regard to herbicides? Should the forest company be expected to provide justification of why herbicides are used (benefits) and consequences of their use (detriments)?
- When advertising herbicide programs, identify the benefits/purpose of the application of herbicides.
- Jan 10/09 public comment: How are different forest co's forest mngt plans integrated? The ecosystem is larger than the DFA. ie: effects on water from mills, recreation, consequences of one plan on another.
- Jan 10/09 public comment: Is there a process for use of blowdown/deadfall in the forest instead of waste? (farmers or others) Permits from SRD for firewood.
- Jan 10/09 public comment: Ensure that the plan does not compromise other rights and agreements in place for the use of timber. ie; volume allocations, timber rights (harvesting), quotas within FMA.
- Jan 10/09 public comment: Do not compromise other values in trying to reduce fire risk across the FMA.
- 5.2.2.1 List of potential uses from Jan 10/09 mtg.
  - wood value for other uses (bio-fuels, hog fuel, co-gen, etc.)
  - power lines
  - transportation (rail, etc.)
  - firewood from blowdown or deadwood
  - gravel extraction
  - recreation (quadding, snowmobiles, camping, backcountry tenting, RV use, horseback riding)
  - ecotourism
  - oil and gas





- minerals, coal
- hunting and trapping
- aesthetics
- birdwatchers
- tree huggers
- roads and infrastructure
- trail riders
- tourism economic development of communities
- berry picking, mushrooms
- hiking
- canoeing, kayak
- fishing
- wild-rice
- cabins
- photography
- traditional uses (first nations)
- insects
- wildlife
- historical sites
- education
- use public announcements to educate public and solicit any further interest/issues through the life of the plan.
- ANC invite info on actual activities and where they are likely to occur.
- Jan 10/09 public comments: There is a desire that the FMP does not limit the ability to explore other uses of the timber such as biofuels, etc. Use the timber most economically to sustain communities, profit.
- How does the forest co strike a balance between capturing uses and issues and the cost(social, financial, effort) in dealing with them? What is the role of the government with regard to this?
- The expectation of the FMA holder in cases of abuse or misuse by others is to report to the proper authority. ie; trapper cabins that are beyond 'trapping' use, quadding, and snowmobiles that abuse trails, activities that could compromise objectives in the FMP (caribou and oil and gas)
- Jan 10/09 public comment: Perhaps ANC could put a public involvement announcement in local papers asking for comments or questions about ANC's FMP.







SECTION 5

# CURRENT STATUS AND FORECAST FOR EACH INDICATOR



## **5** CURRENT STATUS AND FORECAST FOR EACH INDICATOR

Red Text is direct from Alberta Forest Management Planning Standard – Version 4.1, April 2006

TABLE 5-1: CURRENT STATUS AND FORECAST FOR EACH INDICATOR

CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS										
1. Biological Diversity	1.1 Ecosystem Diversity Conserve ecosystem diversity at the landscape level by maintaining the variety of	1.1.1 Landscape scale biodiversity	1.1.1.1 Maintain biodiversity by retaining the full range of cover types and seral stages	Area of old, mature, and young forest in each DFA subunit by cover class	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 1-3) for the details of this target.	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 1-3) for the details of this target.										
	communities and ecosystems that occur naturally in the DFA		1.1.1.2 Maintain biodiversity by avoiding landscape fragmentation	a) Range of patch sizes by subunit and entire DFA	Please refer to <b>Appendix K: VOIT Target Analysis</b> (p. 4) for the details of this target.	Please refer to <b>Appendix K: VOIT Target Analysis</b> (p. 4) for the details of this target.										
				b) Area of old interior forest of each cover class by subunit and entire DFA	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 5-6) for the details of this target.	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 5-6) for the details of this target.										
			1.1.1.3 Maintain biodiversity by minimizing access	Open all-weather forestry road density by subunit	Less than 0.6 km/km2 in compartments located in core grizzly bear habitat.  Less than 1.2 km/km2 in compartments located in secondary grizzly bear habitat.  Please refer to Appendix K (pages 7-11) for further details.	Within the Caribou Zone ANC Timber is committed to following the Integrated Industry Access Plan created in collaboration with other industrial partners through the Foothills Land Management Forum. Please refer to <b>Appendix K</b> (pages 7-11) for further details.										
				Open seasonal / temporary forestry road length by DFA	Targets will be developed cooperatively with ASRD.	Within the Caribou Zone ANC Timber is committed to following the Integrated Industry Access Plan created in collaboration with other industrial partners through the Foothills Land Management Forum.										
													1.1.1.4 Maintain plant communities uncommon in DFA or province	Area or occurrence of Each uncommon plant community within DFA	50% of identified community will be maintained (separate target for each identified community)	ANC Timber maintains spatially explicit records of known locations of uncommon plant communities within the FMA area. At the time of writing of this plan there have been no uncommon plant communities knowingly destroyed.
			1.1.1.5 Maintain unique habitats provided by wildfire and blowdown events	Area of unsalvaged burned forest	Live trees: Retain all unburned trees in green islands and retained patches recognizing timber condition, access, non timber needs Burned trees - Compartment Scale: Retain greater than 10% of merchantable black trees in patches greater than 100 ha Burned trees - Harvest Area Scale: Retain greater than 10% of merchantable black trees in patches 10 -100 ha; and Retain greater than 5% of merchantable black trees in small patches, single trees	Since the writing of the current DFMP there has been one fire large enough to warrant timber salvaging. The fire in question, Fire #DW1-009-94, was 114.2 ha in size. A total of 39.8 ha was salvaged.										
				Area of unsalvaged blowdown	according to loggers choice  In areas of significant blowdown greater than 10% will be left unsalvaged	The only incident of significant blow down that has occurred since the FMA was signed was in 1991. The area was 235.3 ha in size and was entirely salvaged.										
			1.1.1.6 Retain ecological values and functions associated with riparian zones	Compliance with OGR	Consistent with OGR	ANC has maintained adherence to OGRs relative to riparian zone protection.										
		1.1.2 Local/stand scale biodiversity	1.1.2.1 Retain stand level structure	a) % area/volume / stems residual structure (both living and dead), within a harvest area, representative of the status (live / dead), sizes, and species of the overstorey trees by subunit and entire DFA	a) A combination of single stems, clumps, and islands comprising X% of the harvested area / volume / stems within a subunit  Note: A wide range in variability in harvest area-level retention within a subunit is desired as long as the target level is achieved	a) ANC Timber has been following the current Operating Ground Rules with respect stand level structure retention. A total of 18,678 m3 of merchantable coniferous timber and 7,940 m3 of merchantable deciduous timber has been left to contribute to structure within cut over areas.  b) Downed woody debris has been maintained on harvested areas primarily due to the fact that no company operations remove down woody debris. If anything there is more down woody debris post harvest as a result of un-merchantable standing trees being felled during harvesting and not utilized.										



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CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
				b) Percentage of harvested area by subunit with downed woody debris equivalent to preharvest conditions	b) X% of harvest areas having downed woody debris retained on site	
			1.1.2.2 Maintain integrity of sensitive sites	Sensitive sites (e.g. mineral licks, major game trails) by subunit and entire DFA	Strategies to maintain consistent with provincial guidelines / OGR	"Sensitive Sites" are defined as sites that have some unique value for certain species of wildlife. Typically these include mineral licks, major game trails, etc.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure protection of these sites.
			1.1.2.3 Maintain aquatic biodiversity by minimizing impacts of water crossings	Forestry water crossings in compliance with Code of Practice for Water Course Crossings within each Subunit	Designs meet standards of the Code of Practice for Water Course Crossings	Whenever a road or trail crosses a water course there is potential for negative impacts on the water in terms of both quantity and quality.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure best management practices are designed to minimize the likelihood of negatively impacting those water courses
	1.2 Species Diversity Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained throughout	1.2.1 Viable populations of identified plant and animal species	1.2.1.1 Maintain habitat for identified high value species (i.e., economically valuable, socially valuable, species at risk, species of management concern)	Area (ha) of harvesting within Caribou Primary Intact Area.	GRIZZLY BEAR: Please refer to Appendix K: VOIT Target Analysis (pages 15-16) for the details of this target.	There has been no harvesting within the Primary Intact Areas as it relates to the limits defined.
	time				CARIBOU: Please refer to Appendix K: VOIT Target Analysis (p. 17) for the details of this target.	
					The area (ha) of harvesting within Caribou Primary Intact Areas will be less than 250 ha per year for the first 5 years of the plan and will be less intense than for the areas outside of the Primary Intact area for years 6-10.	
	1.3 Genetic Diversity Conserve genetic diversity by maintaining the variation of genes within species	1.3.1 Genetic integrity of natural tree populations	1.3.1.1 Retain "wild forest populations' for each tree species in each seed zone through establishment of in-situ reserves by the organization or in cooperation with Alberta	Number and area (ha) of in situ genetic conservation areas	Number (X) of genetic conservation areas for each seed zone conforming with Section 3 of the Green Area section of Standards for Tree Improvement in Alberta	Long term conservation of existing tree species genomes is important to course filter approaches to maintaining biodiversity.  ANC Timber Ltd. manages a vast area of forest with a relative minor impact on this value on an annual basis.
						Current Alberta policy exists that provides assurances of the protection of this value. Those policies will be adhered to in the implementation of this plan.
			1.3.1.2 Retain wild forest genetic resources through exsitu conservation	Number of provenances and genetic lines in exsitu gene banks and trials	Active conservation program for all Controlled Parentage Program plan species and other species in cooperation with Alberta	ANC currently are members of the Huallen Seed Orchard Company which manages controlled parentage programs for White Spruce, Black Spruce and Lodgepole Pine. All government policies and regulations are followed in those programs.
	1.4 Protected Areas - Respect protected areas identified through government processes	1.4.1 Areas with minimal human disturbances within	1.4.1.1 Integrate Trans-boundary values and objectives into forest management	Stakeholder consultation	Ongoing consultation with relevant protected areas agencies	The western edge of the FMA area touches the northern boundary of Wilmore Wilderness Park.
		managed landscapes				There have been no significant consultation initiatives within the span of the current DFMP relative to identification of protected areas.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
2. Ecosystem Productivity	2.1 Ecosystem resilience	2.1.1 Reforested harvest areas	2.1.1.1 Meet reforestation targets on all harvested areas	Annual % of SR regeneration surveys	Reforest 100% of all harvested areas.	Alberta has two significant pieces of legislation relative to this objective. All areas harvested must be reforested and all treatments necessary to reforest a harvested area must be done within two years of harvesting.  ANC Timber Ltd. intends to continue to aggressively reforest all
						areas harvested by the Company by following current government guidelines and policies and all current company best management practices.
						Details of some of these practices are included in Chapter 7. All harvested areas have been reforested within the 2 year treatment window allowed by current Alberta government regulation.
				Cumulative % of reforested areas that meet reforestation target	As above	All harvested areas have been reforested within the 2 year treatment window allowed by current Alberta government regulation.
		2.1.2 Maintenance of forest landbase	2.1.2.1 Limit conversion of productive forest landbase to other uses	Amount of change in forest landbase	3,819 ha (1% of 381922.5 ha – the original FMA area)	The primary reason, historically, for the conversion of productive forest landbase to other uses has been the development of oil and gas resources. Landbase losses typically have come in the form of well site, pipe line, road, and other infrastructure development.
						At the time of writing of this DFMP ANC Timber Ltd. is in discussions with Alberta Sustainable Resource Development on creating new and better ways to manage these losses.
			2.1.2.2 Recognize lands affected by insects, disease or natural calamities	Amount of area affected	Area (ha) affected by significant outbreaks, infestations, natural calamities	The importance of recognizing lands affected by natural processes has been significantly heightened in light of the current Mountain Pine Beetle infestation situation. A significant part of managing those factors involves maintaining records of known locations of impacted areas.
						ANC Timber Ltd. maintains a record of the locations of all known areas that have been significantly affected by insects, disease other natural calamities. A primary source of that information is Alberta Sustainable Resource development. Company staff find locations as well through their daily field work programs.
						See Section 2.3.5.2 for a current description of known significant areas of infestation.
		2.1.3 Control invasive species	2.1.3.1 Control non-native plant species (weeds)	Noxious weed program	Noxious weed program in place and implemented	Non native plant species can have significant negative effect on natural processed and systems. Current Alberta policy requires that all known locations of non native weed species be controlled to remove those threats. ANC Timber Ltd. will continue to follow government policy relative to the control of non native weed species.
3. Soil and water	3.1 Soil quantity and quality	3.1.1 Soil productivity	3.1.1.1 Minimize impact of roading and bared areas in forest operations	Compliance with OGRs	Less than 5%	Roads and bared areas typically preclude the growth and development of naturally vegetated systems. Roads and bared areas are necessary to carry out business practices. The amount of roads and bared areas will be minimized.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure the amount of roads and bared areas is kept to a minimum.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
			3.1.1.2 Minimize incidence of soil erosion and slumping	Incidence of soil erosion and slumping	Complete compliance	Soil integrity is vital to maintaining healthy forest system. Removal of primary cover vegetation has the potential o create soil damage and slumping.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure protection of soils and minimize the likelihood of slumping.
	3.2 Water quantity and quality	3.2.1 Water quantity	3.2.1.1 Limit impact of timber harvesting on water yield	Forecast impact of timber harvesting on water yield	Zero Water Act penalties, Complete compliance with FMP	Trees act as pumps in a natural system. They intercept precipitation and remove soil moisture through their root systems. Removal of the trees has the potential of modifying water yields within water sheds.
						Appendix F describes work done by Alberta Sustainable Resource Development and provides direction on how water yield impacts will be minimized.
		3.2.2 Effective riparian habitats	3.2.2.1 Minimize impact of operations in riparian areas	Riparian buffers maintained as outlined in OGRs	Complete compliance	In order to protect riparian areas during actual equipment operations best management practices will be defined through the development of operating ground rules in collaboration with Alberta Sustainable Resource Development and embedded quota holders.
4. Global Ecological	4.1 Carbon uptake and storage	To be determined	To be determined	Results of carbon budget modeling	To be determined	N/A
Cycles	4.2 Forest land conversion	See 2.1.2 above				N/A
5. Multiple Benefits to	5.1 Timber and non timber benefits	5.1.1 Sustainable timber supplies	5.1.1.1 Establish appropriate AACs	Process described in Annex 1 is followed and standards are met	Alberta Government approved AAC	Current AACs are defined in approved DFMP and MPB amendment.
Society	5.2 Communities and Sustainability	5.2.1 Risk to communities and landscape values from wildfire is low	5.2.1.1 To reduce wildfire threat potential by reducing fire behavior, fire occurrence, threats to values at risk and enhancing fire suppression capability	1) Percentage reduction in Fire Behavior Potential area (ha) within the FireSmart Community Zone  2) Percentage reduction in Fire Behavior Potential area (ha) across the DFA now and over the planning horizon	1) Reduce the area (ha) in the extreme and high Fire Behavior Potential rating categories by N/A% within the FireSmart Community Zone (no FireSmart Community zones in ANC FMA)  2) Reduce the combined area (ha) in the extreme, very high and high Fire Behaviour Potential rating categories by 9.4% at year 10, further reduced by an additional 10.4% at year 20 across the ANC FMA and reduced by a total of 7.82% at year 50.	Wildfire threat is significant for this FMA area. Appendix F describes the current state of wildfire risk.  A wildfire threat assessment was completed by ASRD which can be found in Appendix F. This assessment also predicts a reduction in wildfire risk if the Spatial Harvest Sequence is followed.
		5.2.3 Forest Productivity	5.2.3.1 Maintain Long Run Sustained Yield Average	Regenerated stand yield compared to natural stand yield	No net decrease from the natural stand productivity	In the past it has been assumed that reforesting all cutover areas to the current regeneration standard will ensure maintenance of site productivity.
						Recently approved regeneration standards link regeneration performance which will provide the ability to report on this target for areas harvested.





CCFM	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
CRITERION						
		5.2.2 Provide opportunities to derive benefits and participate in use and management	5.2.2.1 Integrate other uses and timber management activities	Extent of various uses	No reduction in the number of uses as a result of company activities	A key step in integrating other uses of the forest in management activities is to clearly understand what those uses are. ANC Timber Ltd. values input received from the public and intend to exert appropriate effort to capture that input as well as seeking efficient and effective means to allow the input to influence company management approaches. ANC Timber has a multi faceted public input program ranging from an open door policy to a standing Regional Forest Advisory Committee (RFAC). The details of that public input program can be seen in Section 6.1.1.
						on January 10, 2009:
						<ul> <li>wood for other uses (bio-fuels, hog fuel, co-gen, etc.)</li> <li>power lines</li> <li>transportation (rail, etc.)</li> <li>firewood from blowdown or deadwood</li> <li>gravel extraction</li> <li>recreation (quadding, snowmobiles, camping, backcountry tenting, RV use, horseback riding)</li> <li>ecotourism</li> <li>oil and gas</li> <li>minerals, coal</li> <li>hunting and trapping</li> <li>aesthetics</li> <li>birdwatchers</li> <li>tree huggers</li> <li>roads and infrastructure</li> <li>trail riders</li> <li>tourism – economic development of communities</li> <li>berry picking, mushrooms</li> <li>hiking</li> <li>canoeing, kayak</li> <li>fishing</li> </ul>
						- vild-rice
						- cabins - photography - traditional uses (first nations)
						- insects - wildlife
						- historical sites
						- education
						The opportunity for the public to realize those uses identified through the DFMP Public Involvement Plan will be ensured through adherence to government policy including company Operating Ground Rules





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
6. Accepting society's responsibility for sustainable development	6.1 Aboriginal and treaty rights andaboriginal forest values	6.1.1 Compliance with government regulations and policies	6.1.1.1 Implement Public Involvement Program	Meet Alberta's current expectations for aboriginal consultation	Consult at the community level with designated representatives of affected aborigina communities	In order to meet this objective ANC Timber Ltd. will abide by all current Alberta Government Acts, Regulations and policies relating to aboriginal consultation. At the time of writing of this DFMP the most relevant policy is, "Alberta's First Nations Consultation Guidelines on Land Management and Resource Development – Updated November 14, 2007".  ASRD advised ANC Timber Ltd. that Alexis Nakota Sioux, Alexander First Nation, Aseniwuche Winewak Nation of Canada, and Sturgeon Lake Cree Nation are the aboriginal communities that would be consulted with  Section 6.1.2 provides a summary of First Nations Consultation activities.
	6.2 Public participation and information for decision-making	6.2.1 Meaningful public involvement is achieved	6.2.1.1 Implement public involvement program	Meet expectations of Section 5 of CSA Z809- 02	Alberta government approved Public Involvement Process	At the time of writing of the DFMP ANC Timber has a Public Involvement Process that is described in the Detailed Management Plan approved in2002. This DFMP defines the Public involvement Process that is being proposed into the future.







SECTION 5

# CURRENT STATUS AND FORECAST FOR EACH INDICATOR



## **5** CURRENT STATUS AND FORECAST FOR EACH INDICATOR

Red Text is direct from Alberta Forest Management Planning Standard – Version 4.1, April 2006

TABLE 5-1: CURRENT STATUS AND FORECAST FOR EACH INDICATOR

CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS										
1. Biological Diversity	1.1 Ecosystem Diversity Conserve ecosystem diversity at the landscape level by maintaining the variety of	1.1.1 Landscape scale biodiversity	1.1.1.1 Maintain biodiversity by retaining the full range of cover types and seral stages	Area of old, mature, and young forest in each DFA subunit by cover class	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 1-3) for the details of this target.	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 1-3) for the details of this target.										
	communities and ecosystems that occur naturally in the DFA		1.1.1.2 Maintain biodiversity by avoiding landscape fragmentation	a) Range of patch sizes by subunit and entire DFA	Please refer to <b>Appendix K: VOIT Target Analysis</b> (p. 4) for the details of this target.	Please refer to <b>Appendix K: VOIT Target Analysis</b> (p. 4) for the details of this target.										
				b) Area of old interior forest of each cover class by subunit and entire DFA	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 5-6) for the details of this target.	Please refer to <b>Appendix K: VOIT Target Analysis</b> (pages 5-6) for the details of this target.										
			1.1.1.3 Maintain biodiversity by minimizing access	Open all-weather forestry road density by subunit	Less than 0.6 km/km2 in compartments located in core grizzly bear habitat.  Less than 1.2 km/km2 in compartments located in secondary grizzly bear habitat.  Please refer to Appendix K (pages 7-11) for further details.	Within the Caribou Zone ANC Timber is committed to following the Integrated Industry Access Plan created in collaboration with other industrial partners through the Foothills Land Management Forum. Please refer to <b>Appendix K</b> (pages 7-11) for further details.										
				Open seasonal / temporary forestry road length by DFA	Targets will be developed cooperatively with ASRD.	Within the Caribou Zone ANC Timber is committed to following the Integrated Industry Access Plan created in collaboration with other industrial partners through the Foothills Land Management Forum.										
													1.1.1.4 Maintain plant communities uncommon in DFA or province	Area or occurrence of Each uncommon plant community within DFA	50% of identified community will be maintained (separate target for each identified community)	ANC Timber maintains spatially explicit records of known locations of uncommon plant communities within the FMA area. At the time of writing of this plan there have been no uncommon plant communities knowingly destroyed.
			1.1.1.5 Maintain unique habitats provided by wildfire and blowdown events	Area of unsalvaged burned forest	Live trees: Retain all unburned trees in green islands and retained patches recognizing timber condition, access, non timber needs Burned trees - Compartment Scale: Retain greater than 10% of merchantable black trees in patches greater than 100 ha Burned trees - Harvest Area Scale: Retain greater than 10% of merchantable black trees in patches 10 -100 ha; and Retain greater than 5% of merchantable black trees in small patches, single trees	Since the writing of the current DFMP there has been one fire large enough to warrant timber salvaging. The fire in question, Fire #DW1-009-94, was 114.2 ha in size. A total of 39.8 ha was salvaged.										
				Area of unsalvaged blowdown	according to loggers choice  In areas of significant blowdown greater than 10% will be left unsalvaged	The only incident of significant blow down that has occurred since the FMA was signed was in 1991. The area was 235.3 ha in size and was entirely salvaged.										
			1.1.1.6 Retain ecological values and functions associated with riparian zones	Compliance with OGR	Consistent with OGR	ANC has maintained adherence to OGRs relative to riparian zone protection.										
		1.1.2 Local/stand scale biodiversity	1.1.2.1 Retain stand level structure	a) % area/volume / stems residual structure (both living and dead), within a harvest area, representative of the status (live / dead), sizes, and species of the overstorey trees by subunit and entire DFA	a) A combination of single stems, clumps, and islands comprising X% of the harvested area / volume / stems within a subunit  Note: A wide range in variability in harvest area-level retention within a subunit is desired as long as the target level is achieved	a) ANC Timber has been following the current Operating Ground Rules with respect stand level structure retention. A total of 18,678 m3 of merchantable coniferous timber and 7,940 m3 of merchantable deciduous timber has been left to contribute to structure within cut over areas.  b) Downed woody debris has been maintained on harvested areas primarily due to the fact that no company operations remove down woody debris. If anything there is more down woody debris post harvest as a result of un-merchantable standing trees being felled during harvesting and not utilized.										



5-1



CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
				b) Percentage of harvested area by subunit with downed woody debris equivalent to preharvest conditions	b) X% of harvest areas having downed woody debris retained on site	
			1.1.2.2 Maintain integrity of sensitive sites	Sensitive sites (e.g. mineral licks, major game trails) by subunit and entire DFA	Strategies to maintain consistent with provincial guidelines / OGR	"Sensitive Sites" are defined as sites that have some unique value for certain species of wildlife. Typically these include mineral licks, major game trails, etc.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure protection of these sites.
			1.1.2.3 Maintain aquatic biodiversity by minimizing impacts of water crossings	Forestry water crossings in compliance with Code of Practice for Water Course Crossings within each Subunit	Designs meet standards of the Code of Practice for Water Course Crossings	Whenever a road or trail crosses a water course there is potential for negative impacts on the water in terms of both quantity and quality.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure best management practices are designed to minimize the likelihood of negatively impacting those water courses
	1.2 Species Diversity Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained throughout	1.2.1 Viable populations of identified plant and animal species	1.2.1.1 Maintain habitat for identified high value species (i.e., economically valuable, socially valuable, species at risk, species of management concern)	Area (ha) of harvesting within Caribou Primary Intact Area.	GRIZZLY BEAR: Please refer to Appendix K: VOIT Target Analysis (pages 15-16) for the details of this target.	There has been no harvesting within the Primary Intact Areas as it relates to the limits defined.
	time				CARIBOU: Please refer to Appendix K: VOIT Target Analysis (p. 17) for the details of this target.	
					The area (ha) of harvesting within Caribou Primary Intact Areas will be less than 250 ha per year for the first 5 years of the plan and will be less intense than for the areas outside of the Primary Intact area for years 6-10.	
	1.3 Genetic Diversity Conserve genetic diversity by maintaining the variation of genes within species	1.3.1 Genetic integrity of natural tree populations	1.3.1.1 Retain "wild forest populations' for each tree species in each seed zone through establishment of in-situ reserves by the organization or in cooperation with Alberta	Number and area (ha) of in situ genetic conservation areas	Number (X) of genetic conservation areas for each seed zone conforming with Section 3 of the Green Area section of Standards for Tree Improvement in Alberta	Long term conservation of existing tree species genomes is important to course filter approaches to maintaining biodiversity.  ANC Timber Ltd. manages a vast area of forest with a relative minor impact on this value on an annual basis.
						Current Alberta policy exists that provides assurances of the protection of this value. Those policies will be adhered to in the implementation of this plan.
			1.3.1.2 Retain wild forest genetic resources through exsitu conservation	Number of provenances and genetic lines in exsitu gene banks and trials	Active conservation program for all Controlled Parentage Program plan species and other species in cooperation with Alberta	ANC currently are members of the Huallen Seed Orchard Company which manages controlled parentage programs for White Spruce, Black Spruce and Lodgepole Pine. All government policies and regulations are followed in those programs.
	1.4 Protected Areas - Respect protected areas identified through government processes	1.4.1 Areas with minimal human disturbances within	1.4.1.1 Integrate Trans-boundary values and objectives into forest management	Stakeholder consultation	Ongoing consultation with relevant protected areas agencies	The western edge of the FMA area touches the northern boundary of Wilmore Wilderness Park.
		managed landscapes				There have been no significant consultation initiatives within the span of the current DFMP relative to identification of protected areas.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
2. Ecosystem Productivity	2.1 Ecosystem resilience	2.1.1 Reforested harvest areas	2.1.1.1 Meet reforestation targets on all harvested areas	Annual % of SR regeneration surveys	Reforest 100% of all harvested areas.	Alberta has two significant pieces of legislation relative to this objective. All areas harvested must be reforested and all treatments necessary to reforest a harvested area must be done within two years of harvesting.  ANC Timber Ltd. intends to continue to aggressively reforest all
						areas harvested by the Company by following current government guidelines and policies and all current company best management practices.
						Details of some of these practices are included in Chapter 7. All harvested areas have been reforested within the 2 year treatment window allowed by current Alberta government regulation.
				Cumulative % of reforested areas that meet reforestation target	As above	All harvested areas have been reforested within the 2 year treatment window allowed by current Alberta government regulation.
		2.1.2 Maintenance of forest landbase	2.1.2.1 Limit conversion of productive forest landbase to other uses	Amount of change in forest landbase	3,819 ha (1% of 381922.5 ha – the original FMA area)	The primary reason, historically, for the conversion of productive forest landbase to other uses has been the development of oil and gas resources. Landbase losses typically have come in the form of well site, pipe line, road, and other infrastructure development.
						At the time of writing of this DFMP ANC Timber Ltd. is in discussions with Alberta Sustainable Resource Development on creating new and better ways to manage these losses.
			2.1.2.2 Recognize lands affected by insects, disease or natural calamities	Amount of area affected	Area (ha) affected by significant outbreaks, infestations, natural calamities	The importance of recognizing lands affected by natural processes has been significantly heightened in light of the current Mountain Pine Beetle infestation situation. A significant part of managing those factors involves maintaining records of known locations of impacted areas.
						ANC Timber Ltd. maintains a record of the locations of all known areas that have been significantly affected by insects, disease other natural calamities. A primary source of that information is Alberta Sustainable Resource development. Company staff find locations as well through their daily field work programs.
						See Section 2.3.5.2 for a current description of known significant areas of infestation.
		2.1.3 Control invasive species	2.1.3.1 Control non-native plant species (weeds)	Noxious weed program	Noxious weed program in place and implemented	Non native plant species can have significant negative effect on natural processed and systems. Current Alberta policy requires that all known locations of non native weed species be controlled to remove those threats. ANC Timber Ltd. will continue to follow government policy relative to the control of non native weed species.
3. Soil and water	3.1 Soil quantity and quality	3.1.1 Soil productivity	3.1.1.1 Minimize impact of roading and bared areas in forest operations	Compliance with OGRs	Less than 5%	Roads and bared areas typically preclude the growth and development of naturally vegetated systems. Roads and bared areas are necessary to carry out business practices. The amount of roads and bared areas will be minimized.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure the amount of roads and bared areas is kept to a minimum.





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
			3.1.1.2 Minimize incidence of soil erosion and slumping	Incidence of soil erosion and slumping	Complete compliance	Soil integrity is vital to maintaining healthy forest system. Removal of primary cover vegetation has the potential o create soil damage and slumping.
						ANC Timber Ltd., in collaboration with Alberta Sustainable Resource Development and embedded quota holders will develop Operating Ground Rules to ensure protection of soils and minimize the likelihood of slumping.
	3.2 Water quantity and quality	3.2.1 Water quantity	3.2.1.1 Limit impact of timber harvesting on water yield	Forecast impact of timber harvesting on water yield	Zero Water Act penalties, Complete compliance with FMP	Trees act as pumps in a natural system. They intercept precipitation and remove soil moisture through their root systems. Removal of the trees has the potential of modifying water yields within water sheds.
						Appendix F describes work done by Alberta Sustainable Resource Development and provides direction on how water yield impacts will be minimized.
		3.2.2 Effective riparian habitats	3.2.2.1 Minimize impact of operations in riparian areas	Riparian buffers maintained as outlined in OGRs	Complete compliance	In order to protect riparian areas during actual equipment operations best management practices will be defined through the development of operating ground rules in collaboration with Alberta Sustainable Resource Development and embedded quota holders.
4. Global Ecological	4.1 Carbon uptake and storage	To be determined	To be determined	Results of carbon budget modeling	To be determined	N/A
Cycles	4.2 Forest land conversion	See 2.1.2 above				N/A
5. Multiple Benefits to	5.1 Timber and non timber benefits	5.1.1 Sustainable timber supplies	5.1.1.1 Establish appropriate AACs	Process described in Annex 1 is followed and standards are met	Alberta Government approved AAC	Current AACs are defined in approved DFMP and MPB amendment.
Society	5.2 Communities and Sustainability	5.2.1 Risk to communities and landscape values from wildfire is low	5.2.1.1 To reduce wildfire threat potential by reducing fire behavior, fire occurrence, threats to values at risk and enhancing fire suppression capability	1) Percentage reduction in Fire Behavior Potential area (ha) within the FireSmart Community Zone  2) Percentage reduction in Fire Behavior Potential area (ha) across the DFA now and over the planning horizon	1) Reduce the area (ha) in the extreme and high Fire Behavior Potential rating categories by N/A% within the FireSmart Community Zone (no FireSmart Community zones in ANC FMA)  2) Reduce the combined area (ha) in the extreme, very high and high Fire Behaviour Potential rating categories by 9.4% at year 10, further reduced by an additional 10.4% at year 20 across the ANC FMA and reduced by a total of 7.82% at year 50.	Wildfire threat is significant for this FMA area. Appendix F describes the current state of wildfire risk.  A wildfire threat assessment was completed by ASRD which can be found in Appendix F. This assessment also predicts a reduction in wildfire risk if the Spatial Harvest Sequence is followed.
		5.2.3 Forest Productivity	5.2.3.1 Maintain Long Run Sustained Yield Average	Regenerated stand yield compared to natural stand yield	No net decrease from the natural stand productivity	In the past it has been assumed that reforesting all cutover areas to the current regeneration standard will ensure maintenance of site productivity.
						Recently approved regeneration standards link regeneration performance which will provide the ability to report on this target for areas harvested.





CCFM	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
CRITERION						
		5.2.2 Provide opportunities to derive benefits and participate in use and management	5.2.2.1 Integrate other uses and timber management activities	Extent of various uses	No reduction in the number of uses as a result of company activities	A key step in integrating other uses of the forest in management activities is to clearly understand what those uses are. ANC Timber Ltd. values input received from the public and intend to exert appropriate effort to capture that input as well as seeking efficient and effective means to allow the input to influence company management approaches. ANC Timber has a multi faceted public input program ranging from an open door policy to a standing Regional Forest Advisory Committee (RFAC). The details of that public input program can be seen in Section 6.1.1.
						on January 10, 2009:
						- wood for other uses (bio-fuels, hog fuel, co-gen, etc.) - power lines - transportation (rail, etc.) - firewood from blowdown or deadwood - gravel extraction - recreation (quadding, snowmobiles, camping, backcountry tenting, RV use, horseback riding) - ecotourism - oil and gas - minerals, coal - hunting and trapping - aesthetics - birdwatchers - tree huggers - roads and infrastructure - trail riders - tourism – economic development of communities - berry picking, mushrooms - hiking - canoeing, kayak - fishing
						- vild-rice
						- cabins - photography - traditional uses (first nations)
						- insects - wildlife
						- historical sites
						- education
						The opportunity for the public to realize those uses identified through the DFMP Public Involvement Plan will be ensured through adherence to government policy including company Operating Ground Rules





CCFM CRITERION	CSA SFM ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET	CURRENT STATUS
6. Accepting society's responsibility for sustainable development	6.1 Aboriginal and treaty rights andaboriginal forest values	6.1.1 Compliance with government regulations and policies	6.1.1.1 Implement Public Involvement Program	Meet Alberta's current expectations for aboriginal consultation	Consult at the community level with designated representatives of affected aborigina communities	In order to meet this objective ANC Timber Ltd. will abide by all current Alberta Government Acts, Regulations and policies relating to aboriginal consultation. At the time of writing of this DFMP the most relevant policy is, "Alberta's First Nations Consultation Guidelines on Land Management and Resource Development – Updated November 14, 2007".  ASRD advised ANC Timber Ltd. that Alexis Nakota Sioux, Alexander First Nation, Aseniwuche Winewak Nation of Canada, and Sturgeon Lake Cree Nation are the aboriginal communities that would be consulted with Section 6.1.2 provides a summary of First Nations Consultation activities.
	6.2 Public participation and information for decision-making	6.2.1 Meaningful public involvement is achieved	6.2.1.1 Implement public involvement program	Meet expectations of Section 5 of CSA Z809- 02	Alberta government approved Public Involvement Process	At the time of writing of the DFMP ANC Timber has a Public Involvement Process that is described in the Detailed Management Plan approved in2002. This DFMP defines the Public involvement Process that is being proposed into the future.







PREFERRED FOREST MANAGEMENT
STRATEGY (PFMS)





## 6 PREFERRED FOREST MANAGEMENT STRATEGY (PFMS)

### 6.1 PUBLIC INVOLVEMENT

### 6.1.1 PROCESS

### 6.1.1.1 AD HOC MEETINGS/TOURS/VISITS

In the spirit of maintaining an open door policy with community stakeholders, ANC will continue to hold ad hoc meetings as the need arises. Typically, ad hoc meetings have taken place between ANC and municipal districts, town councils, recreation clubs and/or quota holders. Ad hoc meetings will continue to be an important component of ANC Timber's public involvement process.

The Little Smoky River Corridor Management Strategy is an example of how ANC Timber has demonstrated its willingness to react to public concerns regarding local forest management issues.

### 6.1.1.2 PERSONAL CONTACT

One of the cornerstones ANC's public involvement program is personal contact with concerned community members. Since start up numerous individuals have expressed an interest in how the company's FMA area is being managed. ANC has been more than willing to maintain these relationships and to consider the individual stakeholder's ideas and thoughts when developing management plans and implementing activities.

### 6.1.1.3 ANNUAL OPEN HOUSES

ANC Timber has held annual open houses in the local communities most significantly impacted by company activities. In the past, this has included Fox Creek, Whitecourt, Grande Cache, and Mackay.

ANC Timber Ltd. intends to continue with open houses as one aspect of its community involvement. Although the locations of the annual open houses will continue to be driven by local needs, they will likely remain at Fox Creek, Whitecourt, Grande Cache, and Mackay.

Annual open houses will be held in locations and at times that convenience the people in their respective communities. All aspects of company business related to forest management are open for discussion, with poster-style presentations most common. Typically, subject matter involves harvesting and road building plans, as well as reforestation activities.



### Alberta Newsprint Company

## **DETAILED FOREST MANAGEMENT PLAN**

### 6.1.1.4 REGIONAL FOREST ADVISORY COMMITTEE

At the time of writing of this DFMP the Regional Forest Advisory Committee (RFAC) is undergoing review by its members in order to help ensure it remains an active, effective, and relevant committee meeting the needs of the public in the Whitecourt Region. The follow describes the current structure of RFAC.

The Regional Forest Advisory Committee was established to provide advice and recommendations to the forest industry and Land and Forest Service on matters dealing with forest management. The committee members, who represent a broad spectrum of resource interests, try to ensure the advice and recommendations are representative of the interests of all resource user-groups.

The Regional Forest Advisory Committee facilitates the identification of concerns and issues in a timely manner, so that ANC Timber Ltd. can consider these concerns when writing management plans and delivering programs. The Regional Forest Advisory Committee helps to identify those indicators that best represent the forest and social values that need to be sustained. RFAC attempts to identify and communicate the local communities' social values. ANC can then use this information to ensure that forest resources are being managed in the best interests of present and future generations.

The advice and recommendations provided by the Regional Forest Advisory Committee are an integral part of ANC's forest management regime. The Regional Forest Advisory Committee does not have any decision-making powers, but it does provide valuable advice and insightful recommendations. This helps ensure that local interests are reflected in forest management operations.

When needed, a Technical Scientific Committee provides technical advice to the Regional Forest Advisory Committee. Joint meetings between the Regional Forest Advisory Committee and the Technical Scientific Committee may be held at specified times. Membership in RFAC is not exclusive to those within the forest industry. Interested parties need to express interest in joining RFAC and will be admitted pending acceptance by the current members. Several categories of membership currently exist for RFAC and designation is determined on a case-by-case basis. A member at large (i.e., someone who does not represent a specific interest group or organization) may be considered by RFAC on a case-by-case basis.

The other categories are listed below.

### Active Members (Voting)

Interest groups or organizations are selected by the Regional Forest Advisory Committee (Appendix 1) from within the communities in the region.

### Standing Members (Non Voting)





Standing members are representatives of Alberta Newsprint Company, Blue Ridge Lumber, and Alberta Sustainable Resource Development.

### Ad Hoc (Non Voting)

Ad Hoc committees may be established from time to time. These committees focus on specific issues and allow greater community involvement by citizens directly affected by those issues.

Ad Hoc committee members are invited for the duration that an issue is under consideration and are selected based on equitable representation. Ad Hoc committee members only attend specific RFAC meetings as required.

### Observer Status (Non-Voting)

All RFAC meetings are open to the public. Guidelines for observing are established at the beginning of each meeting at the discretion of the Chair. The Chair may also ask for comments from observers during a meeting. Generally, however, observers are only allowed to watch RFAC and Ad Hoc meetings, without active involvement in the process. Table xxx lists the membership in the Committee, as of 1999.

ANC Timber is committed to remaining an active participant in RFAC for as long as the local community feels it is useful.

### 6.1.1.5 PUBLIC EDUCATION

ANC Timber believes that an informed public, willing to participate in forest management decisions, is critical to meeting sustainable forest management Goals and Objectives.

ANC Timber intends to focus their public education efforts at the local level through several programs. In the past these efforts have included such things as:

- lectures by forestry staff at local schools
- · articles in the company publication "The Reel Sheet"
- · articles in the local papers
- open houses
- trade fairs
- RFAC sessions, etc

ANC intends to continue these types of activities during the next ten years.



### 6.1.1.6 FIRST NATIONS

On May 16, 2005, the Government of Alberta adopted the *Government of Alberta's First Nations*Consultation Policy on Land Management and Resource Development. In the Policy, Alberta makes the commitment to consult with First Nations where land management and resource development have the potential to adversely impact First Nations rights and traditional uses1 of Crown lands (Rights and Traditional Uses).

In the Policy, Alberta committed to creating consultation guidelines (Guidelines) to fulfill its duty to consult, to offer procedures for consultation, and to ensure a practical and efficient consultation process. To ensure consistency across the Guidelines, a framework (Framework) was released on May 19, 2006.

The Guidelines, dated November 14, 2007, are intended to guide all parties involved in consultation, as they are consistent with the current state of the law on consultation.

It is ANC Timber Ltd.'s intention, in consultation with Alberta Sustainable Resource Development, to follow these guidelines in consulting with First Nations on forest management issues as they relate to company operations.

### 6.1.1.7 DFMP SPECIFIC PUBLIC CONSULTATION

In addition to the above described public consultation processes ANC Timber wrote and received Alberta government approval for a public consultation process specific to the writing of this DFMP.

That approved DFMP Public Involvement Process in included as Appendix H.

### 6.1.2 RESULTS

The following section provides a summary of pubic involvement initiatives between the implementation of the last DFMP, May1, 2002, and the present. This section merely gives a summary of the results. Details are available from ANC Timber Ltd.

### 6.1.2.1 AD HOC MEETINGS/TOURS/VISITS

Due to the nature of this component of the Public Involvement Plan results are numerous and varied. Many meetings, discussions, phone calls, etc. occurred between ANC Timber staff and the public, municipal governments, local groups, etc.

Many of the concerns expressed in these forums related to community job security, protection of multiple forest values, and more recently, the potential impact of the Mountain Pine Beetle epidemic.



#### 6.1.2.2 PERSONAL CONTACT

Similar to the Ad Hoc contacts mentioned above personal contact feedback related to everything from request for access maps to questions around Mountain Pine Beetle.

### 6.1.2.3 ANNUAL OPEN HOUSES

ANC Timber held annual open houses in Fox Creek, Whitecourt, Grande Cache, and Mackay consistently over the period of the previous DFMP.

Attendance records are available from ANC Timber. Typically attendance at open houses has been limited. Some questions have arisen as to why attendance is low with many discussions on the validity of holding these sessions. Open houses should not be viewed as the complete public involvement process for ANC Timber. They are only one component of a multi faceted approach. Having said that the lack of attendance at open houses is interpreted by ANC Timber as an indication that local public concerns regarding our operations are minimal and those concerns are being adequately handled through other components of the Public Involvement Process.

### 6.1.2.4 REGIONAL FOREST ADVISORY COMMITTEE

The frequency of meetings of the Regional Forest Advisory Committee has been changing to accommodate the wishes of RFAC members. When RFAC was first created the committee met once per month or approximately 10 times per year. At the request of RFAC members meeting frequency was reduced to once every two months with no meetings in June, July or August.

Discussion topics have been varied within RFAC but have mainly focused on Company plans including AOPs, GDPs, and DFMPs. Significant discussions and presentations have also occurred on the Mountain Pine Beetle situation.

### 6.1.2.5 PUBLIC EDUCATION

Minimal activities have occurred in this area since the last plan. Examples are; Whitecourt Trade Fair booth, First Year University of Alberta Forestry student tours, and local school presentations.

### 6.1.2.6 FIRST NATIONS

Meaningful First Nation consultation initiatives were commenced by ANC Timber after the Alberta Government created its guiding policy in 2007.

Results have been varied and slow. Many of the concerns expressed by First Nations in this process related to frustrations with the process itself as opposed to actual land management activities. Specific land management concerns expressed by First Nation communities included; wildlife habitat protection





(fur bearers and ungulates), amount of harvesting, availability of jobs and economic opportunities, cost of providing input, and herbicide use.

Only one localized site (approximately one hectare in size) was identified as requiring protection from harvesting.

### 6.1.2.7 DFMP SPECIFIC PUBLIC CONSULTATION

Specific to the DFMP ANC Timber met several times with Alexis Nakota Sioux First Nation, Alexander First Nation, Sturgeon Lake Cree Nation and Aseniwuche Winewak Nation.

The only concern received specific to the DFMP was expressed by Aseniwuche Winewak Nation who stated they are opposed to the use of herbicides in forest management. Other groups expressed concerns relative to the efficiencies of First Nation consultation processes, availability of jobs and general concerns around wildlife habitat and more specifically moose habitat and numbers.





### **6.2 MAINTENANCE OF BIODIVERSITY**

Maintaining biodiversity across the entire FMA area is complex. The diversity of biota varies greatly depending on the spatial and temporal scales being considered. An individual cutblock will contain a certain number of various plants and animals at a certain point in time after harvest for example. As time passes, the variety of plants and animals will change on that same piece of ground. Similarly, a summary of the diversity of plants and animals within the same cutblock would change if the only area assessed was the cutblock itself versus the Compartment it is located in, the Natural Sub Region, etc.

Because of this complexity two basic approaches are taken; coarse and fine filter. The Coarse Filter approach looks at cover types, seral stages, fragmentation, access, water, riparian management, and stand level structure.

Fine filter aspects are Caribou, Unique sites, and genetic conservation.

### 6.2.1 COARSE FILTER

J. John Stadt, Forest Ecology Specialist, Forest Management Planning Section, Alberta Sustainable Resource Development offered the following recommendations relative to Coarse Filter Biodiversity Management within the FMA area (See Document, "Alberta Newsprint Company Forest Condition Assessments – 2011, Alberta Sustainable Resource Development, April 26, 2011"):

"The mountain pine beetle driven accelerated harvest in the first 20 years shifts the forest from being dominated by mature and old stands to being dominated by young and immature forest by year 20. By Year 100 old forest almost disappears. This shift is more pronounced in the Upper Foothills NSR where harvesting was concentrated due to the extensive mature and old pine stands in the area.

Consequences for caribou is a reduction in good forage habitat (old forest) and an increase in young seral habitats that favour alternate prey and which thereby increases predation mortality risk to caribou. Some recovery of older forests in the last 100 years will reduce this increased risk to caribou but risks will remain higher than Year 0 levels.

Changes in the spatial distribution of forest also have implications for caribou. The tripling of young seral forest area in Upper Foothills NSR by year 20 resulted in doubling the area in smaller patch classes. Therefore despite a reduction in the proportion of small patches, the supply of small young patches favourable to moose and deer increases, which significantly increases short term risks to the part of the Little Smoky herd utilizing this area. By Year 50, this risk to caribou is reduced to Year 0 levels as harvest levels decline in the Upper Foothills NSR.

Old forest species dependent on higher productivity habitats will find little suitable habitat at years 50 to 100 when the proportion of Active Landbase old forest drops to 1-2%. Species dependent on old interior forest conditions will have progressively reduced habitat for the assessed period between Year 0 and Year 50."

Based on those recommendations the following actions will be taken:





- 1. Forest operators will follow all planning and operating ground rules which, among other things, aid in the protection of the coarse filter values described above.
- 2. All Operators will adhere to the Alberta Government Woodland Caribou Policy.

### 6.2.1.1 ACCESS MANAGEMENT

Access management is a vital component of maintaining biodiversity on the landscape. Access development influences biodiversity directly through loss of certain types of wildlife habitat, direct modification of plant species complexes, etc. It also influences biodiversity indirectly by allowing increased human activity in areas where that activity would be less if the access were not there.

On ANC Timber Ltd.'s FMA area the main area of concern with respect access development and management is the Caribou Zone within the FMA. The approach the Company has taken to manage access within this zone is to participate in the Foothills Landscape Management Forum (formerly called Caribou Landscape Management Association). ANC worked with the FLMF on the development of an integrated access management plan titled the, "Berland Smoky Regional Access Development Plan".

At the time of writing of this Detailed Forest Management Plan the Berland Smoky Regional Access Development Plan was very near completion but still in draft form. The complete draft plan is included as Appendix I.

Immediately following is the Executive Summary from the plan as it exists at the time of writing of this DFMP.

"Four years ago, the Foothills Landscape Management Forum (FLMF) initiated a unique integrated industrial access planning process. In June, 2009, a Terms of Reference was established between government and the FLMF that outlined the governance structure, objectives and desired outcomes of the planning process referred to as the Regional Access Development (RAD) plan. The RAD plan is a significant advancement over past integrated land management (ILM) plans in the province, and perhaps, a prototype for further integrated land management plans.

The unique nature of this initiative is that it was jointly managed by government and industry to be used as an example for other areas of the province. There was significant investment and cooperation from the forest and energy industrial sectors operating in the foothills of Alberta. Through the FLMF, member companies received direction from Alberta Sustainable Resource Development (ASRD) and met on a regular basis over the past 22 months.

The RAD plan also incorporated new components including measuring land disturbance towards recommended land disturbance targets, assessing the achievability of meeting or exceeding land disturbance targets, refining the targets, ongoing monitoring and reporting, and mitigation strategies being incorporated directly into the plan.

The RAD plan identifies the permanent industrial primary and secondary roads corridors (EAP Class I and II) required over the next 30 years and beyond for a large landscape covering just



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over 1,000,000 hectares. It is anticipated that the corridors will support both the energy and forest sectors long term needs including non-conventional shale gas development."

It is ANC Timber Ltd.'s intent to continue to participate in the process of integrated access planning and development using the Foothills land Management Forum as the platform for integration. Alberta government endorsement will be sought for the Berland Smoky Regional Access Development Plan by the FLMF. Once that endorsement is acquired that access plan will form the basis for all access development within the FMA area.

### 6.2.1.2 WATERSHED MANAGEMENT

John Diiwu, Forest Hydrology Specialist, Forest Management Planning Section, Alberta Sustainable Resource Development offered the following recommendations relative to Watershed Management within the FMA area (See Document, "Alberta Newsprint Company Forest Condition Assessments – 2011, Alberta Sustainable Resource Development, April 26, 2011"):

"The impacts of MPB are predicted to be greater than the impacts of the planned harvesting. Also, the watershed hazard recovery of the MPB killed stands (Scenario II) is predicted to be slower than the harvest (Scenario I). The planned harvesting does have a few watersheds with high hazard levels and several watersheds with medium hazard levels. However, most watersheds would be fully recovered to pre-disturbance levels by year 50. Moreover, the watersheds with medium hazard levels can be managed with appropriate mitigation strategies. This assessment has identified the hazard which is only part of the risk to watershed values. Recommendations presented here are therefore designed to define risk and to mitigate the hazards:

- 1) ANC should track at the operational stage of planning, the actual ECA of specific watersheds at the Final Harvest Plan (see Appendix 1 for descript of ECA method).
- 2) Determine presence of values in watersheds with medium and high hazard for the purpose of defining mitigation strategies.
- 3) Operationally assess the potential hydrologic impact of roads and riparian health/stability, in areas with high risk.
- 4) Ensure good operational practices and prompt reforestation
  - Timely removal of temporary roads and good location practices, possibly using new tools such as Wet Areas Mapping.
  - Retention of buffers along streams and wetlands.
  - Timing and location of proposed operations to minimize risk of erosion.
  - Minimize site disturbance associated with skidding and site preparation and avoidance of sensitive and wet soil areas, possibly using new tools such as Wet Areas Mapping.
  - Any other management strategies that would demonstrate due diligence by ANC."

Based on these recommendations the following will be implemented:

1. Forest operators will adhere to the Spatial Harvest Sequence as directed by Planning and Operating Ground Rules.





- Actual ECA values will be calculated for watersheds listed as high risk in the above referenced report as part of the five year Stewardship Report using the same methodology. Where ECA values calculated based on actual harvesting amounts exceed thresholds mitigative measures will be developed and implemented following discussions with ASRD.
- 3. Forest operators will follow Planning and Operational Ground Rules intended to protect water values during operations.

### 6.2.1.3 STAND LEVEL STRUCTURE

The retention of a diverse pattern of standing live and dead trees and shrubs within harvested areas is important for the maintenance of refuges for forest biota so that they can re-colonize these areas. Maintaining snags and live residual trees in harvested areas for biota that depend on them provides wildlife with thermal/hiding cover within compartments throughout rotation. It also provides wildlife travel corridors within large cutblocks and compartments.

At the time of writing of this DFMP combined policies on riparian management and residual structure to address landscape structure issues have not been fully developed for Alberta. Various initiatives may result in changes to management of both riparian areas and residual structure. The work of the Foothills Model Forest Natural Disturbance Program will be instrumental in driving change, if change is necessary in ANC Timber's FMA area.

Although many types of natural disturbance (fire, floods, wind events, pest events) occur within Alberta's forests, fire is the most common. Virtually all trees are killed within intense fires but, following low and moderate-intensity fires, many scattered live trees are present post disturbance. In addition, within all fire types, fire skips result in residual patches of live trees remaining within burned areas.

D. Andison (March, 2001) suggests that fires in the boreal forest are commonly referred to as "events". They tend to be memorable, occur over a very short period of time, and leave behind a mosaic of burnt and un-burnt patches. The relationship between events and their constituent patches is vital to ANC Timber's approach to residual structure retention. During Operational Plan development Compartments will be considered "events" while Cutblocks will be analogous to burned patches within the events.

Most disturbance patches are very small. For instance, in the Upper Foothills, 62% of the young forest patches are less than 40 hectares in size, compared to 0.7% greater than 10,000 hectares. Large patches account for most of the land. Although few in number, young patches larger than 10,000 hectares cover over 50% of the Upper Foothills landscape (Andison, March 2001).

An area relationship between patches and fire events exists. Since most events are composed of a number of disturbance patches, we expect large events to be even more prominent on the landscape. For instance, disturbance patches greater than 2,000 hectares occupy 71% of the Upper Foothills landscape,





but disturbance events greater than 2,000 hectares occupy 90% of the Upper Foothills landscape (Andison, March 2001).

The undisturbed areas within fire event boundaries include both forested and non-forested patches. In fact, on the Upper Foothills landscape, non-forested patches contribute almost 40% of the undisturbed area within an event, despite the fact that only about 10% of the Upper Foothills landscape is non-forested (Andison, March 2001). Hence, the relationship between disturbance patches and events is greatly influencing the number and size of non-forested patches.

It is likely not possible to create compartments with as high a density of large snags as are found after fire. However, retaining some large snags and large downed logs within cutblock and compartments creates habitat for some of the biota associated with disturbed habitat. Additional large snags may be created by retaining large live trees, as some of these trees will die throughout the rotation.

Current residual structure in the FMA area indicates that considerable opportunity exists for retaining residual structure post harvest. In the FMA area, there are 229,992 ha scheduled for harvests during the 200-year planning horizon. Refer back to Table 2-10 for a summary of the categories of tree types that can be retained post-harvest in order to ensure appropriate levels of structure remain after logging.

As a general operational procedure, some trees will be left un-harvested within cutblocks. A variety of tree sizes may be left with recognition that large trees are valuable for wildlife habitat. Trees that are crooked and heavily branched will be preferably left. Depending on block size and shape, a variety of clumps of more than three trees may be left. Clumps will be left in areas that have a steep slope, excessive moisture, or natural openings. Known nesting areas will be candidates for creating clumps, as well as patches of non-merchantable vegetation and snags, provided worker or public safety isn't compromised.

Operating Ground Rules will be developed that are focused on ecologically meaningful and quantifiable targets for the appropriate amount of residual structure needed. In the interim, 39% of the landbase within the DFA will not be scheduled for harvest within the 200 year planning horizon.

ANC will leave coarse woody debris on the site following harvest in amounts that, at minimum, reflect pre harvest condition. Steps will not be taken to drastically reduce the amount of course woody debris remaining after harvest unless absolutely necessary for reforestation purposes. This woody debris may be in the form of downed material or as standing snags.

ANC will remove snags from areas within 50 m of all roads or landings for safety and fire protection purposes.



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### 6.2.2 FINE FILTER

Woodland Caribou has been identified by Alberta Sustainable Resource Development as a key wildlife species that warrants a fine filter approach to management.

In addition to Woodland Caribou this section of the DFMP addresses how certain sites of unique value will be protected as well as how the genetic integrity of the primary tree species on the FMA will be maintained.

### 6.2.2.1 CARIBOU

The following is lifted from the West Central Alberta Caribou Landscape Plan Prepared for the Alberta Caribou Committee by the West Central Alberta Caribou Landscape Planning Team May 6, 2008. Although this Landscape Plan has not yet been sanctioned by Alberta it is presented in this DFMP because it reflects the opinion of ANC Timber Ltd. on how Caribou and caribou habitat could be affectively managed within the FMA area.

Woodland caribou (Rangifer tarandus) are classified as threatened in Alberta. In support of the national Species at Risk Act, a Recovery Plan for Woodland Caribou in Alberta was completed in 2004. The provincial plan was developed at a strategic level and it called for local implementation plans to be completed within 5 areas of the province. The West Central Alberta Caribou Landscape Plan (WCCLP) is the first of these to be initiated. The WCCLP addresses 6 herds; 3 on provincially administered lands (the Little Smoky, Redrock-Prairie Creek and Narraway herds), 2 on federally administered lands (Jasper National Park and Banff National Park) and the A La Peche Herd which is shared between provincial and federal lands. The Narraway herd range extends into British Columbia provincially administered lands.

In west central Alberta, woodland caribou are typically associated with large contiguous stands of mature (i.e. > 80 years old) coniferous forest. On provincially administered lands, these types of landscapes have been changing through timber harvest, oil and gas development and fire suppression. The progressive alteration of these large contiguous coniferous forests to a younger, more fragmented forest and climate conditions, short and long term are thought to have facilitated an increase in primary prey species other than woodland caribou (e.g. moose, elk and deer). In addition, populations of moose, elk and deer have increased over the last 50 years to meet management objectives for hunting. These changes have resulted in higher densities of wolves, particularly in areas immediately adjacent to caribou range. These increased densities of wolves typically result in increased mortality of woodland caribou to a point where some herds may disappear in the near future and the outlook for others is questionable.

Based on computer models of this relationship, the forecast of caribou mortality from predation indicates that most woodland caribou will not be sustained without major changes to most, if not all management strategies. It is worthy to note that models themselves cannot give absolute results as they are based on





a variety of assumptions that have not been fully tested or validated. However, based on best available information they provide a tool and opportunity to assess sensitivity to different treatments and where benefits may be maximized. The model results suggest that a combination of different levels of aggressive management actions will be necessary to sustain caribou on the landscape as follows:

### Synthesis of Recommendations:

- 1. Reduce wolf densities.
- 2. Reduce primary prey densities
- 3. Verify the extent of early seral vegetation response to anthropogenic disturbance.
- 4. Address the options of application of effort (focus equally on all herds or not)?
- 5. Review the surface tenure planning process for industrial activities.
- Caribou concerns should be addressed at the beginning of land use planning, not at the end.
- Recommend effective mitigation techniques, based on guidelines identified in the mitigation audit through an industry led workshop.
- 8. Conduct a cost-benefit analysis of scenarios considered.
- 9. Develop a herd-based and integrated adaptive management plan including sustainable funding levels to guide west central caribou recovery.
- 10. Expand a monitoring program which contains indicators at each level of planning; strategic, tactical and operational.
- 11. Initiate high density planting of coniferous trees and aggressive vegetation control of browse species on necessary ecosites that exhibit a moderate to high forage species response conducive to moose elk and deer.
- 12. Engage First Nation communities on a regular basis to advise them of the WCCLP, updated them on results and ask for their advice.
- 13. In the event of a MPB outbreak, leave a large % of the unsalvaged forest as is and initiate an aggressive silviculture program to fast track a new forest in those areas that are the least intact.
- 14. Manage for large patches of intact coniferous forests > 80 years over time.
- 15. Initiate all management changes simultaneously as per the Alberta Governments Land Use Framework.
- 16. Apply methods that reduce the projected industrial footprint.
- 17. Land Use decisions must be truly integrated more so than the approach currently practiced.
- 18. The most benefit and therefore the most effort should be directed to strategic planning followed by tactical rather than operational.

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Dependent upon the action (or combination thereof) and levels to be employed there are significantly different consequences and costs from a social and economic perspective. It is becoming increasingly clear that just removing the industrial footprint alone will not adequately result in immediate caribou recovery. The primary limiting factor is not habitat carrying capacity within each range but extensive predation. Predation control (wolves) will have to be undertaken for most scenarios for significant periods of time. It is likely that management actions beyond the caribou ranges may also be necessary because of ongoing immigration of predators. Each West Central caribou range is too small to support natural predator-prey-habitat dynamics. Nonetheless, the current protected areas in west central Alberta (Willmore Wilderness, Kakwa Wildland Park, and Jasper National Park) provide important contributions to woodland caribou conservation. There are some very difficult decisions to be made, ranging from ongoing and aggressive predator and primary prey control for long periods of time to allow for ongoing industrial development to periodic predator and primary prey control and reduction and recovery of industrial footprint over the longer term.

Regardless of the options decided upon, it will be necessary to monitor all of the "indicators" on a regular basis. This portion of a strategy must be properly funded and sustained over time. Moreover, this monitoring requirement will facilitate an "adaptive management" approach that will test the validity of the strategies chosen, support those that work and reject the ones that don't through immediate change.

### Recovery Scenarios

If nothing is done to change "business as usual" caribou recovery is unlikely, and extirpation of some or all West Central Alberta caribou herds is probable. (At this time, there are no modeling results for the National Parks, therefore information presented deals almost exclusively with caribou ranges on provincial lands).

Coordinated recovery actions targeting both habitat and populations are necessary and provide the best chance for success. Habitat actions should focus on prevention, mitigation, and recovery over both short and long terms. Population actions should focus on predator control when and where necessary and primary prey control as a long term strategy. Caribou response should be used to adjust habitat and predator/prey management actions.

Only scenarios that have a technical and biological chance of successful caribou recovery should be considered. Feasible scenarios exist across a gradient and have significantly different costs and benefits, and different chances/risks of success. As shown in the matrix below, Habitat Protection and Recovery is emphasized on one side of the gradient, and Predator/Prey Control is emphasized on the other side. Adaptive Management is a principle component of all scenarios.



### Caribou Recovery Matrix

The table shown below, represents the Caribou Recovery Matrix.

**TABLE 6-1: CARIBOU RECOVERY MATRIX** 

		ADAPTIVE MANAGEMENT GRADIENT					
		More	- ADAITII	Habitat Protection	ADIENT	Less	
INDICATORS		Less	<b>←</b>	Predator/Primary Prey	$\rightarrow$	More	
		Less		Control Forest Harvest	<u>→</u>	More	
		High		Economic Cost		Low	
Intactness (Forest age Patch size)	DEVELOPMENT	Forest Ham limited to Lo II MPB. Reg wood baske applied.     Aggressive protection     Prompt refo	evel 1 and gional et concept forest	<ul> <li>Defer harvest in primary intact area for 100 years and manage for high levels of intactness in secondary intact areas. Regional wood basket concept applied.</li> <li>Aggressive forest protection</li> <li>Prompt reforestation</li> </ul>	primal for 10 manage levels throug Aggree protected.	harvest in ry intact areas years and ge for high	
Footprint	STOP INDUSTRIAL DE\	<ul> <li>Aggregate at 0.3</li> <li>Require pip that follows existing pip right-of-way Coordinate and reclam planning in</li> <li>Aggressive reclamation existing foo start in all a</li> </ul>	peline plan access or eline /s. footprint ation all areas.	<ul> <li>Aggregate well sites at 0.1</li> <li>Require pipeline plan that follows access or existing pipeline right-of-ways.         Coordinate footprint and reclamation planning in primary and secondary intact areas.     </li> <li>Implement coordinated development and reclamation in all areas</li> </ul>	and replanni intactr Impler coordi develo areas	inated opment in intact and nation in select	
Predators (primarily wolves)		Targeted w reductions a required un recovers	as	Targeted wolf reductions as required until primary prey is reduced and/or habitat recovers	ongoir reduct • Other	ssive and ng wolf tions predator tions if required	
Primary prey (moose, elk, deer)		Targeted property reduct required un recovers	ions as	Targeted primary prey reductions ongoing.		ssive and ng primary prey tions	
Caribou		Monitor and actions	d adjust	<ul> <li>Monitor and adjust actions</li> </ul>	Monito action	or and adjust s	





The WCACLPT recommendations suggest a wide variety of management actions to ensure Caribou habitat protection and population recovery. Only some of those recommendations would be appropriate to include in an FMA DFMP. The complete suite of recommendations is included above to provide important context to what the DFMP can influence.

The primary management activity influenced by this DFMP that would affect Caribou habitat is timber harvesting. The amount and timing of that harvesting activity is thought to have the potential to affect caribou habitat both directly and through the affect on secondary prey species as described above.

The DFMP Plan Development Team held several discussions on how best to introduce the amount, spatial location, and timing of timber harvesting within Caribou ranges within the FMA area. In the final stages of those discussions ASRD advised ANC Timber and the PDT that, over the first five year period of the spatial harvest sequence, 250 hectares per year of harvesting within the Primary Intact areas would be appropriate. During the second five year period the intensity of harvesting within the Primary intact areas should be less than the intensity of harvesting outside of those primary areas within the remainder of the FMA. Intensity of harvesting was defined as the hectares of harvesting relative to the total contributing net landbase. ASRD also advised that in both periods the location of the harvesting should be as concentrated as possible and be generally located toward the perimeter of the primary intact areas to the extent possible.

The spatial harvest sequence represented in this DFMP reflects that direction provided.

### 6.2.2.2 RARE PLANTS

Timber harvesting can pose a level of threat to rare plant species and rare plant assemblages. The impact of these disturbances is often measured in terms of the plant community, rather than a specific rare plant. Nevertheless, with the exception of some invader species, the impact of forestry activities is similar for both rare plants and the overall vegetation community.

Fire is another disturbance that must be considered in the protection of rare plants. As the Greatest natural disturbance within the FMA area, fire plays a major role in the survival of rare and endangered plants. Open habitats created by fire can harm rare species that require closed and shaded habitats.

Under the proposed wildfire protection strategy some fires will still occur, providing adequate habitat for those plants that require these areas for survival. Conversely, Wildfire suppression will ensure that sufficient habitat will be available to support those rare Plants requiring forested sites.

Harvesting operations will adhere to the company's operating ground rules that protect Rare and endangered plants within the FMA area. These include the use of buffer zones around lakes and





wetlands, and the preservation of riparian areas, which are known to have a high potential for harboring rare plants.

Adherence to sustainable levels of timber harvest also lends itself to the protection of rare Plants. Through this strategy, a diverse representation of stand age and structure will be maintained throughout the FMA area. This will ensure the continued existence of forested Habitat that is required by selected rare plant species.

The protection of caribou habitat, riparian zone buffering and inoperable and non-productive stand exclusion from harvesting all will Aid in the protection of rare plants.

Sites will be reforested to a similar species makeup as was present prior to Harvest. This will be more conducive to maintaining habitat for specific rare and endangered Plants.

The locations of known rare and endangered plants within the FMA will be buffered by a radius of the average canopy height to a minimum of 2 m in non-treed areas.

#### 6.2.2.3 GENETIC CONSERVATION

Alberta has a provincial policy called, "Gene Conservation Plan for Native Trees of Alberta, May, 2009".

The Preface to that Plan states, "This plan was developed jointly by the Forestry Division of Alberta Sustainable Resource Development (SRD) and the Parks Division of Alberta Tourism, Parks and Recreation (TPR). It was developed as part of a formal agreement by these two agencies to co-operate in forest genetic resource conservation and in response to a request by the Alberta Forest Genetic Resources Council (AFGRC), who had identified as an issue, the need for a provincial forest tree gene resource conservation plan.

The plan is a technical document intended to complement and align with existing policy, particularly the Standards for Tree Improvement in Alberta (STIA). It provides a framework, including concepts for tree gene conservation and an initial work plan for implementing, coordinating and maintaining a provincial network of in situ reserves for 28 native Alberta tree species. Partners in implementation of the plan include SRD and TPR (under their co-operative agreement) and forest companies involved in tree improvement activities covered by Controlled Parentage Programs (CPPs) and conservation requirements under STIA.

As public land management agencies with complementary land base management and stewardship responsibilities, TPR and SRD have primary responsibility under the plan for establishment of in situ reserves for non-commercial species and commercial species or populations not covered under tree improvement programs.





Companies involved in tree improvement have the primary responsibility for establishment and maintenance of reserves for species and populations covered under CPPs.

The plan will be reviewed and updated as more is learned regarding the conservation gaps and biology of species. At present, there is limited information regarding the range and biology of some species. GAP analysis may indicate that some additional areas will be required to provide adequate protection for some of these species. At present, a further limitation occurs due to land management responsibility and ownership, as there are forested areas falling outside the jurisdiction of the present partners, which may contain important native tree genetic resources (e.g., federal parks, Indian Reserves and deeded lands)."

It is ANC Timber Ltd.'s intent to follow current Alberta policy with respect gene conservation including the above referenced document.

### 6.2.2.4 GRIZZLY BEAR

Beverly Wilson, RPF 391, Senior Resource Analyst, Resource Analysis Section, Alberta Sustainable Resource Development offered the following recommendations relative to Grizzly Bear Management within the FMA area (See Document, "Alberta Newsprint Company Forest Condition Assessments – 2011, Alberta Sustainable Resource Development, April 26, 2011"):

"The model has identified core units G38 and G46 and secondary units G40 and G37 as units where the mortality risk has increased to a level where mitigation options should be considered. Operational planning can mitigate many of the impacts of timber harvesting. ANC can act to make roads impassable and to quickly reclaim access into completed compartments. On-going communication with the forest area should address these issues in annual operational planning. Achieving the structure retention target will contribute to mitigating the effects of timber harvesting on grizzly bear habitat. ANC is further encouraged to practice integrated land management to minimize the associated negative effects on grizzly bear habitat."

Based on these recommendations the following actions will be taken:

- 1. Within core units G38 and G46 and secondary units G40 and G37 operational planning will attempt to mitigate the impacts of timber harvesting on Grizzly Bear habitat.
- Forest operators will follow operating ground rules that will ensure prompt reclamation of access into completed compartments. Doing this will aid in restricting/impeding vehicular access.
- 3. Approaches to structure retention will be developed within the operating and planning ground rules.
- 4. ANC will continue to practice integrated land management to minimize the associated negative effects on grizzly bear habitat.

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### **6.3 FOREST PROTECTION**

ANC has made a sizable investment in its FMA area, in terms of infrastructure, employment, and reforestation. Protecting that investment from damage caused by fire, insects and disease is vitally important. Monitoring and control systems designed to limit unusually large outbreaks of insects and diseases, and to prevent fires from getting out of control, are necessary. ANC has developed a rigorous wildfire protection strategy, along with an insect and disease monitoring system, which will limit the amount of timber lost. This will protect the forest resource for ANC and the public, for generations to come.

### 6.3.1 WILDFIRE PREVENTION AND RISK

Alberta Sustainable Resource Development provides the people and resources necessary to protect the FMA area from catastrophic wildfires. Fundamental to the approach taken is early detection and rapid, early initial attack.

During the summer, manned towers and aerial patrols are used for the early detection of fires. Once a fire is spotted, it is critical to deploy men and equipment rapidly in order to contain the fire before it has a chance to spread. Typically, this is done using helicopters and initial attack crews. The early fire attack strategy is to get crawler tractor type equipment onto the fire line to construct a non-combustible perimeter guard. The intent of this strategy is to not allow a fire to enter the second burning period (second day) without a perimeter guard. Typically, fires start late in the afternoon as a result of late day thunderstorms.

The following commitments are made to help protect the FMA area from catastrophic wildfire events:

- ANC Timber will prepare an annual Emergency Response Plan (ERP) detailing how the above principles will be met. These obligations are established in the Forest Management Agreement and the Fire Control Agreement between ANC Timber and the Alberta government.
- ANC Timber will maintain all equipment necessary to meet their obligations under the FMA, the Fire Control Agreement, the Annual Emergency Response Plan, in addition to any other commitments made.
- ANC will ensure that all company woodlands staff, contractor and summer staff have the necessary training to report and effectively take initial action on any fire discovered.
- ANC will train company staff to recognize fire hazards and to eliminate the hazard promptly.
- ANC will ensure that company personnel are equipped or have access to the necessary firefighting equipment required to take initial action on a fire.

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- ANC will supervise all winter burning sites and ensure that all ground fires are extinguished prior to the commencement of that year's fire season.
- ANC will continue formalized communication of weather and fire hazard information to company field personnel.
- ANC will maintain good communications with Alberta's Lands and Forest Service (LFS) to ensure that pre-suppression requirements are being met.
- ANC will maintain good communications with commercial stakeholders within the FMA area and with the public who are traveling through the FMA area, in order to convey the importance of fire prevention and reporting.
- ANC will continue its annual reporting of the area and severity of fires by forest types.
   This report will made be available to Alberta Sustainable Development.

In addition to protecting the FMA area from the affects of catastrophic wildfire this DFMP recognizes the importance of maintaining key ecological aspects of burned areas. When and if any large fires occur within the FMA area the Company will work with Alberta Sustainable Resource Development in developing any necessary salvage plans. Those plans will balance the importance of salvaging fire killed timber with the importance of maintaining certain ecological niches create by wildfires.

### 6.3.1.1 WILDFIRE THREAT ASSESSMENT RECOMMENDATIONS

Stewart Kelm, RPF, FireSmart Forest Management Specialist, Wildfire Management Branch, Alberta Sustainable Resource Development offered the following recommendations relative to Wildfire and FireSmart Management within the FMA area (See Document, "Alberta Newsprint Company Forest Condition Assessments – 2011, Alberta Sustainable Resource Development, April 26, 2011"):

"The following recommendations pertain to FireSmart management in the ANC FMA:

- The current SHS is targeting older age classes and pine stands. It has resulted in a
  reduction in fire behaviour potential by removing problematic C2 (boreal spruce) and C3
  (mature jack or lodgepole pine) fuel types. This meets the performance standard
  identified in the Forest Management Planning Standard. Any variance from the SHS
  should be examined to ensure at least a 10 percent reduction in fire behaviour potential is
  met.
- The potential to create a wildfire containment strategy on the FMA by aligning harvest and other disturbances should be explored.
- Merchantable stands located near settled areas and other values (recreation areas, other
  infrastructure) should be considered for harvest disturbances to reduce the exposure of
  these values to potential wildfire."

Based on these recommendations the following actions will be taken:

1. All forest operations within the FMA area will be guided by Operating and Planning Ground Rules. These ground rules, among other things, provide direction on how operators are required to follow the Spatial Harvest Sequence described in this DFMP within tolerances.





- 2. Merchantable stands located near settled areas and other values (recreation areas, other infrastructure) will be considered for harvest disturbances to reduce the exposure of these values to potential wildfire within the limits available.
- 3. ANC Timber will work closely with SRD and municipalities to identify and address risk areas.

See Appendix F for Alberta Sustainable Resource Development's "FireSmart Management and Wildfire Threat Assessment".

### 6.3.2 INSECTS AND DISEASE

Section 2.3.5.2 describes the current status of insect and disease infestations in the FMA area.

The insect of primary concern at the time of writing of the DFMP is Mountain Pine Beetle. Strategies listed below explain how ANC Timber intends to manage potential major insect and disease infestations including but not necessarily limited to Mountain Pine Beetle. When such species as dwarf mistletoe, spruce beetle, mountain pine beetle, spruce budworm, and jack pine budworm are present in abnormally high populations within proposed harvest areas, a Forest Protection Officer will be consulted during the development of the AOP. The following information will be included with the preliminary harvest design: a map or aerial photograph of appropriate scale showing the infested/infected areas; a description of damage, causes and future implications; and a description of proposed treatments, modifications to the harvest areas, and sequence and operational precautions.

Priority will be given to harvesting stands with a high incidence of disease or insects, or stands that are most at risk because diseases or insects are known to be present at above normal population levels. Over-mature stands are often the source of pest outbreaks.

Harvest designs will minimize the risk of stand degradation and blowdown that might provide a refuge or be the centre for insect infestations or disease.

Harvesting methods will be used that encourage the natural control of pests, including the retention of cutover stands and maintaining minimum coarse woody debris levels where risks of insect and disease outbreaks are considered high.

Wherever possible, wildlife and protection buffers will be selected from stands free of disease or insect infestations.

Key ANC Timber staff will be trained in the identification of insects and diseases common to the FMA area.

Insect and Disease information updates will be circulated to all Woodlands staff.

Reporting of infestations or abnormalities will be made to ANC Timber's Forest Protection





Coordinator noting the following: land location or AVI stand number, species affected, area affected (ha), suspected insect or disease type (if known).

Any areas of infestation seen during fire patrol flights made throughout the summer are to be reported to ANC Timber's Forest Protection Coordinator.

If reported findings are judged to be serious, then experts will be consulted as to complete identification and possible control methods (Canadian Forest Service, Alberta Environmental Protection, University of Alberta, etc.).

ANC Timber will continue to participate in the Regional Integrated Pest Management Committee and share appropriate information with that group.

ANC Timber will be supportive of any monitoring protocols developed by the Regional Integrated Pest Management Committee.

Areas infested will be described in the annual report.

Any area treated due to an infestation, will be included in the annual report.

ANC Timber will review and consider, through the NES Integrated Pest Management Committee, a set of programs to further improve our insect and disease control strategy.

### **6.3.3 WEEDS**

In terms of controlling noxious weeds on the FMA area ANC Timber Ltd. will prevent the establishment of and control all noxious and restricted weeds to which the Weed Control Act applies, in a manner acceptable to the Minister.

### 6.3.4 SITE PRODUCTIVITY

Site productivity is broadly defined as the ability of a given site to grow trees. Based on that definition the main threat to site productivity on the FMA area is the withdrawal of lands for the purpose of construction of industrial installations. These installation mostly include sites that are being developed in some way for the purpose of oil and gas extraction and include such things as well sites, roads, pipelines, gas plants, etc.

The figure below (Figure 6-1) displays the current trend (from 1989 – 2009) of land withdrawals on the DFA. Figure 6-2 projects that same trend over the next 40 years with additional projections that represent 50% and 150% of the current trend.

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ANC Timber Ltd.'s Forest Management Agreement identifies a 1% withdrawal threshold that triggers different consideration by the Crown in terms of compensation to the Company. ANC intends to continue to monitor withdrawals and follow direction provided within the FMA agreement should thresholds be exceeded.

FIGURE 6-1: LAND WITHDRAWAL TREND (1989 - 2009)

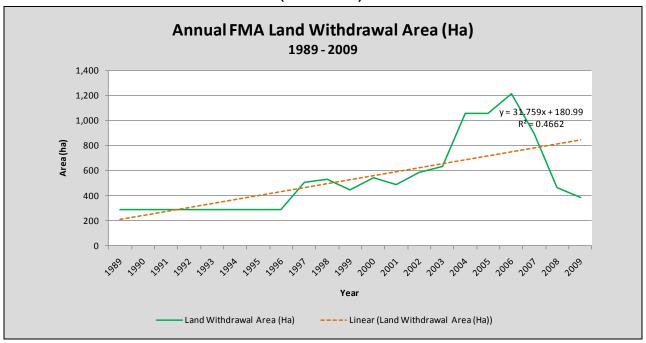
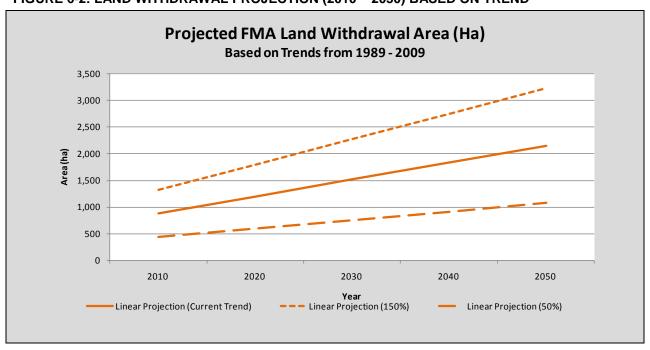


FIGURE 6-2: LAND WITHDRAWAL PROJECTION (2010 - 2050) BASED ON TREND





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### 6.3.5 INDUSTRIAL SALVAGE

It is intended that all industrial salvage processes are consistent with the intent of this DFMP to harvest timber sustainably. Unless otherwise directed by the Minister, all industrial salvage will be considered drain against the calculated AAC's and quadrant production control values for the FMA area.

Under ANC Timber Ltd.'s Forest Management Agreement the Minister retains the right to withdraw land from the FMA area for various industrial development purposes. Typically in those circumstances timber is harvested from those lands to facilitate the development. The following describes how timber salvage will be administered under those situations.

- An entity, usually an oil and gas company, applies for FMA consent to withdraw land from the FMA through an ANC Timber Ltd. Consultant using the On-Line Land Withdrawal Application System.
- A digital spatial representation of the application location is provided to ANC Timber for inclusion in ANC's geospatial data set.
- Other documentation is also provided by the applicant to facilitate ANC Timber's review and potential approval and Timber Damage billing (survey plan, LAT report, etc.)
- The application is reviewed by ANC Timber Ltd. against a suite of criteria including environmental risk, potential overlap with ANC Timber's plans, etc. If no concerns are found then FMA consent is provided in the form of a Schedule "A" emailed to the applicant.
- Consent from ANC Timber Ltd. is based on whether the proposed disposition alignment
  has been designed to maximize good land management practices, for example whether it
  follows existing corridors and minimizes fragmentation. It is also assessed to determine if
  there will be any significant safety hazards created as a result, as well as whether it is
  within a cutblock, to address issues such as whether or not intensive silviculture has
  been done.
- The digital spatial representation of the application is input into the consultant's proprietary Automated Timber Damage Assessment Application System and Timber Damage Assessment amounts are calculated.
- An invoice is then issued to the applicant along with a detailed worksheet showing the AVI stand types and timber damage values used to tally the timber values.
  - Per hectare timber values are based on the provincial Timber Damage Tables.
     The tables are chosen based on the date of FMA consent.
  - ANC Timber Ltd. collects and holds 100% of the Coniferous and 100% of the Deciduous TDA as per their Forest Management Agreement.
  - For FMA withdrawals consented to by ANC Timber Ltd. between June 1, 2010 and November 30<sup>th</sup>, 2010, ANC invoiced only 63.8% of the Coniferous and 99% of the Deciduous TDA. The remaining amount was collected by the Crown.
  - After December 1, 2010 ANC returned to collecting and keeping 100% of the Coniferous and 100% of the Deciduous TDA as per the Forest Management Agreement.

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- Timber Damage Invoices adhere to the following protocol:
  - 100% of the Coniferous and 100% of the Deciduous TDA is collected except through the previously explained time periods;
  - Coniferous and Deciduous volume drain is calculated based on stand type within each disposition and volume tables specific to ANC Timber Ltd.'s FMA area;
  - Historically Crown Dues were calculated based on the volume tables at a \$/m3 rate that varied annually based on the Pulpwood Royalty Rates reported to ANC by SRD's Timber Revenue and Disposition Section. As of May 25<sup>th</sup>, 2009,following the re-negotiated Forest Management Agreement section 29 (1), timber dues rates are paid to the Minister using the rates established under the Timber Management Regulation.
  - Crown Dues are charged an all areas within the disposition or temporary clearings where timber is present. This includes the land base deemed "Productive Land" only. TDA is assessed only on "Productive Land".
  - Dispositions are typically assessed for TDA and Crown Dues 1-3 months after FMA consent is provided. During the 2010 calendar year invoicing was delayed while ANC Timber Ltd. And the Crown resolved issues around TDA entitlements.
  - Additional fees are occasionally charged by ANC Timber Ltd. to the applicant to recover intensive silviculture costs if it is agreed in the Land Withdrawal approval for the specific disposition.
- When dispositions are cancelled and a Letter of Closure is received from the Crown proving no entry, a credit is applied to the applicant's account or a refund cheque is issued by ANC Timber Ltd.
- ANC Timber Ltd. submits Crown Dues to the Crown on a quarterly basis.
- When ANC Timber Ltd. is notified that a site will be constructed they contact the
  applicant's construction coordinator to discuss salvage wood options and arrange an
  agreement to have the salvage wood delivered to satellite yard.
- The applicant selling the salvage wood signs a Schedule C Industrial Salvage Log Purchase Agreement with ANC Timber Ltd. to identify the applicant's name, contact person for the wood, the location that the wood is coming from (legal location and disposition number), the location that the wood will be decked, as well as the prices involved with the purchase.
- ANC Timber Ltd. log quality expectations are specified in Schedule D of the Master Withdrawal Agreement.
- Once the salvage wood is decked in the location previously agreed to, ANC Timber Ltd.
  is notified and takes ownership of the wood. The wood is weighed when it comes across
  the scales of the receiving mill, and a TM9 is filled out to state the population (type of
  wood), disposition number, disposition owner if known, date, truck number, etc.
- The TM9's are provided monthly by the receiving mill to ANC Timber Ltd. and input into their recording system
- Applicants are then paid for the purchase of the salvage wood.

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### 6.4 HARVEST LEVELS

### 6.4.1 LANDBASE

A Landbase Determination Document was sent to SRD in January of 2010. It was approved in principle with two conditions (as provided by SRD), which are displayed in the table below. Also included in the table is a description of the actions taken.

TABLE 6-2: LANDBASE DETERMINATION DOCUMENT APPROVAL CONDITIONS

CONDITION	ACTION REQUIRED	DEADLINE FOR COMPLETION	ACTION TAKEN
The data dictionary included reference to a field named OPENNUM with the description being "Opening Number". If this field represents the ARIS opening number, the description for the OPENNUM field should be "ARIS Opening Number".	Revise data dictionary as requested	Include with 2010 Forest Management Plan (FMP)	It was confirmed that the OPENNUM field represents the ARIS opening number. The data dictionary in the Landbase Determination Document has been updated to show this.
Each operator with harvested areas on ANC's FMA is required to ensure their records in the Alberta Regeneration Information system (ARIs) are consistent with the information contained in the landbase for each harvested area. Please refer to the later dated December 14,2010 from SRD regarding the ARIS records validation process.	Complete validation procedure	To be done 90 days following approval of Alberta Newsprint Company (ANC)'s 2010 FMP.	To be addressed following approval of the 2010 FMP.

The landbase data has been updated since submission in January to account for additional layers required for timber supply analysis (e.g. the Caribou intactness layer). This data is included with the updated Landbase Determination Document that accompanies this FMP document. Please refer to the Landbase Determination Document for all details with respect to how the net landbase was derived. The following section has been included for quick reference to some general but important landbase information.

### 6.4.1.1 LANDBASE SUMMARIES

Table 6-3 summarizes the area within each of the landbase categories associated with determining the operable productive forest area.



TABLE 6-3: OPERABLE PRODUCTIVE FOREST AREA DETERMINATION SUMMARY

LANDBASE CATEGORY	AREA (HA)	PERCENT OF FMA GROSS AREA
Total Gross Area	378,397	N/A
Outside FMA Area	4,342	N/A
FMA Gross Area	374,055	100.0%
Non-Forested Areas		
Water	1,474	0.4%
Landuse Dispositions (GRL, DRS, PNT, REC)	2,027	0.5%
Anthropogenic Non-Forested	17,387	4.6%
Natural Non-Forested	6,755	1.8%
Sub-Total	27,643	7.4%
Gross Forested Area	346,412	92.6%
Special Operating Condition Areas		
Watercourse Buffer Considerations		
Lake Buffers for Lakes <4ha - 20m	31	0.0%
Lake Buffers for Lakes >4ha - 100m	362	0.1%
Trumpeter Swan Lake Buffers - 400m	123	0.0%
Large Permanent Buffers - 60m	7,039	1.9%
Small Permanent Buffers - 30m	7,183	1.9%
Sub-Total	14,737	3.9%
Operability Considerations		
Steep Slopes	1,739	0.5%
Sub-Total	1,739	0.5%
Merchantability Considerations		
TPR=U	38,541	10.3%
TPR = F and SB Leading	11,010	2.9%
Sub-Total	49,551	13.2%
Operable Productive Forest Area	280,385	75.0%

As described in the Landbase Determination Document, ANC has identified additional areas to be temporarily withdrawn from the net landbase. Table 6-4 summarizes the temporary withdrawals from the operable productive forest area and the resulting net landbase area.

Figure 6-3 illustrates the net landbase area by overstorey species group and age class. Figure 6-4 includes additional landbase summaries.



**TABLE 6-4: NET LANDBASE DETERMINATION SUMMARY** 

LANDBASE CATEGORY	AREA (HA)	PERCENT OF FMA GROSS AREA
Operable Productive Forest Area	280,385	75.0%
Temporary Withdrawals		
MOIST = W and SB Leading	22,744	6.1%
'A' Density PL with SB u/s with TPR = F	12,024	3.2%
'A' Density PL with SB u/s with TPR = M or G and MOIST = W	1,954	0.5%
Larch Leading	11,633	3.1%
Burned Cutblocks / Salvage Blocks with no Liability	0	0.0%
Non-Salvageable Burns	0	0.0%
Pre-91 Cutblock Naturally Non-Forested	2,037	0.5%
Sub-Total	50,393	13.5%
Net Productive Forest Area (Net Landbase)	229,992	61.5%

FIGURE 6-3: NET LANDBASE AGE CLASS DISTRIBUTION

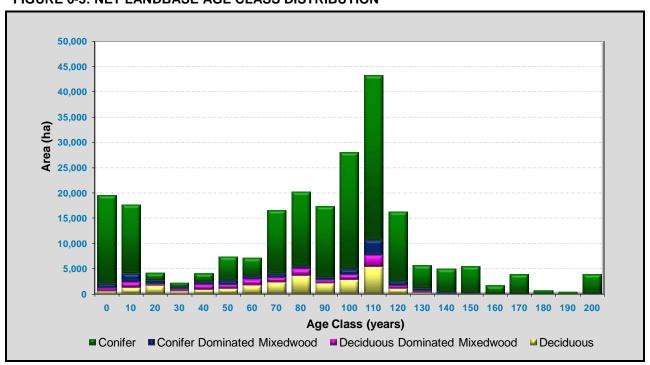
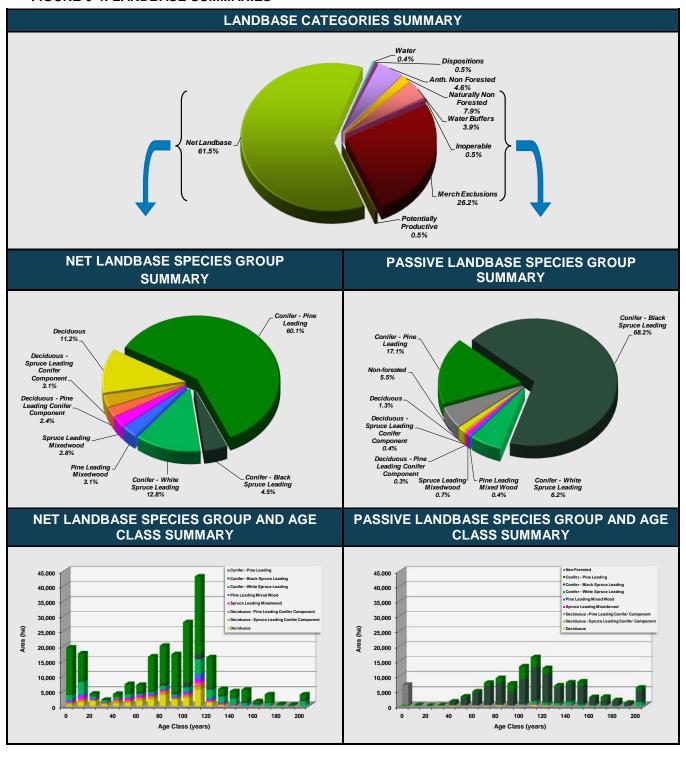


FIGURE 6-4: LANDBASE SUMMARIES





### 6.4.2 YIELD ESTIMATES

A Yield Curve Determination Document was sent to SRD in January of 2010. It was approved in principle with eight conditions (as provided by SRD), which are displayed in the table below. Also included in the table is a description of the actions taken.

TABLE 6-5: YIELD CURVE DETERMINATION DOCUMENT APPROVAL CONDITIONS

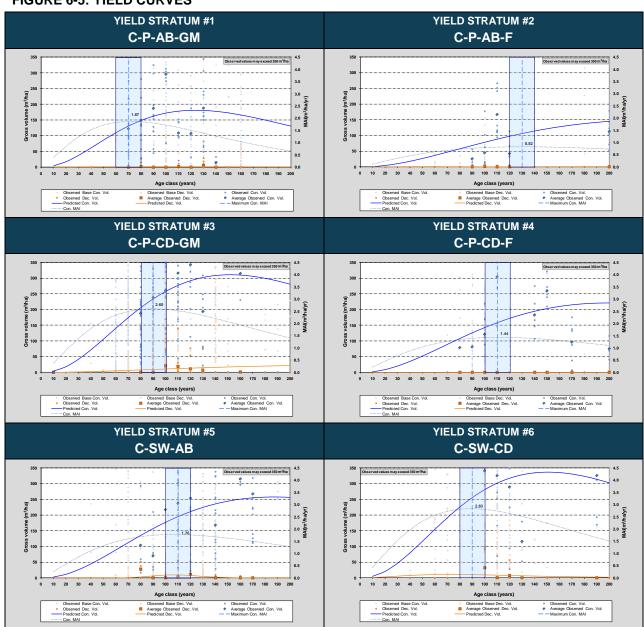
CONDITION	ACTION REQUIRED	DEADLINE FOR COMPLETION	ACTION TAKEN
A detailed description of the model forms used for the piece size estimates and a table with the resulting coefficients is required so that piece size estimates can be replicated.	Provide description	Include with the 2010 FMP	A detailed description has been included in the updated Yield Curve Determination Document. A draft of the description was reviewed by SRD.
Cull factors and methods used to derive these factors must be clearly documented in the Timber Supply Analysis (TSA).	Provide documentation in TSA	Include with the 2010 FMP	The cull factors used in timber supply analysis were provided by SRD. This is now documented in the Yield Curve Determination Document.
Regeneration lag details must be clearly documented in the TSA.	Provide documentation in TSA	Include with the 2010 FMP	A 2 year regeneration lag has been applied in the PFMS. It is described in section 6.4.3.6
Minimum merchantable tree length was not defined in the utilization standards.	Please clarify/ document the minimum merchantable utilization standard.	Include with the 2010 FMP	There was no minimum merchantable tree length used in the tree volume compilation. This is now documented in the Yield Curve Determination Document.
ANC's intention regarding genetic gains (i.e. improved seed) was not mentioned in the documentation.	Document ANC's intention for genetic gains in the 2010 FMP.	Provide documentation clarifying ANC's intentions by May I, 2010.	See Table 4-1 (specifically, Objective 1.3.1.1)and Section 7.1
ARS mean annual increment targets must be included as part of the FMP.	Provide targets for 2010 FMP	Include with the 2010 FMP	See Section 7.3
Yield Stratum #8 - There is insufficient localization data to support the localized yield estimates. The base curve for conifer and deciduous should be used instead of the localization data.	Base curve to be used for yield stratum #8.	Include with the 2010 FMP	The yield curves have been updated.
Yield Stratum#12 - The deciduous yield in this stratum represents an aggressive yield estimate. This curve should be modified or use the base curve.	Modified curve or base curve to be used for yield stratum #12.	Include with the 2010 FMP	The yield curve has been updated.



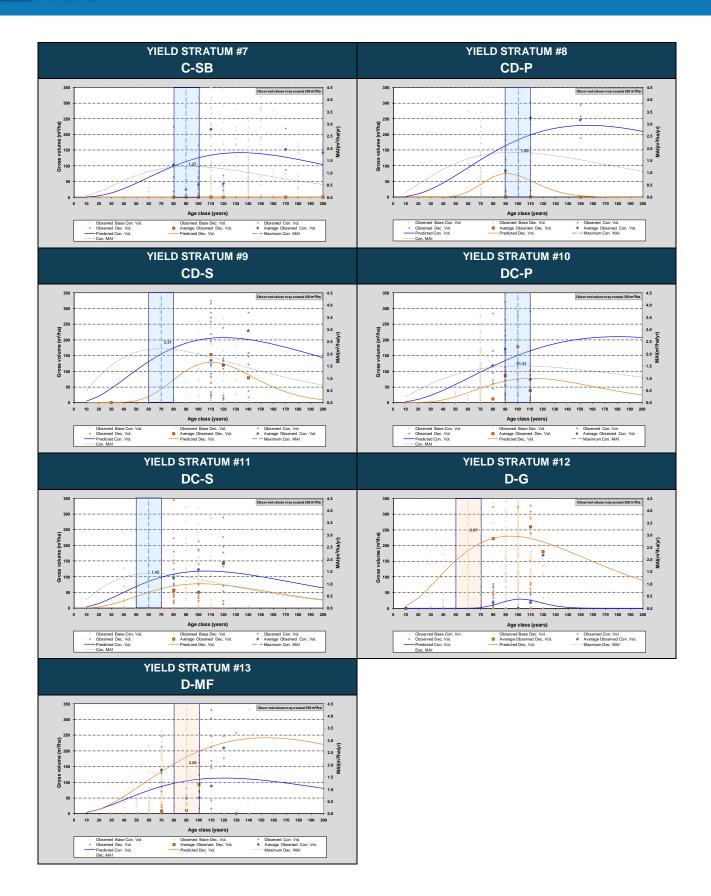
The Yield Curve Determination Document has been updated since submission in January to account for the approval conditions listed in the table above. Where necessary the appropriate datasets have been updated as well and are included with the Yield Curve Determination Document that accompanies this FMP document. Please refer to that document for all details with respect to how the yield curves were developed. The following section has been included for quick reference to the gross yield curves (without any cull deduction or regeneration delay applied).

#### 6.4.2.1 YIELD CURVES AND SUMMARIES

FIGURE 6-5: YIELD CURVES











The table below summarizes the net area that each yield stratum covers.

**TABLE 6-6: NET AREA BY YIELD STRATA** 

YIELD STRATA NUMBER	YIELD STRATA	NET LANDBASE AREA
1	C-P-AB-GM	27,889
2	C-P-AB-F	12,781
3	C-P-CD-GM	69,512
4	C-P-CD-F	28,062
5	C-SW-AB	17,967
6	C-SW-CD	11,512
7	C-SB	10,455
8	CD-P	7,089
9	CD-S	6,380
10	DC-P	5,493
11	DC-S	7,123
12	D-G	9,592
13	D-MF	16,138
TO	ΓAL	229,992

### 6.4.3 HARVEST SEQUENCING

The purpose of this section is to describe the methods used to determine the annual allowable cut for ANC's FMA area (FMA #8900026). As outlined in the Alberta Forest Management Planning Standard (version 4.1, Alberta Sustainable Resource Development 2006) it is a requirement of the DFMP process to undertake forecasting to analyze a range of realistic forest management scenarios and determine a Preferred Forest Management Strategy (PFMS). The key outputs of the PFMS are timber harvest levels in the form of a recommended AAC, as well as a mapped spatial harvest sequence (SHS) outlining stands scheduled for harvest over the first 20 years of the planning horizon.

### 6.4.3.1 LONG RUN SUSTAINED YIELD AVERAGE

Long run sustained yield average (LRYSA) is a measure of current forest productivity and is used to provide initial estimates of an AAC. It is calculated as the sum of growth per year of regenerated stands based on a selected rotation age and is derived from the theoretical concept of a regulated forest with a static and uniform age class distribution, a single rotation age and a single yield function operating across equally productive sites. Thus, it is assumed the annual harvest equates to the annual growth at the selected age class. LRSYA is calculated using the following formula:





$$LRYSA = \sum_{1}^{k} MAI_{i} \times A_{i}$$

Where:

LRSYA = long run sustained yield average (m<sup>3</sup>/yr)

 $MAI_i$  = mean annual increment (m<sup>3</sup>/ha/yr) for yield class

A<sub>i</sub> = net area (ha) for yield class

K = number of yield strata

The net (after cull deductions) LRSYA estimates based on MAI at 90 years for status quo and fully stocked transition assumptions are depicted in Table 6-7 and Table 6-8 respectively. These estimates have cull deductions applied but do not account for a regeneration lag.





TABLE 6-7: LRSYA ESTIMATES: "STATUS QUO" REGENERATION TRANSITION

YIELD CURVE	YIELD CURVE DESCRIPTION	FMA NET AREA	MAI <sup>1</sup> (M³/HA/YR) @ 90 YEARS		LRSYA <sup>2</sup> (M³/YR)	
NUMBER	DESCRIPTION	(HA)	CONIFER	DECIDUOUS	CONIFER	DECIDUOUS
1	C-P-AB-GM	27,889	1.75	0.01	48,758	335
2	C-P-AB-F	12,781	0.74	0.00	9,419	36
3	C-P-CD-GM	69,512	2.52	0.10	175,018	6,721
4	C-P-CD-F	28,062	1.35	0.00	37,932	0
5	C-SW-AB	17,967	1.69	0.06	30,304	1,138
6	C-SW-CD	11,512	2.75	0.10	31,619	1,185
7	C-SB	10,455	1.23	0.00	12,839	0
8	CD-P	7,089	1.77	0.77	12,534	5,488
9	CD-S	6,380	2.04	1.05	12,995	6,683
10	DC-P	5,493	1.45	0.71	7,944	3,881
11	DC-S	7,123	1.24	0.78	8,815	5,586
12	D-G	9,592	0.23	2.36	2,245	22,681
13	D-MF	16,138	1.12	1.86	18,149	30,002
Te	OTAL	229,992			408,571	83,736



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 $<sup>^1</sup>$  MAI includes cull deductions (3.1% conifer, 7.2% deciduous, as provided by SRD).  $^2$  Minor differences in LRSYA calculations may results as a result of rounding.



TABLE 6-8: LRSYA ESTIMATES: "FULLY STOCKED" REGENERATION TRANSITION

YIELD CURVE	YIELD CURVE DESCRIPTION	FMA NET AREA	MAI <sup>1</sup> (M³/HA/YR) @ 90 YEARS		LRSYA <sup>2</sup> (M³/YR)	
NUMBER	DESCRIPTION	(HA)	CONIFER	DECIDUOUS	CONIFER	DECIDUOUS
1	C-P-AB-GM	27,889	2.52	0.10	70,219	2,697
2	C-P-AB-F	12,781	1.35	0.00	17,276	0
3	C-P-CD-GM	69,512	2.52	0.10	175,018	6,721
4	C-P-CD-F	28,062	1.35	0.00	37,932	0
5	C-SW-AB	17,967	2.75	0.10	49,347	1,850
6	C-SW-CD	11,512	2.75	0.10	31,619	1,185
7	C-SB	10,455	1.23	0.00	12,839	0
8	CD-P	7,089	1.77	0.77	12,534	5,488
9	CD-S	6,380	2.04	1.05	12,995	6,683
10	DC-P	5,493	1.45	0.71	7,944	3,881
11	DC-S	7,123	1.24	0.78	8,815	5,586
12	D-G	9,592	0.23	2.36	2,245	22,681
13	D-MF	16,138	1.12	1.86	18,149	30,002
T	OTAL	229,992			456,933	86,774

#### 6.4.3.2 TIMBER SUPPLY MODEL

Timber supply modeling was done using the Remsoft Spatial Planning System (RSPS) analysis tools (version 20011.3). For this TSA, aspatial modeling scenarios were completed in Woodstock as optimization formulas with one objective function maximized or minimized (e.g. maximize volume, minimize haul distance, etc.). Other constraints were placed on the model in order to achieve the desired future forest. The resulting linear programming matrix created by Woodstock was solved using MOSEK, an interior point LP solver (version 4.0.0.50). An example of the parameter settings used can be seen in Table 6-27: Scenario 26 Model Parameters.

Two primary inputs used in the timber supply were the net landbase and yield curves (with revisions to the January 26, 2010 submitted version as described above).

### 6.4.3.3 ACCOUNTING FOR SEISMIC LINES

Section 5.8 of the Net Landbase Determination document provides a detailed description of how the area seismic lines were accounted for in the landbase database. Through GIS processing, a field called COR\_FAC was produced that indicates the proportion of each polygon that seismic lines constitute.

<sup>&</sup>lt;sup>2</sup> Minor differences in LRSYA calculations may results as a result of rounding.



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<sup>&</sup>lt;sup>1</sup> MAI includes cull deductions (3.1% conifer, 7.2% deciduous, as provided by SRD).

Using the exact proportion from the COR\_FAC field as a theme in WOODSTOCK was not an option. Because of the nature of the program, attempting this would only lead to models so large that they become unsolvable. For that reason, a theme was used that grouped the COR\_FAC into larger categories to simplify the model. The seismic line area adjustment factors used in the TSA are depicted in the table below:

TABLE 6-9: SEISMIC LINE AREA ADJUSTMENT FACTORS USED IN WOODSTOCK

RANGE OF COR_FAC	AREA ADJUSTMENT FACTOR APPLIED IN WOODSTOCK	NET LANDBASE AREA (HA)
<0.90	85.0%	312
≥0.90 and <0.91	90.5%	135
≥0.91 and <0.92	91.5%	306
≥0.92 and <0.93	92.5%	445
≥0.93 and <0.94	93.5%	988
≥0.94 and <0.95	94.5%	1,913
≥0.95 and <0.96	95.5%	3,619
≥0.96 and <0.97	96.5%	7,074
≥0.97 and <0.98	97.5%	14,227
≥0.98 and <0.99	98.5%	26,907
≥0.99 and <0.100	99.5%	33,672
1	100.0%	140,395
To	229,992	

In the timber supply analysis this field was used to determine the proportion of each polygon that would be harvested in the first rotation. It was assumed that after harvest, all seismic lines within the polygon would regenerate at the same rate as the rest of the stand.

### 6.4.3.4 REGENERATION LAG

It is the position of Alberta Newsprint Company that there is little to no regeneration lag occurring on the harvest blocks within the DFA. To be conservative, for timber supply analysis purposes, a 2 year regeneration lag was applied to the Preferred Forest Management Strategy (PFMS).

### 6.4.3.5 FOREST MANAGEMENT SCENARIOS

It should be noted that certain inputs changed as the scenarios progressed. For example, SRD requested some changes to the curves in yield strata 8 and 12. These curves were updated as requested but the scenarios that had already been completed were not re-run. The same is true for cull deductions. Many of the scenarios were completed using the cull deductions from the previous DFMP. Once SRD provided the official cull deductions of 3.1% for conifer and 7.2% for deciduous they were used for all scenarios from then on.



The following table provides a brief description along with the associated aspatial harvest levels of the key forest management scenarios that were completed for this DFMP using Woodstock.

**TABLE 6-10: KEY FOREST MANAGEMENT SCENARIOS** 

<u>o</u>		WOODSTOCK OPTIMIZ	ATION RESULTS
SCENARIO	BRIEF DESCRIPTION	Conifer (m³/yr)	Deciduous (m³/yr)
2	Maximized even-flow of conifer	505,25	187,776 (20 year Avg.)
3	Maximized even-flow of deciduous	812,36 (20 year Avg	100 630
4	Dual even-flow (conifer maximized)	498,36	7 84,895
5	Minimize mature pine stands (for MPB risk purposes) but constrain the surge – no constraints to deciduous flow	Years 1-20: <b>852,18</b> Years 21-200: <b>450,00</b>	,
6	Minimize mature pine stands (for MPB risk purposes) – no constraints to deciduous flow	Years 1-20: 1,112,31 Years 21-200: 316,81	
7	Minimize mature pine stands (for MPB risk purposes) then bring post-surge harvest level back up at year 70 – no constraints to deciduous flow	Years 1-20: 1,112,31 Years 21-70: 316,81 Years 71-200: 423,61	30,564 (20 year Avg.)
8	Similar to Scenario 7 but forcing the post-surge conifer level to 420,000 m³/yr for as long as possible – no constraints to deciduous flow	Years 1-20: 1,112,31 Years 21-45 420,00 Years 46-70: 160,27 Years 71-200: 423,61	30,564 0 (20 year Avg.)
12	Similar to Scenario 6 but with even flow deciduous	Years 1-20: 1,112,31 Years 21-200: 312,67	
15	A scenario requested by SRD with some Caribou constraints and the post-surge harvest level not less than 90% of long-term even flow	Years 1-20: <b>816,74</b> Years 21-200: <b>448,53</b>	,
16	SRD Caribou with no constraint to post-surge even flow harvest level	Years 1-20: 989,36 Years 21-200: 349,05	- I
17	No harvesting in class 1 caribou intactness areas for 5 years	Years 1-20: 1,115,56 Years 21-200: 315,14	
18	SRD's MPB disaster assumptions applied to Scenario 4	Years 1-20: 498,36 Years 21-200: 164,84	
19	SRD's MPB disaster assumptions applied to Scenario 15	Years 1-20: <b>816,74</b> Years 21-200: <b>224,74</b>	
20	SRD's MPB disaster assumptions applied to Scenario 17	Years 1-20: 1,115,56 Years 21-200: 209,13	· ·
21	Target 50% pine but only 1250 ha in yrs 1-5 in primary caribou intactness area	Years 1-20: 1,119,37 Years 21-200: 312,59	
22	Target 50% pine but only 1250 ha in yrs 1-5 and 1750 ha in yrs 6-10 in primary caribou intactness area	Years 1-20: 1,118,54 Years 21-200: 312,59	
24	Similar to Scenario 22 with yield curves revised as requested by SRD	Years 1-20: 1,121,54 Years 21-200: 312,27	- I
25	Similar to Scenario 24 with 1.3 million carry forward volume applied to the 1 <sup>st</sup> 5 years	Years 1-5: 1,380,00 Years 6-20: 1,029,56 Years 21-200: 312,27	5 (20 year Avg.)
26	Similar to Scenario 25 with SRD cull factors applied and with sliver polygons removed	Years 1-5: 1,380,00 Years 6-20: 994,62 Years 21-200: 310,12	6 (20 year Avg.)





02		WOODSTOCK OPTIMIZATION RESULTS		
SCENARIO	BRIEF DESCRIPTION	Conifer (m³/yr)	Deciduous (m³/yr)	
31	Selected (in consultation with SRD) to be the PFMS, this scenario brings back the temporary landbase deletions after year 20 to support the sustainability of a MPB related 20 year accelerated harvest. Carry forward was also removed to help keep the results clear.	Years 1-20: 1,120,000 Years 21-200: 432,365	123,550 (20 year Avg.)	
33	This scenario was included to provide support that the potential carry forward volume could be harvested in the first 5-year period without reducing the total conifer harvested in the first 20 years and without significant reduction to the long-term harvest level.	Years 1-5: 1,488,437 Years 6-10: 1,120,000 Years 11-20: 955,781 Years 21-200: 429,561	123,847 (20 year Avg.)	

Table 6-11 through to Table 6-29 provide detailed descriptions of the model parameters used for the key forest management scenarios. Figure 6-6 through to Figure 6-24 provide detailed output summaries from those same scenarios. Scenarios 2 and 3 were not included due to their simplistic nature.



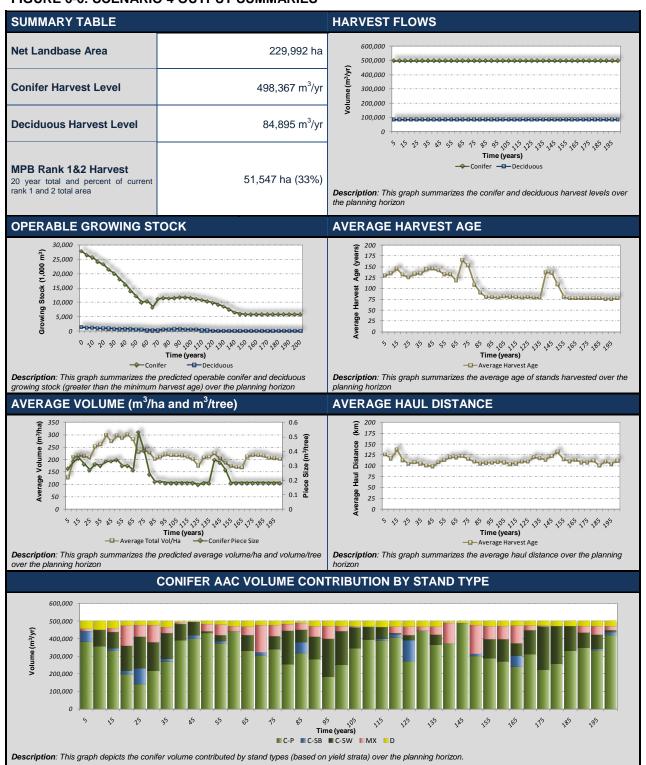


**TABLE 6-11: SCENARIO 4 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	Even flow of conifer volume     Even flow of deciduous volume     Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-6: SCENARIO 4 OUTPUT SUMMARIES





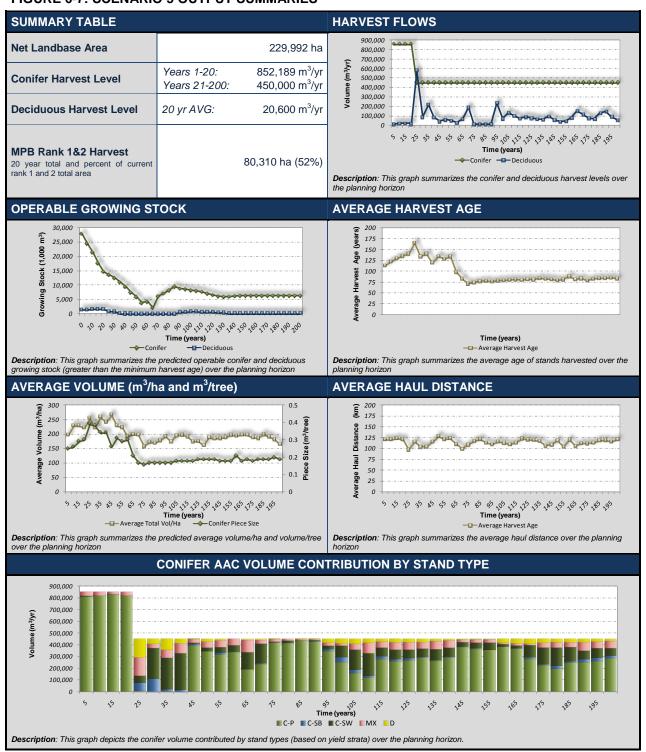


### **TABLE 6-12: SCENARIO 5 MODEL PARAMETERS**

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20
Model constraints:	<ol> <li>Conifer flow ≥ 450,000 m³/yr for years 21-200</li> <li>Even flow of conifer in years 1-20 and also in years 21-200</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-7: SCENARIO 5 OUTPUT SUMMARIES





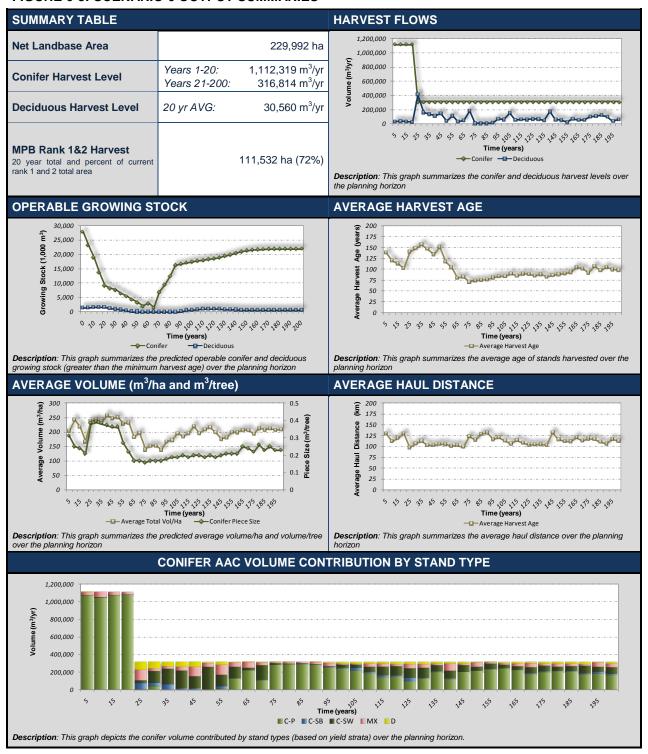


**TABLE 6-13: SCENARIO 6 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Harvest nearly 100% of operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer in years 1-20 and also in years 21-200</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the</li> </ol>
	planning horizon
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-8: SCENARIO 6 OUTPUT SUMMARIES





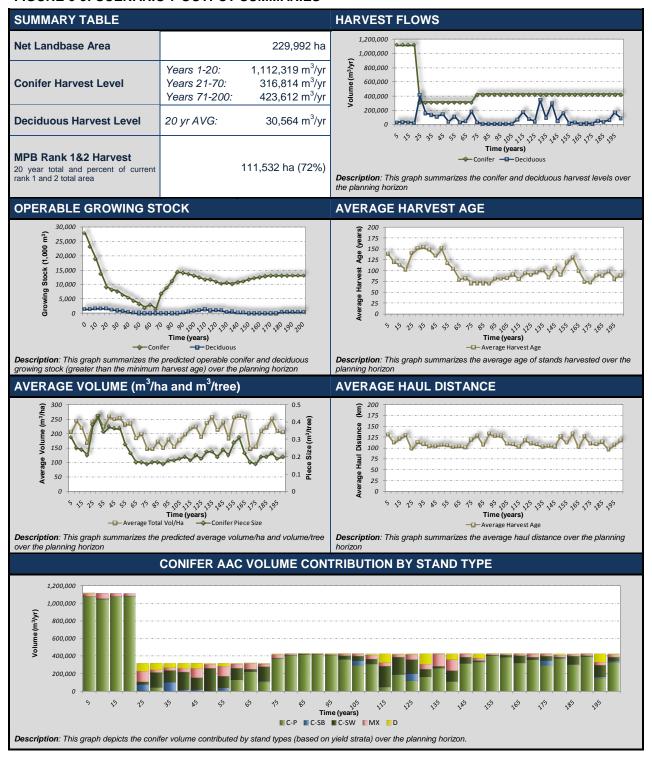


**TABLE 6-14: SCENARIO 7 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Harvest nearly 100% of operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Force the model to cut the same surge and midterm harvest levels (years 1-70) as in Scenario 6</li> <li>Even flow of conifer in years 1-20, years 21-70, and years 71-200</li> </ol>
	4) Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-9: SCENARIO 7 OUTPUT SUMMARIES





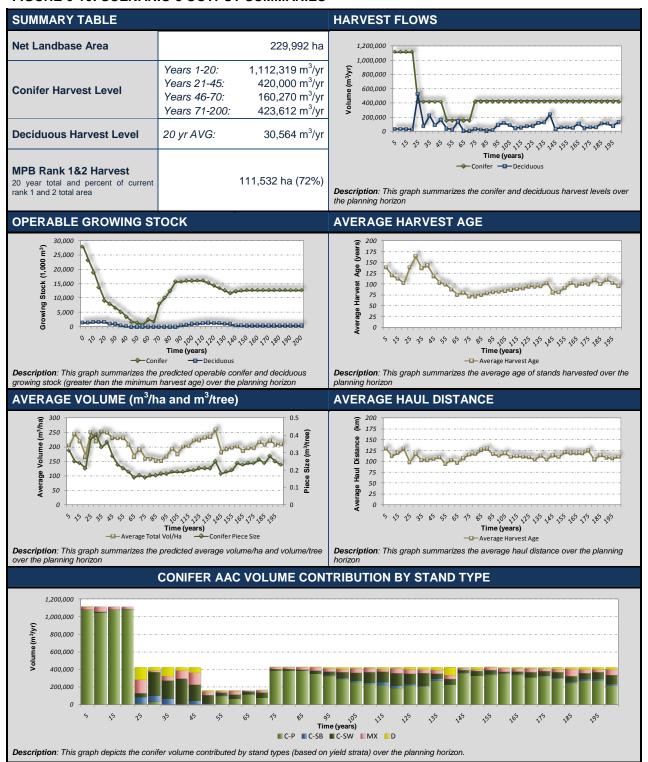


**TABLE 6-15: SCENARIO 8 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	1) Harvest nearly 100% of operable conifer growing stock in pine dominant (≥50% pine) stands by year 20
	2) Force the model to cut the same surge (years 1- 20) and late (years 71-200) levels as in Scenario 7
	<ol> <li>Allow two separate even flow levels during the mid-term (years 21-70) but harvest 420,000 m<sup>3</sup>/yr for as many years as possible</li> </ol>
	Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-10: SCENARIO 8 OUTPUT SUMMARIES



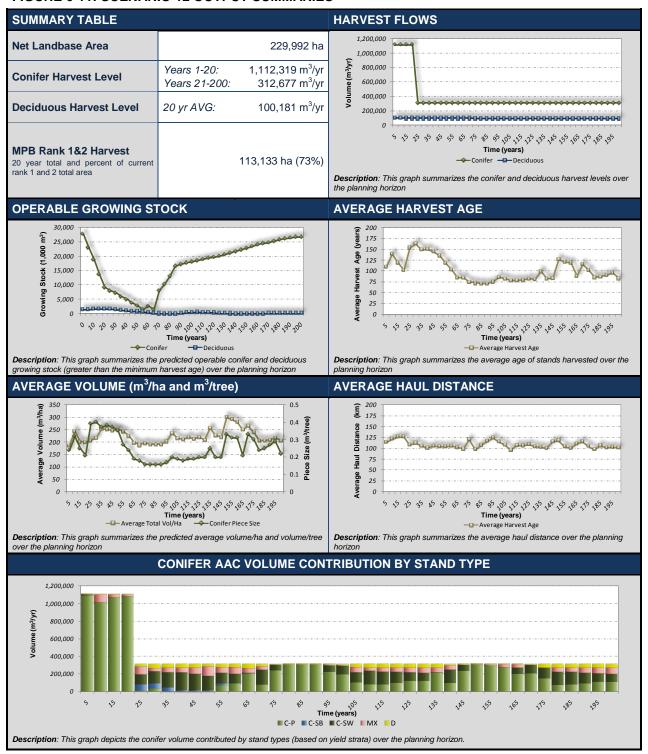




**TABLE 6-16: SCENARIO 12 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Harvest nearly 100% of operable conifer growing stock in stands with ≥ 50% pine by year 20</li> <li>Even flow of conifer in years 1-20 and also in years 21-200</li> <li>Even flow of deciduous (with an allowable variance of 5%) in years 1-20 and also in years 21-200</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied

### FIGURE 6-11: SCENARIO 12 OUTPUT SUMMARIES





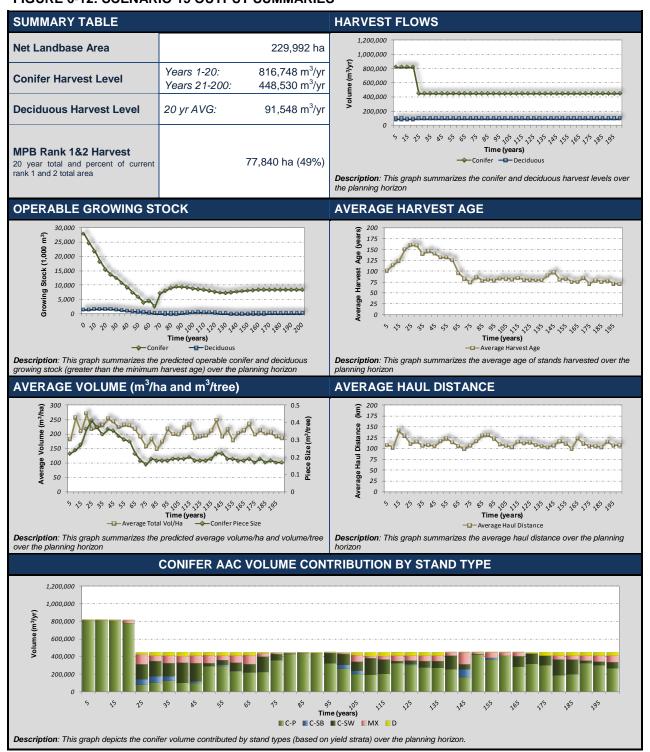


**TABLE 6-17: SCENARIO 15 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Minimize operable conifer growing stock in pine dominant (≥70% pine) stands by year 20
Model constraints:	<ol> <li>Conifer flow ≥ 448,530 m³/yr for years 21-200</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>No harvesting during the first 10 years in the following compartments E7-13, E7-12, E7-10, E7-7, W1-7, W1-8, and W1-9</li> <li>For compartments E7-11, E7-8, W1-5, W1-10, W1-11A, W1-14, and W1-3, no more than 20% of the gross forested area is allowed to be less than 30 years old</li> <li>Non-declining conifer and deciduous operable</li> </ol>
	growing stock during the last 50 years of the planning horizon
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



#### FIGURE 6-12: SCENARIO 15 OUTPUT SUMMARIES





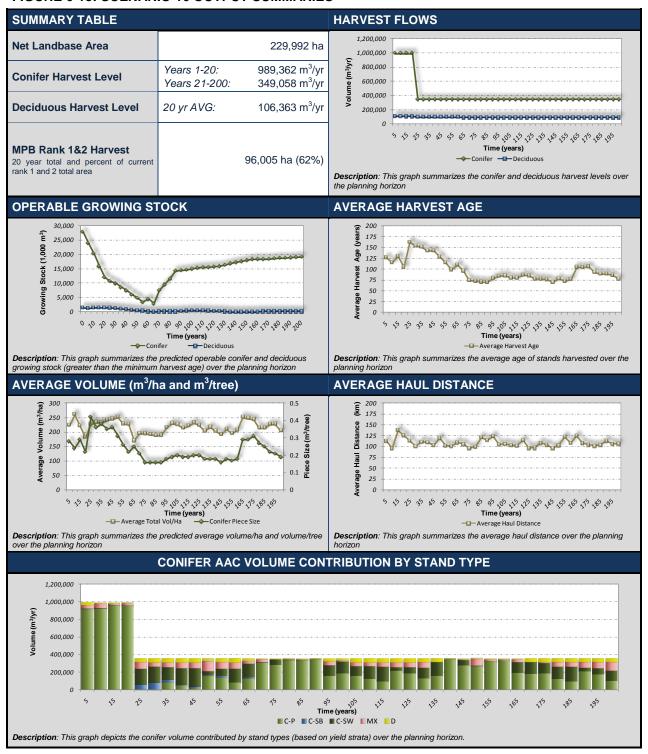


**TABLE 6-18: SCENARIO 16 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>No harvesting during the first 10 years in the following compartments E7-13, E7-12, E7-10, E7-7, W1-7, W1-8, and W1-9</li> <li>For E7-11, E7-8, W1-5, W1-10, W1-11A, W1-14, and W1-3 no more than 20% of the gross forested area is allowed to be less than 30 years old</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-13: SCENARIO 16 OUTPUT SUMMARIES





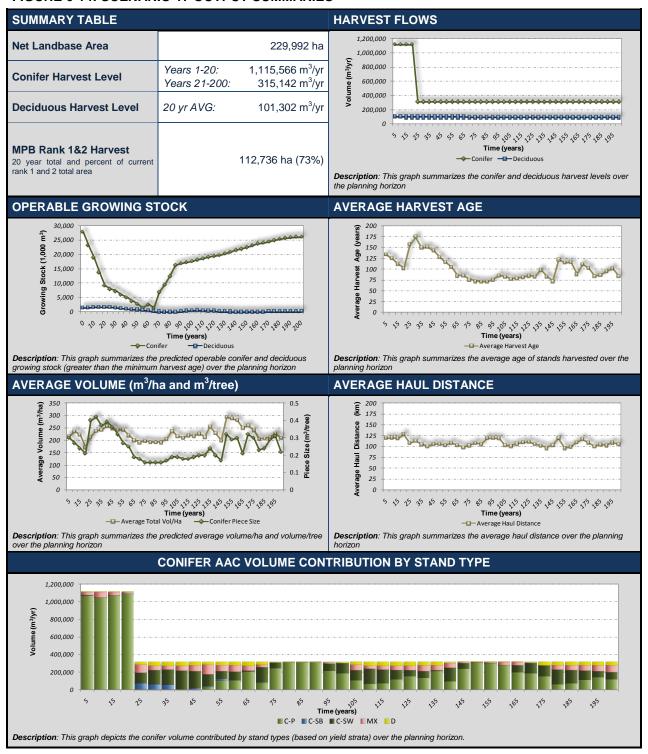


**TABLE 6-19: SCENARIO 17 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>No harvesting during the first 5 years in class 1 caribou intactness areas</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-14: SCENARIO 17 OUTPUT SUMMARIES





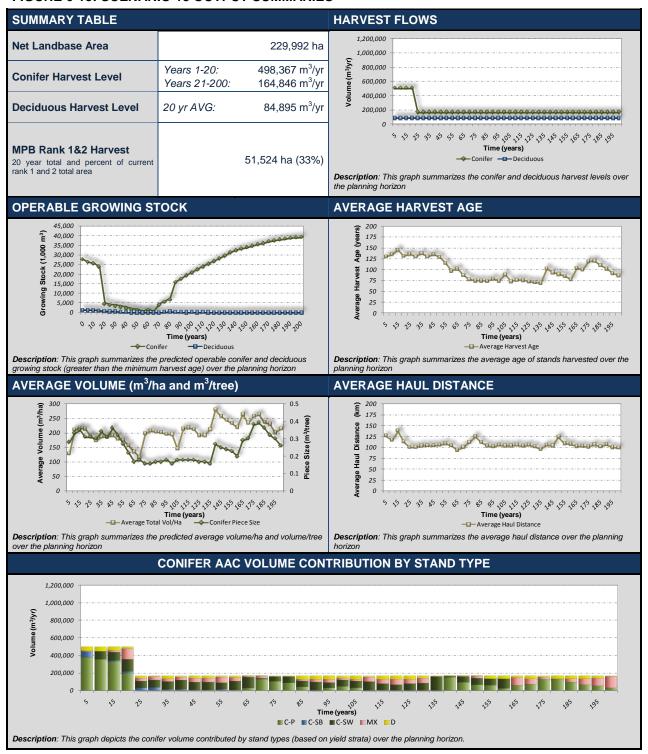


### **TABLE 6-20: SCENARIO 18 MODEL PARAMETERS**

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>For the first 20 years, implement the same activities as Scenario 4 (dual even-flow)</li> <li>SRD MPB disaster scenario assumptions are followed (i.e. attack at year 10, 10 years to salvage etc.)</li> <li>Even flow of conifer and deciduous in years 21-200</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-15: SCENARIO 18 OUTPUT SUMMARIES





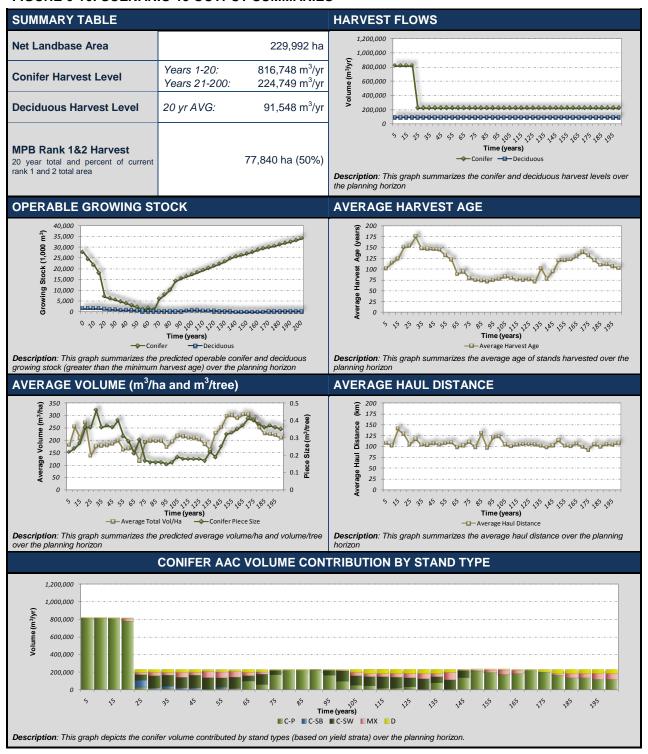


**TABLE 6-21: SCENARIO 19 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>For the first 20 years, implement the same activities as Scenario 15 (SRD caribou run with 90% of even flow rule)</li> <li>SRD MPB disaster scenario assumptions are followed (i.e. attack at year 10, 10 years to salvage etc.)</li> <li>Even flow of conifer and deciduous in years 21-200</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-16: SCENARIO 19 OUTPUT SUMMARIES





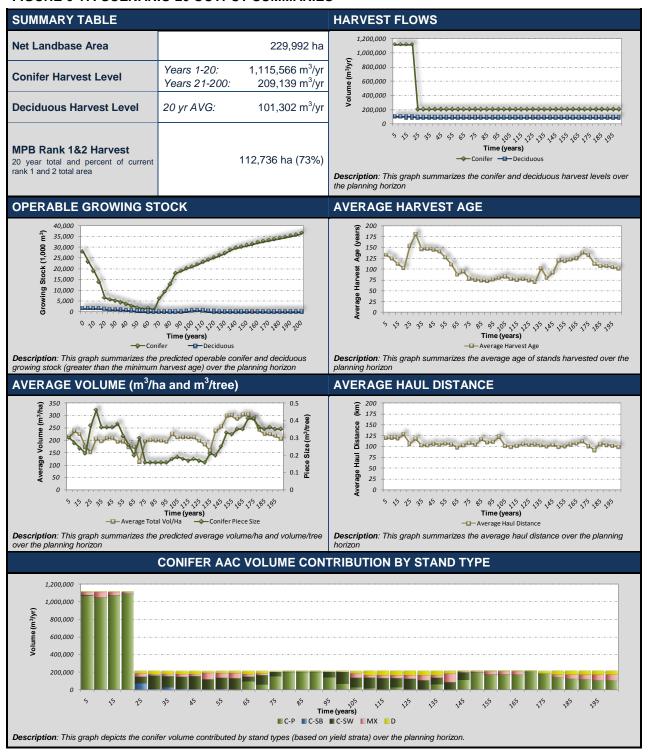


**TABLE 6-22: SCENARIO 20 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>For the first 20 years, implement the same activities as Scenario 17 (West Central Caribou Committee run)</li> <li>SRD MPB disaster scenario assumptions are followed (i.e. attack at year 10, 10 years to salvage etc.)</li> <li>Even flow of conifer and deciduous in years 21-200</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-17: SCENARIO 20 OUTPUT SUMMARIES





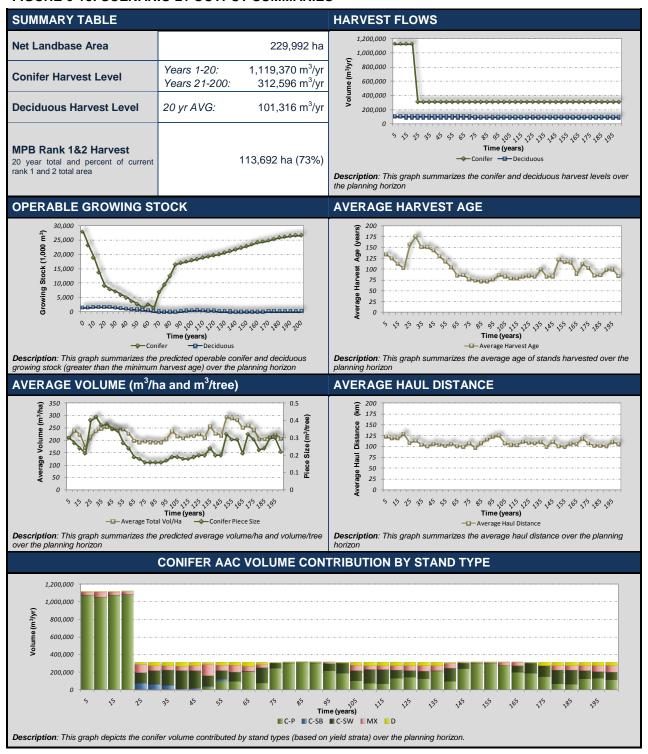


**TABLE 6-23: SCENARIO 21 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>Limited harvesting during the first 5 years in class 1 caribou intactness areas (~1250 ha selected)</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-18: SCENARIO 21 OUTPUT SUMMARIES





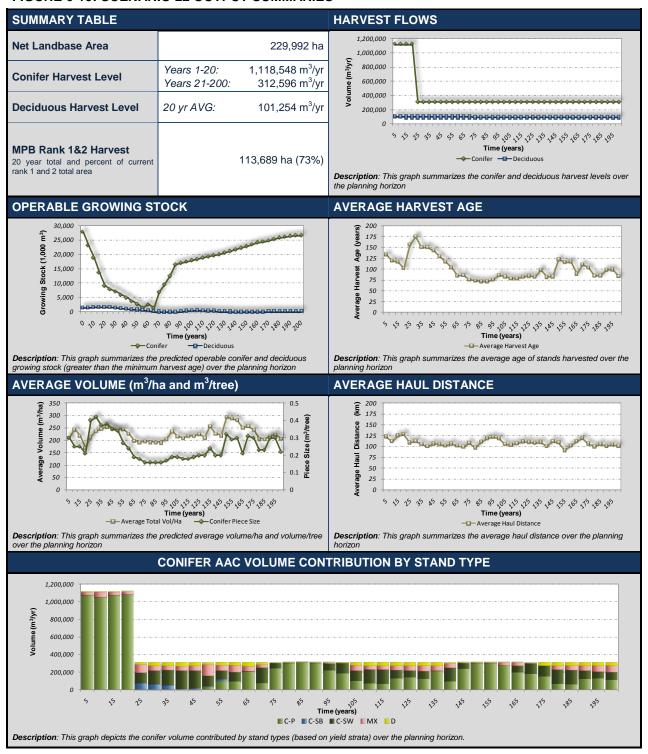


**TABLE 6-24: SCENARIO 22 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>Limited harvesting during the first 10 years in class 1 caribou intactness areas (~1250 ha selected for years 1-5 and ~1750ha selected for years 6-10)</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	2010 submitted yield curves
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-19: SCENARIO 22 OUTPUT SUMMARIES





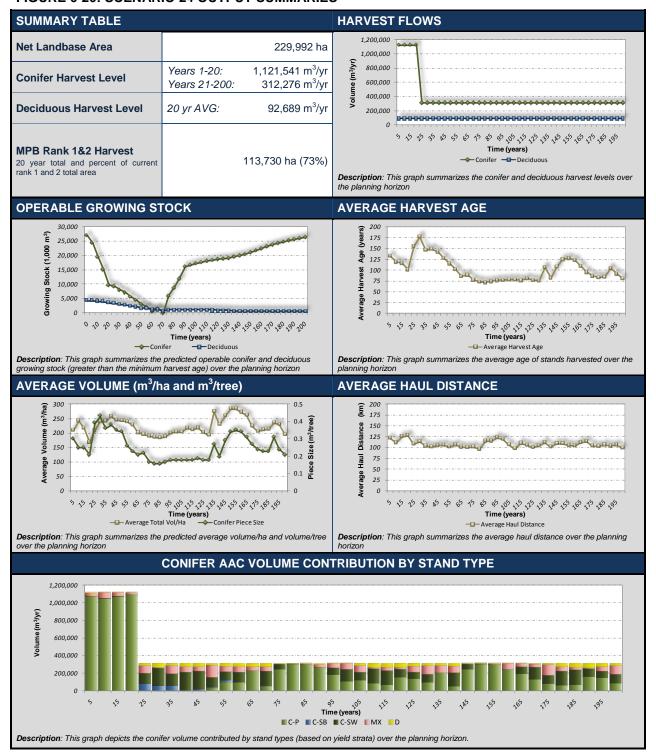


### **TABLE 6-25: SCENARIO 24 MODEL PARAMETERS**

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>Limited harvesting during the first 10 years in class 1 caribou intactness areas (~1250 ha selected for years 1-5 and ~1750ha selected for years 6-10)</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the</li> </ol>
	planning horizon
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	Revised 2010 submitted yield curves (conifer and deciduous base curves used for Yield Stratum #8, deciduous base curve used for Yield Stratum #12)
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-20: SCENARIO 24 OUTPUT SUMMARIES





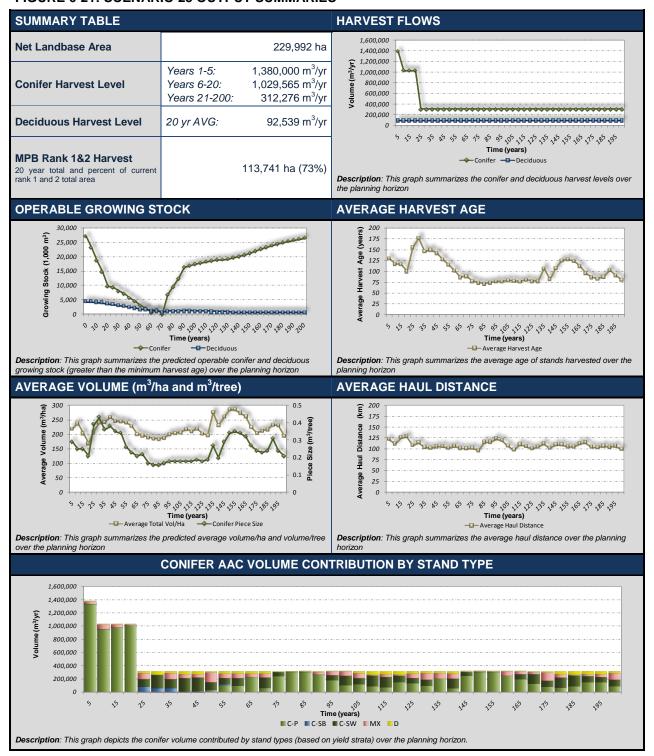


### **TABLE 6-26: SCENARIO 25 MODEL PARAMETERS**

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-5, 6-20 and also in years 21-200</li> <li>Limited harvesting during the first 10 years in class 1 caribou intactness areas (~1250 ha selected for years 1-5 and ~1750ha selected for years 6-10)</li> <li>Including 1.3 million m³ of carry-forward conifer volume to the first 5 years.</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase
Yield curves:	Revised 2010 submitted yield curves (conifer and deciduous base curves used for Yield Stratum #8, deciduous base curve used for Yield Stratum #12)
Cull Deductions:	Conifer: 1.5% Deciduous: 10%
Regeneration transition:	Fully stocked
Regeneration lag:	Not applied
Introduce harvest plans:	Not applied
Compartment sequencing:	Not applied
MPB Infestation:	Not applied



### FIGURE 6-21: SCENARIO 25 OUTPUT SUMMARIES





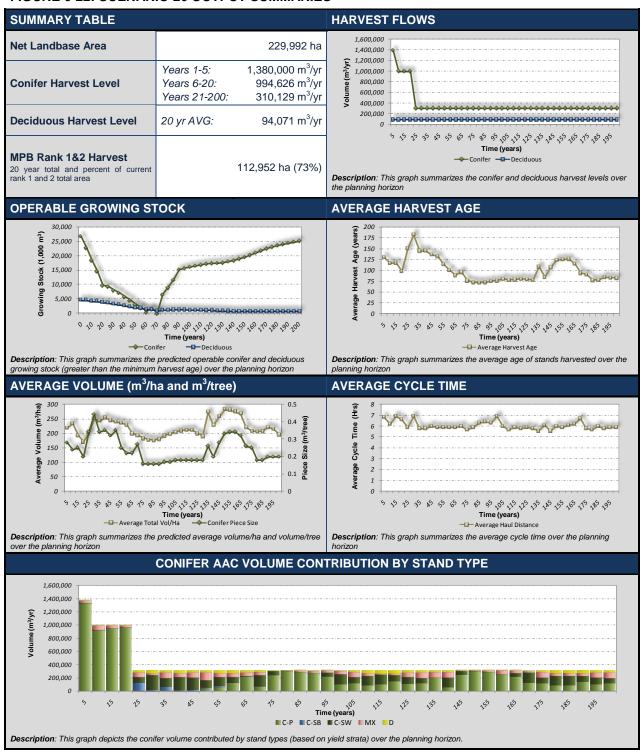


**TABLE 6-27: SCENARIO 26 MODEL PARAMETERS** 

CONTROL PARAMETER	PARAMETER SETTING			
Objective:	Maximize conifer volume harvested over the planning horizon			
Model constraints:	<ol> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-5, 6-20 and also in years 21-200</li> <li>Limited harvesting during the first 10 years in class 1 caribou intactness areas (~1250 ha selected for years 1-5 and ~1750ha selected for years 6-10)</li> <li>Including 1.3 million m³ of carry-forward conifer volume to the first 5 years.</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> <li>Isolated polygons less than 1 ha and other polygons infeasible for operation were excluded from the first 20 years of harvesting</li> </ol>			
Effective Date	2009			
Harvest unit:	ANC FMA area			
Planning horizon:	200 yrs			
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs			
Landbase:	2010 submitted net landbase			
Yield curves:	Revised 2010 submitted yield curves (conifer and deciduous base curves used for Yield Stratum #8, deciduous base curve used for Yield Stratum #12)			
Cull Deductions:	Conifer: 3.1% Deciduous: 7.2%			
Regeneration transition:	Fully stocked			
Regeneration lag:	2 Years			
Introduce harvest plans:	Applied (revised planned block layer)			
Compartment sequencing:	Not applied			
MPB Infestation:	Not applied			



### FIGURE 6-22: SCENARIO 26 OUTPUT SUMMARIES





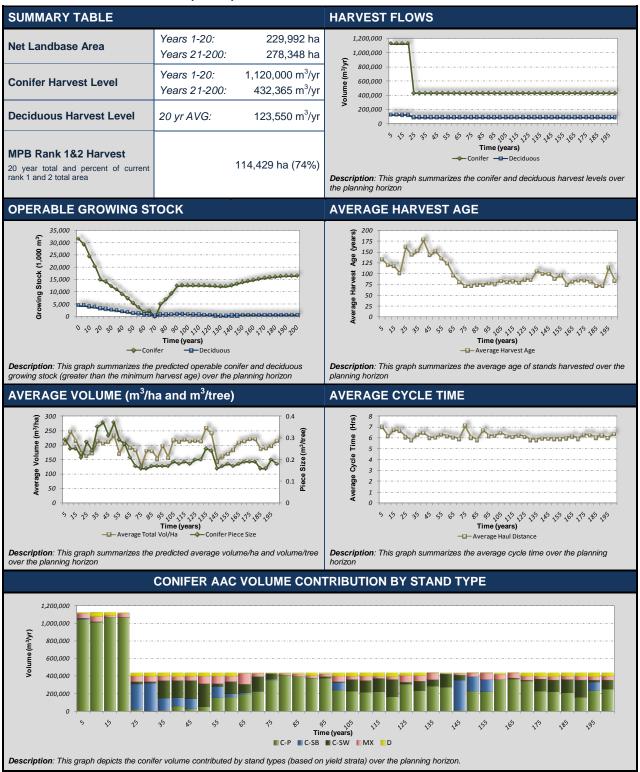


### TABLE 6-28: SCENARIO 31 (PFMS) MODEL PARAMETERS

CONTROL PARAMETER	PARAMETER SETTING			
Objective:	Maximize conifer volume harvested over the planning horizon			
Model constraints:	<ol> <li>Harvest 1.12 million m³/yr of conifer for the first 20 years.</li> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>Even flow of conifer and deciduous in years 1-20 and also in years 21-200</li> <li>In year 20, bring the temporary landbase withdrawal areas back into the productive landbase and assign them to the most appropriate existing yield strata</li> <li>Limited harvesting during the first 10 years in class 1 caribou intactness areas (~1250 ha selected for years 1-5 and ~1750ha selected for years 6-10)</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>			
Effective Date	2009			
Harvest unit:	ANC FMA area			
Planning horizon:	200 yrs			
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs			
Landbase:	2010 submitted net landbase with temporary merchantability deletions re-introduced at year 20			
Yield curves:	Revised 2010 submitted yield curves (conifer and deciduous base curves used for Yield Stratum #8, deciduous base curve used for Yield Stratum #12)			
Cull Deductions:	Conifer: 3.1% Deciduous: 7.2%			
Regeneration transition:	Fully stocked			
Regeneration lag:	2 Years			
Introduce harvest plans:	Applied (revised planned block layer)			
Compartment sequencing:	Not applied			
MPB Infestation:	Not applied			



FIGURE 6-23: SCENARIO 31 (PFMS) OUTPUT SUMMARIES



\*Please note that the even-flow harvest level shown in the bottom graph from years 21-200 could be increased starting at year 70, similar to scenarios 7 and 8. It is shown here as an constant level as requested by SRD.





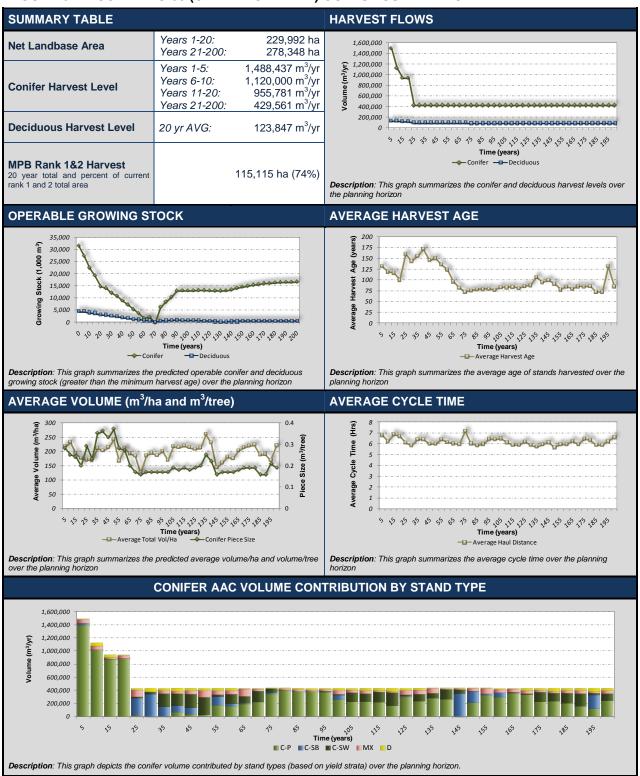
TABLE 6-29: SCENARIO 33 (CARRY FORWARD) MODEL PARAMETERS

CONTROL PARAMETER	PARAMETER SETTING
Objective:	Maximize conifer volume harvested over the planning horizon
Model constraints:	<ol> <li>For the first 5 years, harvest the PFMS AAC of 1.12 million m³/yr of conifer plus the total potential carry forward (1,842,184 / 5 years) = 1,488,437 m³/yr</li> <li>In years 6 to 10, harvest the PFMS AAC of 1.12 million m³/yr of conifer</li> <li>In years 11 to 20, harvest enough conifer to bring the 20 year total to 22.4 million m³ (same 20 year total as PFMS)</li> <li>Minimize operable conifer growing stock in pine dominant (≥50% pine) stands by year 20</li> <li>In year 20, bring the temporary landbase withdrawal areas back into the productive landbase and assign them to the most appropriate existing yield strata</li> <li>Even flow of conifer in years 11 to 20, and 21 to 200. Deciduous even flow in years 1 to 20 and 21 to 200</li> <li>Limited harvesting during the first 10 years in class 1 caribou intactness areas (~1250 ha selected for years 1-5 and ~1750ha selected for years 6-10)</li> <li>Non-declining conifer and deciduous operable growing stock during the last 50 years of the planning horizon</li> </ol>
Effective Date	2009
Harvest unit:	ANC FMA area
Planning horizon:	200 yrs
Minimum harvest age:	Conifer: 70 yrs Deciduous: 70 yrs
Landbase:	2010 submitted net landbase with temporary merchantability deletions re-introduced at year 20
Yield curves:	Revised 2010 submitted yield curves (conifer and deciduous base curves used for Yield Stratum #8, deciduous base curve used for Yield Stratum #12)
Cull Deductions:	Conifer: 3.1% Deciduous: 7.2%
Regeneration transition:	Fully stocked
Regeneration lag:	2 Years
Introduce harvest plans:	Applied (revised planned block layer)
Compartment sequencing:	Not applied
MPB Infestation:	Not applied





FIGURE 6-24: SCENARIO 33 (CARRY FORWARD) OUTPUT SUMMARIES



<sup>\*</sup>Please note that the even-flow harvest level shown in the bottom graph from years 21-200 could be increased starting at year 70, similar to scenarios 7 and 8. It is shown here as an constant level as requested by SRD.



### Alberta Newsprint Company

### **DETAILED FOREST MANAGEMENT PLAN**

#### 6.4.3.6 PREFERRED FOREST MANAGEMENT STRATEGY (PFMS) DETERMINATION

Following the November 29, 2010 DFMP submission, there were continued discussion between ANC and SRD regarding the surge and post surge harvest levels. A variety of scenarios were modelled and a "Supplement Timber Supply Analysis" document was submitted to SRD on April 21, 2011. An agreement was reached that Scenario 31 would form the basis of the new Preferred Forest Management Strategy (PFMS). Similar to Scenario 26, the primary goal of this scenario was the reduction of stands that are highly susceptible to mountain pine beetle (MPB) attack while meeting the caribou habitat criteria provided by SRD. These requirements led to an accelerated harvest over the first 20 years of the planning horizon and significant reduction in MPB susceptible stands. However, in contrast to Scenario 26, the new PFMS (Scenario 31) had no carry forward volume included to help provide clarity (the (sustainability of harvesting the carry forward volume was then addressed in Scenario 33, an additional and separate scenario).

As explained in the Supplement Timber Supply Analysis (April 21, 2011), Scenario 31 also included the re-introduction of the temporary withdrawal areas after year 20. This was requested by SRD, to address concerns over the post-surge harvest levels. Among other analytical details, the following key points were explained in the Supplement Timber Supply Analysis:

- In Scenarios 31, the temporary withdrawal areas (as described in section 5.10.8 of the Landbase Determination Document) were re-introduced into the active landbase after the first 20 years.
- These temporary withdrawal areas are identified in the submitted landbase file by NETDOWN=11.3 to 11.6 and can be described as follows:
  - Wet stands leading in black spruce (NETDOWN = 11.3);
  - 'A' density pine leading stands with a black spruce leading understorey and a Timber Productivity Rating (TPR) of fair (NETDOWN = 11.4);
  - Wet stands with an 'A' density pine leading overstorey, a black spruce leading understorey and a Timber Productivity Rating (TPR) of good or medium (NETDOWN = 11.5);
  - Stands leading in larch (NETDOWN = 11.6).
- While Scenario 31 used the yield curves submitted with the 2010 DFMP, as explained above it utilized a different net landbase after year 20 of the planning horizon. Since the submitted yield curves were developed using only sample plots from within the net landbase, there are no plots representing the temporary withdrawal areas. Temporary withdrawal stands were placed on the most appropriate yield curve available. The black spruce and larch stands were placed on the black spruce curve (YCNUM=7). The fair 'A' density pine stands were placed on the fair, low density pine curve (YCNUM=2). The good and medium 'A' density pine stands were placed on the good/medium, low density pine curve (YCNUM=1).



#### MPB Risk Reduction

Sustainable Resource Development produced and distributed an Interpretive Bulletin in September, 2006 to attempt to reduce the risk of a catastrophic MPB outbreak in Alberta. The Bulleting instructed forest management companies to reduce the area of Rank 1 and Rank 2 MPB stands to 25% of their current levels within 20 years.

A Mountain Pine Beetle (MPB) rank was applied to each stand within the ANC DFA, consistent with the Mountain Pine Beetle Stand Susceptibility Index program (version: Sep 14, 2006) released by Alberta Sustainable Resource Development. The area of Rank 1 and Rank 2 stands scheduled for harvest in the first 20 years was measured for each forest management scenario. This metric is displayed on the summary tables for each of the key forest management scenarios, included above. For the PFMS, the area of Rank 1 and 2 MPB stands scheduled for harvest by the timber supply model during years 1 – 20 is 112,952 ha. This represents 73% of the total area of Rank 1 and 2 stands within the Net Landbase.

After submission of their 2006 Mountain Pine Beetle DFMP Amendment, ANC discovered that some of the sequenced Rank 1 and Rank 2 MPB stands had only a small component of pine. Harvesting stands with only a small component of pine while trying to reduce the risk of MPB makes little sense. For this reason, the PFMS targets pine leading stands (≥50% pine component in the AVI call). Specifically, the PFMS attempts to harvest all operable conifer growing stock in these pine leading stands by year 20 of the planning horizon. Achieving this goal and creating a landbase that is far less prone to the devastating effects of a MPB outbreak requires a largely accelerated harvest.

#### Regional MPB Analysis

A Regional MPB Committee, with representation from all of the major Forest Products companies within the Whitecourt Region, developed a MPB cut priority rating. The rating was generated using an MPB risk model to assign each stand in the region a cut priority with respect to reducing MPB risk.

Table 6-30 below summarizes the effectiveness of the 20-Year SHS at reducing the high priority MPB stands as identified by the analysis done by the Regional MPB committee.



TABLE 6-30: REGIONAL MPB COMMITTEE'S CUT PRIORITY IN THE SHS

CUT PERIOD	20 YEAR SHS AREA (HA) BY MPB CUT PRIORITY							TOTAL
COT FERIOD	1	2	3	4	5	10	Null	IOIAL
Years 1-5	11,842	9,207	1,008	3,649	192	3,908	7	29,813
Years 6-10	11,712	7,583	1,243	1,982	0	2,328	14	24,863
Years 11-15	8,708	13,814	1,727	1,486	0	2,893	10	28,637
Years 16-20	6,270	12,263	9,501	1,231	0	5,936	11	35,212
Total SHS Area	38,532	42,866	13,479	8,348	193	15,064	43	118,525
Total Net Landbase Area	40,708	44,900	15,752	10,057	3,892	114,537	146	229,992
Percent of Net Landbase Area in 20 Year SHS	95%	95%	86%	83%	5%	13%	29%	52%

#### Caribou Habitat Maintenance

As requested by SRD, the PFMS SHS contains only limited, contiguous harvesting in the Primary Caribou Intactness Area (see Map 6-1) during the first 10 years of the planning horizon. The allowable harvest area in this zone, as provided by SRD, was 1,250 ha for years 1 to 5 and 1,750 ha for years 6 to 10. The table below summarizes the area sequenced within the Primary Caribou Intactness area in the 20-year SHS.

TABLE 6-31: AREA HARVESTED IN THE PRIMARY CARIBOU INTACTNESS AREA

PERIOD	AREA (HA) SEQUENCED
Years 1-5	1,247
Years 6-10	1,657
Years 11-15	4,878
Years 16-20	4,186
Total	11,968

### Spatial Analysis

Spatial modeling was performed on specific scenarios (including the PFMS) in Stanley, another component of the Remsoft Spatial Planning System. The sequence was constrained by minimum and maximum polygon sizes, proximity distances and validation of selected stands by staff of ANC and the quota holders.

For the PFMS, the following spatial parameters were used in Stanley:

Minimum polygon size: 2 ha

Adjacency distance: 100 m





Maximum polygon size: 1,000 ha

Green-up: N/A

#### Sliver Polygon Removal

The first version of the sequence was reviewed and all isolated polygons less than 1 ha in size (sliver polygons) that were sequenced in the first 20 years were identified. The landbase was then put through Woodstock again using the same PFMS (Scenario 31) model parameters but with the identified sliver polygons blocked from harvest. The Woodstock output was run through Stanley again with the same PFMS spatial constraints and the sliver polygon identification and removal process was repeated.

#### Spatial Harvest Sequence Review

A shapefile of the spatial harvest sequence was distributed to the quota holders with all necessary information to review the stands selected for harvest during the first 20 years.

The 20-year spatial harvest sequence (SHS) generated from the above process is displayed on Map 6-1.

#### Harvest Sequence Database

A database that identifies the polygons sequenced in the first 70 years of the planning horizon is provided on the DVD enclosed in this document. Table 6-32 describes what data fields are included in the database and also gives a description of the database structure. The database links with the net landbase data and the landbase coverage (both included on a DVD in the Net Landbase Determination document) via the unique identifier field "GL100621".

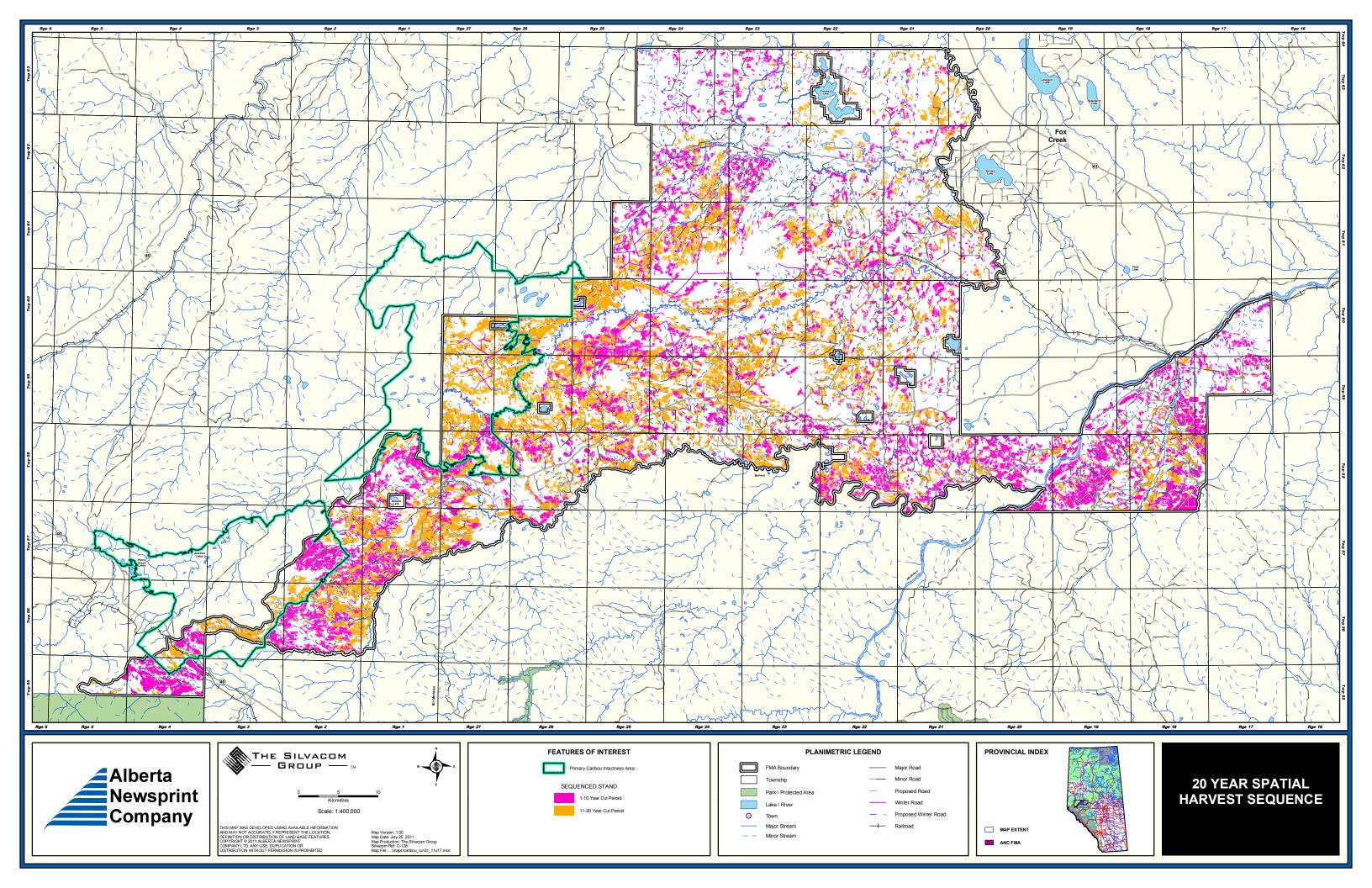
TABLE 6-32: HARVEST SEQUENCE DATABASE STRUCTURE AND DESCRIPTION

FIELD NO.	FIELD NAME	FIELD TYPE	FIELD WIDTH	NO. OF DECIMALS	FIELD DESCRIPTION
1.	GL100621	Number	20	0	Unique Identifier
2.	CUT_PERIOD	Number	3	0	5-year Harvest Period (Periods 1 to 14)
3.	CUTAGE5	Number	4	0	Age of the Polygon in 5-Year Classes at Harvest
4.	CONTPM	Number	10	5	Conifer Piece Size (trees/m³) at Harvest
5.	DECTPM	Number	10	5	Deciduous Piece Size (trees/m³) at Harvest
6.	CVOLHA	Number	8	2	Conifer Volume per Hectare (m³/ha) at Harvest
7.	DVOLHA	Number	8	2	Deciduous Volume per Hectare (m³/ha)
8.	CVOL	Number	8	2	Conifer Volume (m <sup>3</sup> ) at Harvest





FIELD NO.	FIELD NAME	FIELD TYPE	FIELD WIDTH	NO. OF DECIMALS	FIELD DESCRIPTION
9.	DVOL	Number	8	2	Deciduous Volume (m3) at Harvest
10.	HAUL_TIME	Number	8	2	Haul Cycle Time (hrs)
11.	COMPANY	Character	10		Company the Polygon is Allocated to in the SHS (only applies to years 1-10):  Blank (MISSING); ANC; BRL; MWFP.



#### 6.4.3.7 COMPANY ALLOCATIONS

The Alberta Forest Management Planning Standard expects that the Spatial Harvest Sequence within the Detailed Forest Management Plan identifies which operator will be harvesting which stands in sufficient detail. The following approach was taken to accomplish that.

The FMA Timber Supply Analysis was executed without consideration of which operator harvested which stands. All companies involved (ANC Timber Ltd., Blue Ridge Lumber Inc., and Millar Western Forest Products) engaged in discussions on how the SHS would be allocated to each operator. Agreement was reached on the principal of allocating the SHS stands in a balanced way relative to a series of metrics. The metrics agreed to were; average piece size, haul time to Whitecourt, average volume per hectare, and area within the Primary Intact Caribou zone. The intent was to have the value of each metric for each Companies individual ten year allocation approximate the average for all volume scheduled in the first ten years of the SHS.

Upon completion of the TSA and selection of the PFMS and resultant SHS, ANC Timber created a draft allocation plan by attempting to balance the above metrics by Company as compared to the average values for all timber in the first ten year period. That initial scenario was reviewed by Millar Western and Blue Ridge Lumber and adjusted based on their input. Table 6-33 depicts the results of the allocation process. Map 6-2 depicts the allocation spatially.

**TABLE 6-33: SEQUENCE BALANCING BY COMPANY** 

COMPANY	AVERAGE PIECE SIZE TREES/M³	AVERAGE HAUL CYCLE TIME* TO WHITECOURT (HRS)	AVERAGE VOLUME PER HA	TARGET** AREA WITHIN PRIMARY CARIBOU ZONE (HA)	SCHEDULED AREA WITHIN PRIMARY CARIBOU ZONE (HA)
ANC Timber Ltd	3.8	6.5	202	1,873	2,012
Blue Ridge Lumber Inc.	4.0	6.4	203	580	526
Millar Western Industries	4.0	6.4	194	452	366
Ten Year Totals				2,904	2,904
Ten Year Averages	3.9	6.4	201		

<sup>\*</sup>The "Average Haul Cycle Time" was weighted by the volume in each scheduled polygon to account for the amount of hauling required.



<sup>\*\*</sup>Because operating within the Primary Caribou Intact Zone implies the potential for increased operating costs and potential limitations to operability, a balanced approach was taken in allocating these areas. The Target amount represents each company's portion of the total target area relative to their percentage AAC allocation.



The allocation of stands to each company covers a ten year period. Management plans are rewritten approximately every ten years. The intent of this process is that companies harvest the average profile for these metrics beyond the life of this DFMP. In future DFMPs and subsequent spatial allocations of stands to Companies historic harvesting will be taken into account. It is the intent that each company harvests average profile values on an ongoing basis while maintaining a certain amount of company specific flexibility during shorter time periods.

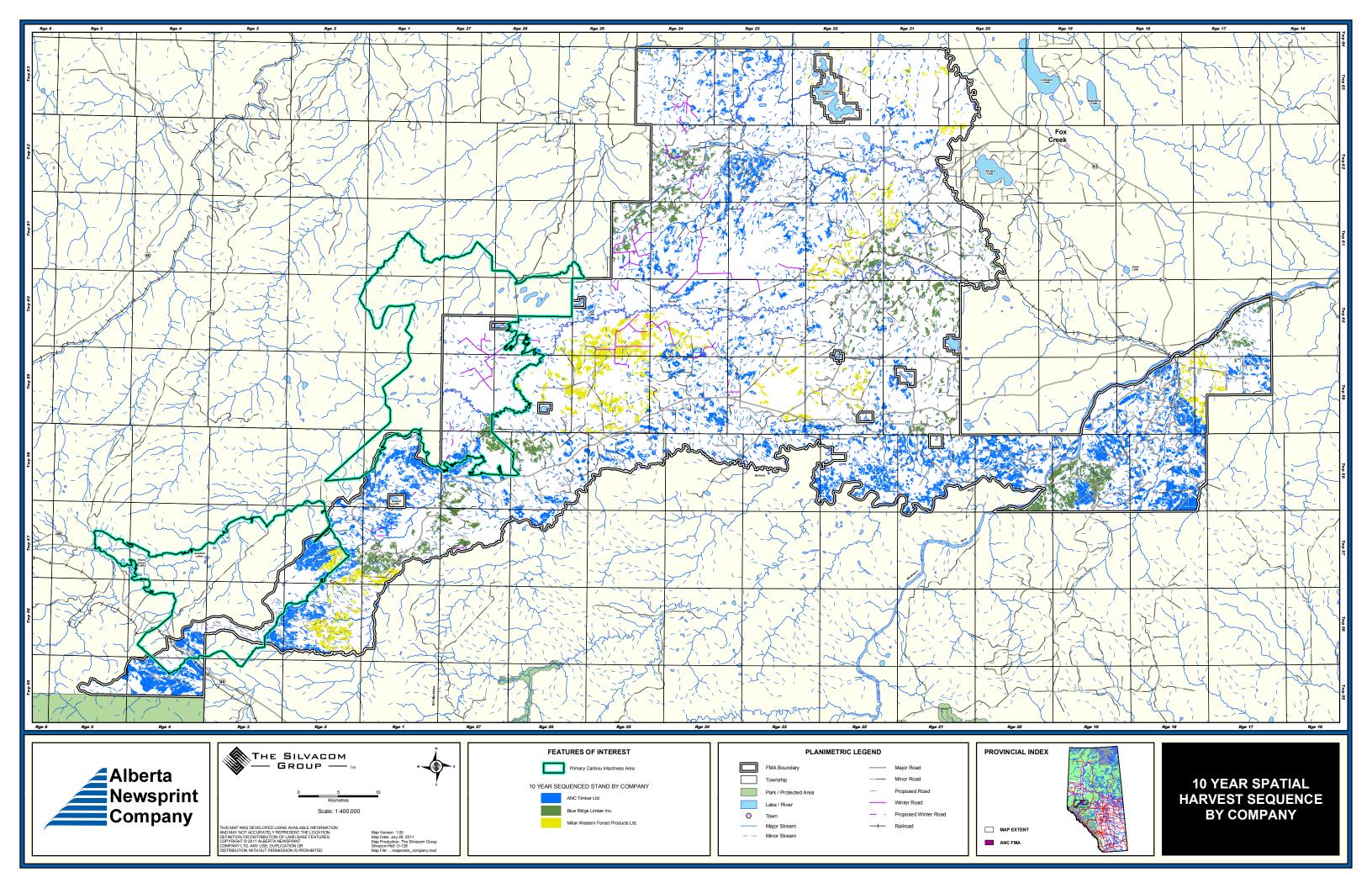
#### 6.4.3.8 DECIDUOUS MANAGEMENT

Because this DFMP calculates fibre flows from a single landbase there are no incidental volumes as sometimes defined in other Forest Management Plans throughout Alberta. All volumes projected to flow from the spatial harvest sequence contribute to the AAC of both deciduous and coniferous species. Deciduous encountered by operators while harvesting conifer contributes to the deciduous AAC. The reverse is true of conifer flows from predominantly deciduous stands.

ANC Timber Ltd. has exclusive rights to deciduous volumes while all three Companies have certain rights relative to the conifer volumes. The company specific allocation of the spatial harvest sequence focuses on ensuring an adequate amount of conifer is available to each company based on their rights and commitments with Alberta. In harvesting those stands quota holders should fully expect to encounter deciduous volume. The amount of deciduous that is expected to be generated by the quota holders over the first ten year period is predicted by the SHS. As stated, this volume contributes to the deciduous AAC and must be managed as such.

Quota holders have two basic options available to them when dealing with this volume. They can leave the deciduous standing to be accessed by ANC at a later date or they can work out a contractual arrangement with ANC Timber Ltd. prior to harvesting any deciduous volume. The amount of deciduous that is forecast to be generated through the SHS and company allocations will provide assistance when contract discussions occur. Leaving the volume standing would likely create issues and concerns relative to the timing of reforestation activities by the coniferous operators and is hence not the preferred option. By allocating ten years worth of coniferous volume there should be adequate flexibility to manage deciduous flows in a way that eliminates disruption to any company's plans.





#### 6.4.3.9 ANNUAL ALLOWABLE CUT (AAC)

The AAC proportions by company are displayed in Table 6-34.

**TABLE 6-34: CONIFER AAC PROPORTIONS BY COMPANY** 

COMPANY	ANC Timber Ltd (includes 1% for MTU)	Blue Ridge Lumber Inc	Millar Western Industries	Total
CONIFER AAC PROPORTION	64.48%	19.96%	15.56%	100%

Table 6-35 indicates the conifer annual allowable cut (AAC) by company for the 20-year SHS. The company AACs were generated by applying the AAC proportions by company to the total conifer volume scheduled for harvest in the 20 year SHS (21,971,293m<sup>3</sup> divided by 20 years is 1,098,565m<sup>3</sup>/yr). The deciduous AAC, which is allocated completely to ANC, is summarized in Table 6-36. The totals in both tables differ from the harvest levels calculated in Woodstock (as shown in Figure 6-23) because of the spatial constraints discussed in the Spatial Analysis section on page 6-80.

TABLE 6-35: CONIFER AAC BY COMPANY FOR YEARS 1 TO 20

PERIOD	CONIFER	TOTAL					
	ANC Timber Ltd. Company <sup>1</sup>	1					
Years 1 to 20	708,354	219,274	170,937	1,098,565			

TABLE 6-36: DECIDUOUS AAC FOR YEARS 1 TO 20

PERIOD	DECIDUOUS AAC (M³/YR)
Years 1 to 20 (20 year average)	121,248

#### Alternate Utilization Standard Conversions

Current government policy allows operators to request the ability to operate under a different utilization standard than the DFMP used in determining the Annual Allowable Cut. Reasons for these are varied. The following work was done, not to seek approval for any changes to utilization standards, but rather to facilitate a request should one be brought forward. It is still the responsibility of any company to seek Alberta Government approval for any utilization standard that differs from what their tenure states.

<sup>&</sup>lt;sup>1</sup> 1% of the total AAC is allotted to miscellaneous timber uses MTU). That 1% is included in ANCs proportion in this table.



The quota holders, Blue Ridge Lumber and Millar Western Forest Products, requested the calculation of conversion factors that could be applied to the AAC should they choose to use utilization standards alternate to the 15/10 standard that the timber supply analysis was based upon. Conversion factors were requested for the following utilization standards: 15/11, 15/12, 15/13, and 19/13.

The process to determine the requested conversion factors consisted of using temporary sample plot data to determine the average volume (m³/ha) at each of the utilization standards for each base strata and 10 year age class. These averages were then area weighted by the proportion of area in each base strata/age class combination that is scheduled for harvest in the 20 year SHS to determine the overall average volume (m³/ha) of the sequenced stands for each utilization standard. These overall area-weighted average volumes, both conifer and deciduous, are provided in Table 6-37, along with the conversion factors, which are simply the proportional relationship between average volume for each utilization standard and the average volume for the base 15/10 standard.

TABLE 6-37: AAC CONVERSION FACTORS FOR ALTERNATE UTILIZATION STANDARDS

UTILIZATION STANDARD	15/	/10	15/	11	15/	12	15/	13	19/	13
Species Type	Con.	Dec.	Con.	Dec.	Con.	Dec.	Con.	Dec.	Con.	Dec.
Area-Weighted Average Volume (m³/ha) (Generated from TSP data) for the 20-Year SHS	210.0	38.8	204.4	38.4	196.7	37.8	186.5	37.1	174.3	36.7
Conversion Factor (%)	100.0	100.0	97.3	98.9	93.7	97.5	88.8	95.7	83.0	94.7

#### 6.4.3.10 CARRY FORWARD VOLUME

Current Alberta Government policy allows a forest products company to apply for the ability to harvest unharvested volume from the previous quadrant in subsequent quadrants. This opportunity is referred to as Carry Forward volume. Alberta policy regarding Carry Forward expects that the implications to long term fibre supply of approving those requests are considered.

At the time of writing of this DFMP Millar Western, Blue Ridge Lumber, and ANC Timber Ltd. intended to apply to ASRD for Carry Forward volume.

Table 6-38 summarizes the current level of Carry Forward entitlements that each company feels they have. These numbers will be considered at the time each individual company applies to Alberta for Carry Forward opportunities.

As explained earlier in this DFMP the intent of the harvest scheduling and harvest levels of the DFMP is to convert the Mountain Pine Beetle susceptible stands to a younger age class within the first twenty year period. Because there is a finite amount of MPB susceptible areas awarding Carry Forward opportunities could result in non-susceptible stands being sequenced under the surge cut scenario. That is not the





intent. As can be seen in Table 6-38 the total volume harvested over the first 20 year period of the DFMP is the same whether Carry Forward is approved by Alberta or not. If Carry Forward is approved the MPB susceptible stands are cut sooner in the first twenty years (during the first 5 year quadrant) and the levels of harvest in the last decade are reduced accordingly. Harvest levels in the second five year quadrant return to the AAC levels regardless of the amount of Carry Forward approved. Similarly, if the amount of Carry Forward that Alberta approves is different than the amount depicted in the table then the level of harvest in the final 10 year period would be adjusted accordingly. The total volume harvested in the first 20 years does not change.

**TABLE 6-38: CARRY FORWARD VOLUME SUMMARY** 

		Without Carry						
COMPANY	% OF AAC	AAC with no Carry Forward (Total AAC*%) Years 1 - 20	Years 11- 20 (AAC*10-C.F.)/10  Years 6 - 10 (AAC)  Years 1 - 5 (AAC+C.F./5)  Carry Forward Entitlement					With Carry Forward
ANC	64.48%	708,354	834,486	875,252	708,354	624,906	14,167,090	14,167,090
BRL	19.96%	219,274	<del>                                     </del>					4,385,470
MWFP	15.56%	170,937	471,407 265,218 170,937 123,796 3,418,733 3,418,73					3,418,733
TOTAL	100.00%	1,098,565	1,842,184	1,467,001	1,098,565	914,346	21,971,293	21,971,293

#### 6.4.3.11 SHS VARIANCE

Analyses that use the Spatial Harvest Sequence done both within and outside of this DFMP expect that actual harvesting is carried out following both the spatial and temporal schedule in the SHS. The outcomes of those analyses presuppose that the actual harvesting on the ground will mimic what the SHS depicts otherwise the outcomes of the analyses are not appropriate. At the same time, it is not reasonable to expect that a Spatial Harvest Sequence will exactly reflect on the ground harvesting activities. There simply is too much variability in the systems at play to expect that to be the case particularly in light of the unfolding Mountain Pine Beetle epidemic. In order to strike a balance between this seeming conflict the following approach will be used during the delivery of this DFMP.



#### Alberta Newsprint Company

## **DETAILED FOREST MANAGEMENT PLAN**

The net forested landbase has been stratified into thirteen yield classes for the purpose of timber yield estimating. These thirteen strata will be used as the basis for monitoring the adherence of harvest plans to the Spatial Harvest Sequence modeled.

Table 6-39 and Table 6-40 illustrate the reporting standard that will be used using the 20 year SHS strata compartment area as the target. Table 6-39 represents a given Company's plans to harvest while Table 6-40 represents a reporting of what was actually harvested. Both are necessary to account for minor variations that can occur between planned and actual harvesting.

In Table 6-39 the amount of area, in hectares, by yield strata for each of the thirteen strata is listed. The Forest Operator then lists, for a given Final Harvest Plan or Compartment Design, how much area they intend to cut within each stratum. In situations where proposed harvest levels exceed 120% of the total compartment area for a given strata, rationale will be provided as part of the approval request submission.

Table 6-39 will be provided with any new Final Harvest Plan or Compartment Design.

TABLE 6-39: PROPOSED HARVEST AREA BY YIELD STRATA AND COMPARTMENT (EXAMPLE)

	20 YEAR		CD OR	FHP AREA	S (HA)			%
YC STRATA	SHS AREA (HA)	#1	#2	#3	#4	#5	TOTAL	TOTAL
C-P-AB-GM	-	-		-	-	-	-	-
C-P-AB-F	-	-	-	-	-	-	-	-
C-P-CD-GM	2,700	1,000	250	1,000	1,000	100	3,350	124%
C-P-CD-F	-	-	-	-	-	-	-	
C-SW-AB	4,500	1,000	1,000	1,000	500	1,500	5,000	111%
C-SW-CD								
C-SB	300	50	-	-	-	-	50	17%
CD-P	-	-	-	-	-	-	-	-
CD-S	1,000	-	-	100	-	-	100	10%
DC-P	1,500	-	-	900	-	600	1,500	100%
DC-S	-	-		-	-	-	-	-
D-G	-	-	-	-	-	-	-	-
D-MF	-	-	-	-	-	-	-	-
Totals	10,000	2,050	1,250	3,000	1,500	2,200	10,000	100%

In order to account for any changes that might occur between harvest approvals and the actual harvest activity, Table 6-40 will be submitted annually as part of the Annual Operating Plan.

Similar to Table 6-39, this table lists the cumulative amount of area that has been cut within each stratum. The intent is to not harvest less than 80% of a sequenced stratum or more than 120%.





#### TABLE 6-40: ACTUAL HARVEST AREA BY YIELD STRATA – COMPARTMENT X (EXAMPLE)

	20 YEAR		ACTUAL H	IARVEST A	AREA (HA)			%
YC STRATA	SHS AREA (HA)	2009/10	2010/11	2011/12	2012/13	2013/14	TOTAL	TOTAL
C-P-AB-GM	-	-	-	-	-	-	-	-
C-P-AB-F	-	-	-	-	-	-	-	-
C-P-CD-GM	2,700	800	300	-	1,800	100	3,000	111%
C-P-CD-F	-	-	-	-	-	-	-	
C-SW-AB	4,500	700	1,200	1,000	500	1,200	4,600	102%
C-SW-CD	-	-	-	-	-	-	-	-
C-SB	300	50	-	-	-	-	50	17%
CD-P	-	-	-	-	-	-	-	-
CD-S	1,000	-	-	100	-	-	100	10%
DC-P	1,500	-	-	900	500	-	1,400	93%
DC-S	-	-	-	-	-	-	-	-
D-G	-	-	-	-	-	-	-	-
D-MF	-	-	-	-	-	-	-	-
Totals	10,000	1,550	1,500	2,000	2,800	1,300	9,150	91.5%







SECTION 7
REFORESTATION



#### 7 REFORESTATION

#### 7.1 FMP REFORESTATION STRATEGY

- 1. The Natural Sub-regions are described in the FMP.
- 2. The tree species that ANC Timber Ltd (ANC) grows for reforestation on the landscape are:
  - Lodgepole Pine

A very tough species well adapted for growth on higher, better drained sites. Shallow soils with lodgepole pine cones result in plenty of natural ingress.

White Spruce

This species is selected where sites are moist, nutrient rich and can tolerate shade from competition.

Black Spruce

This species naturally grows with lodgepole pine and also grows well in black organic elevated soils

• Trembling Aspen

Typically aspen regenerates nicely in "D" blocks. We have done some trial aspen planting but it is cost prohibitive.

- 3. The seed zones in the ANC Forest Management Area are:
  - UF 1.3
  - UF 1.2
  - LF 2.1
  - LF 1.4
  - CM 3.4
  - SA 1.1
  - SA 2.1

ANC maintains a five year seed supply of lodgepole pine seed and ten years of white spruce for compartments with planned harvesting. Limited quantities of black spruce have been collected in the



past, but with the new Alberta Regeneration Standard, more collecting of black spruce will be necessary in all of the active seed zones. The seed inventories are reviewed annually and cone collection plans are prepared from the results of the seed inventory review.

With the arrival of the mountain pine beetle, it is anticipated that larger pine seed inventories will be targeted.

#### 4. Genetically Improved Stock.

ANC currently plants genetically improved stock in the W8 management unit. This practice will continue providing we continue to have genetically improved stock at our disposal. The Huallen Seed orchard is supplying enough seed for our needs at this time. We have also collected some additional seed from UF1.2 so seed would be available in the event of a lack of seed production from the Huallen orchard. The seed produced from the Huallen orchard is for G1 (lodgepole pine) and Region I (white spruce).

At this time, ANC is not seeking genetic gain by planting genetically improved stock, but we may do so in the future.

#### 5. Secondary Timber Species

Pure "C" stand types: coniferous seedlings are planted on the block, roads and slash piles. Vegetation management is practiced to control the ingress of secondary timber species.

Pure "D" stand types: the block is left for natural suckering except for the roads and slash piles which are reforested to coniferous seedlings.

#### 6. Strata Balancing

ANC is committed to following government policy on balancing and maintaining the strata's as shown in the original inventory.

#### 7. Silviculture Prescription Process

Many of ANC blocks have had pre harvest assessments completed. The sites are visited, soil pits are dug, the ecosystem type is determined and a reforestation prescription is suggested. During or after the harvesting of the block, the block is visited again. The site is again looked at in regards to duff depth, stoniness, drainage, vegetation competition, cone availability, access and other operational constraints. At this time, a site prep prescription is recommended with a proposed season of treatment.

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**TABLE 7-1: SITE PREPARATION TIMING** 

SITE PREP TYPE	APPROXIMATE TIMING
Ripper plowing	December 1st to March 15th
Excavator mounding	May to March
Donaren mounding	May 15th to October 15th
Disc Trenching	May 15th to October 15th
Drags (barrels & chains)	June 1st to October 15 <sup>th</sup>
Chemical	August15th to September 15th

#### 8. Understorey Management Strategies

Understorey management strategies are not planned on any part of the landscape. There is no assumption in the Timber Supply Analysis that the understory will exist at maturity of the overstorey.

#### 9. Enhanced Forest Management Strategies

Choosing this type of strategy typically requires the development of a crop plan. ANC does not have a crop plan in the FMP.





#### 7.2 REFORESTATION STRATEGY TABLE

#### **TABLE 7-2: REFORESTATION STRATEGY TABLE**

REGENERATED YIELD TRAJECTORY (LEADING + SECONDARY SPECIES)	STRATA STANDARD (C, CD, DC, D)	TRANSITIONS TOWARD CLIMAX	SPECIES PROPORTIONS	LIMITATIONS TO CROP ESTABLISHMENT	SILVICULTURE SYSTEM	SITE PREP	SEEDLING ESTABLISHMENT (INCLUDES LFN)	SEEDLING DENSITY	REFORESTATION STAGE INTERVENTION
Deciduous	D	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	80% deciduous	elevation, soil moisture, soil type & grass competition	clear cut	no site prep	LFN - deciduous	1000 to 1800/ha	
Hardwood/Pine	DC	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	50% deciduous, 30% coniferous	elevation, soil type & grass competition	clear cut with retention	elevated microsite	Planting Pine, LFN deciduous	800 to 1800/ha	stand tending
Hardwood/Spruce	DC	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	50% deciduous, 30% coniferous	elevation, soil moisture, soil type, grass & aspen competition	clear cut with retention	elevated microsite	LFN deciduous, Planting Spruce	800 to 1800/ha	stand tending
White Spruce/Hardwood	CD	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	50% coniferous,30% deciduous	elevation, soil moisture, soil type, grass & aspen competition	clear cut with retention	elevated microsite	Planting Spruce, LFN deciduous	1000 to 1800/ha	stand tending
Pine/Hardwood	CD	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	50% coniferous,30% deciduous	grass & aspen competition	clear cut with retention	elevated microsite	Planting Pine, LFN deciduous	1000 to 1800/ha	stand tending
Black Spruce/Hardwood	CD	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	50% coniferous,30% deciduous	elevation, soil moisture & grass	clear cut	elevated microsite	Planting Black Spruce, LFN deciduous	1000 to 1800/ha	stand tending
White Spruce pure or leading	С	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	80% coniferous	elevation, soil moisture, grass, soil type & aspen competition	clear cut	elevated microsite chemical	Planting White Spruce	1400 to 1800/ha	stand tending
Pine pure or leading	С	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	80% coniferous	grass & aspen competition	clear cut	dragging elevated microsite chemical	Planting Pine, LFN Pine	1400 to 1800/ha	stand tending
Black Spruce pure or leading	С	No transitions expected however as the stand composition progresses changes may have to be made to ensure strata balancing.	80% coniferous	elevation, soil moisture, grass and soil type	clear cut	elevated microsite	Plant Black Spruce, LFN Black Spruce	1400 to 1800/ha	stand tending
Douglas Fir pure or leading	С	nonexistent in the ANC FMA	n/a	n/a	n/a	n/a	n/a	n/a	n/a

#### Column Explanations/expectations:

- 1. Regenerated Yield Trajectory: Taken from "Yield Projection Guidelines for Alberta" (the Alberta Forest Planning Standard)
- 2. Strata Standard: Alberta uses C, CD, DC and D as an active label/designation for pure and mixedwood stands, showing species group leading. The Regenerated Yield Trajectory is commonly translated into one of these strata standards.
- 3. Transitions Towards Climax: Will the regenerated stand move through another stand structure before ending up at what's projected? May have implications on future cut calculations, balancing and initial silviculture prescriptions.
- 4. Species Proportions: The target proportion of coniferous and deciduous in the regenerated stand based on a standard or productivity objective.
- 5. Climatic/Site Limitations: The factors in climate and on the site that are expected to significantly increase the risk of NOT reaching establishment of the (survival) or the regenerated yield objective (productivity). This will contribute to the justification (good science) for the treatments chosen
- 6. Silviculture System: Could be clearcut, shelterwood, seed-tree, partial cut, understory protection. Choosing a silviculture system strategy should be about working with the regenerative silvics of the species to be reforested, operational delivery logistics and productivity objectives.
- 7. Site Prep: Operational strategies to alleviate site or climatic limitations and/or species to be established. Could be raised bed, drag, mixing and sometimes chemical.
- 8. Seedling Establishment: The operational strategy to introduce the seedling to the site. Includes planting, artificial seeding, Leave-for-Natural (LFN).
- Seedling Density: An operational strategy that is applied to achieve full site coverage (stocking/density targets) in the initial stages of regeneration in order to reduce the effects of mortality on the objective. May also be a target set as a minimum objective reached during the Reforestation Stage (first 14 and used as an early target in an Alternative Regeneration Standard (ARS) objective, a surrogate measure of early productivity.
   Reforestation Stage Intervention: The Reforestation Stage is Year 0 to Year 14. The objective is to get the regenerated stand to Free-To-Grow (FTG). In the Reforestation Stage there is the Establishment Phase and Performance Phase and in each of these Phases one might choose some type
- 10. Reforestation Stage Intervention: The Reforestation Stage is Year 0 to Year 14. The objective is to get the regenerated stand to Free-To-Grow (FTG). In the Reforestation Stage there is the Establishment Phase and Performance Phase and in each of these Phases one might choose some type of intervention to ensure the objective is reached. This could include herbicide (chemical or mechanical) for grass, herbicide for competition, fill-in-plant for mortality, etc.



#### 7.3 RSA MAI TARGETS

The following table provides the RSA MAI targets for the ANC FMA.

**TABLE 7-3: RSA MAI TARGETS** 

BASE STRATA	TARGET SPECIES TYPE	RSA MAI TARGET	MAI TARGET FOR COINCIDENTAL SPECIES TYPE	MAX MAI AGE
C-P	С	2.217	0.073	100
C-SB	С	1.242	0.000	95
C-SW	С	2.773	0.109	92
CD	С	1.943	0.679	89
DC	С	0.803	1.413	86
D	D	2.371	0.670	80

#### 7.4 ROADS AND BARED AREAS

All roads built within the boundaries of cutovers will be reforested as part of the reforestation effort for that block. Effort will be made to sequence the harvesting of blocks In a way that minimizes the need to keep block roads open but should that occur then internal block roads will be reforested as the roads are reclaimed. If a road is required for more than two years it will be held under LOC.

Similar to roads any other bared areas created in the normal course of timber harvesting will be reforested progressively as the blocks are reforested.

#### 7.5 CONE AND SEED COLLECTION

The following table summarizes ANC Timber's seed inventories at the time of writing of this DFMP. In light of the MPB infestation there is concern that adequate seed is available to reforest both harvested land as well as possibly reforesting MPB killed unsalvaged lands.

**TABLE 7-4: ANC SEED INVENTORIES** 

SEED ZONE	10 YEAR PLANNED VOLUME (M³)	PERCENT BY SPECIES		10 YEAR SEED REQUIRED (MILLIONS)*	ANC SEED INVENTORY (02/01/11)	COMMENTS
		Pl	90%	17.7	38,079,160	Adequate
UF 1.3	<b>UF 1.3</b> 4,000,000	Sw	5%	1.0	65,522,700	Adequate
		Sb	5%	1.0	3,864,000	Adequate
LF 1.4	2,000,000	Pl	70%	3.8	42,567,812	Adequate
LF 1.4		Sw	25%	1.4	90,602,550	Adequate





SEED ZONE	10 YEAR PLANNED VOLUME (M³)	PERCEN SPECIES		10 YEAR SEED REQUIRED (MILLIONS)*	ANC SEED INVENTORY (02/01/11)	COMMENTS
		Sb	5%	0.3	0	Collection plan to be developed
		Pl	70%	6.8	17,382,120	Adequate
LF 2.1	1,600,000	Sw	25%	2.4	43,496,100	Adequate
		Sb	5%	0.5	9,831,200	Adequate
		Pl	90%	3.2	2,650,480	Collection plan to be developed
SA 1.1	800,000	Sw	5%	1.1	0	Collection plan to be developed
		Sb	5%	0.2	0	Collection plan to be developed

<sup>\*</sup>Seed required is based on 200 m³/ha and planting densities of 1,400 stems/ha.

This inventory and related seed collection plan is updated annually as part of the Company's annual internal reforestation plan.





SECTION 8

MONITORING PROGRAM



#### 8 MONITORING PROGRAM

Adaptive management is an integral component of forest management. Management activities are modified based on the experience gained from previous activities. Monitoring, reporting and the analysis of the monitor data provide feedback so that improvements in management can be made. Feedback results in changes to operational plans and activities as well as the forest management plan. Reporting on the results of performance monitoring provides a measure of accountability to the public on management effectiveness.

An annual performance report is used to record results in the preceding year. In addition, it tracks cumulative performance from the time the forest management plan is implemented. The annual report will be prepared and submitted to Alberta Sustainable Resource Development on November 1 of every year reporting on all relevant activities carried out between May 1 and April 30 of the preceding year.

The stewardship report is a more formal compilation of performance prepared and submitted every five years. In the Stewardship Report ANC Timber will report on performance problems associated with the DFMP, even if those problems are beyond their control or mandated responsibilities. ASRD will work with ANC Timber in monitoring and reporting on external factors affecting DFMP performance. Performance successes will also be noted in this report.

Compliance to legislation, agreements and ground rules is not intended to be a critical part of this forest management plan performance monitoring. Company performance in these areas is handled in other ways (primarily through the Operating Ground Rules, and ASRD's Forest Operations Monitoring Program).

#### 8.1 ANNUAL REPORT SUMMARIES – PREVIOUS DFMP

The following tables are a summary of the annual reports created and submitted to ASRD between 2002 and 2009.





TABLE 8-1: ANNUAL REPORT TABLE 1 – SUMMARY OF AREA HARVESTED BY YIELD STRATA BY TIMBER YEAR

STRATA	STRATA		AREA (	HA) HARVEST	ED BY TIMBER	YEAR		TOTAL
#	DESCRIPTION	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	IOIAL
0	Non-productive	21	18	4	15	9	21	88
1	10-AB-S-G	0	3	0	0	2	0	5
2	10-AB-S-M	3	43	17	21	55	102	241
3	10-AB-S-F	1	10	7	16	32	3	69
4	10-CD-S-G	98	76	17	42	227	31	490
5	10-CD-S-M	537	504	580	359	990	746	3,716
6	10-CD-S-F	47	154	66	146	192	43	648
7	11-AB-S-G	16	3	0	6	0	4	29
8	11-AB-S-M	16	32	0	14	17	81	159
9	11-AB-S-F	8	4	0	2	0	5	19
10	11-CD-S-G	43	107	39	69	86	296	640
11	11-CD-S-M	127	290	193	169	99	255	1,133
12	11-CD-S-F	116	32	0	65	4	79	296
13	AB-Mixedwood-All	1	51	6	3	0	70	131
14	CD-Mixedwood-All	23	125	42	79	31	131	430
15	AB-Pure Deciduous-All	0	10	0	0	0	11	21
16	CD-Pure Deciduous-All	40	47	1	59	5	46	197
TOTAL		1,096	1,508	969	1,063	1,749	1,926	8,311





TABLE 8-2: ANNUAL REPORT TABLE 2 – COMPARISON OF PREDICTED AND ACTUAL VOLUMES BY TIMBER YEAR

			CON	IIFER AN	ND DECID	UOUS V	OLUME (	M³) BY TI	MBER YE	AR			CDAND	TOTAL
CATEGORY	2002/	2003	2003/	2004	2004/	2005	2005/	/2006	2006/	2007	2007/	2008	GRAND	IOTAL
	Conifer	Decid.	Conifer	Decid.	Conifer	Decid.	Conifer	Decid.	Conifer	Decid.	Conifer	Decid.	Conifer	Decid.
Predicted Volume	222,246	19,868	310,511	41,995	212,450	13,512	205,058	30,133	371,642	17,785	209,913	25,165	1,531,820	148,456
Hauled Volume	267,429	19,943	369,273	35,955	268,890	13,840	226,547	25,139	393,487	17,354	272,207	18,991	1,797,832	131,221
Structure Retention Volume	5,411	1,095	8,696	3,097	2,080	2,035	Not Reported	Not Reported	1,199	930	1,292	783	18,678	7,940
Difference	50,594	1,170	67,458	-2,944	58,520	2,363	21,488	-4,993	23,043	499	63,586	-5,391	284,690	-9,295





TABLE 8-3: ANNUAL REPORT TABLE 3.1 – AREA HARVESTED BY COMPARTMENT AND TIMBER YEAR

COMPARTMENTS		AR	EA (HA) HARVE	STED BY TIMBE	R YEAR		TOTAL
COMPARTMENTS	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
(Home Creek)	0	226	0	0	0	0	226
1-01 (Bird Creek)	256	310	40	11	0	62	679
1-02 (South Lake)	0	0	29	0	82	57	168
1-02E (South Lake East)	0	0	24	0	200	124	348
1-04 (Berland North)	0	0	0	0	249	74	323
1-13 (Grizzly Creek)	147	0	119	0	0	0	266
1-28	0	0	0	0	30	0	30
6-01 (Home Creek)	116	0	0	127	0	0	244
6-02 (Sandy Creek)	0	151	0	0	0	123	273
6-04	0	0	109	0	0	73	182
7-02 (Berland North)	0	0	0	79	0	0	79
7-02 (Berland South)	128	305	106	52	404	17	1,011
7-03 (Berland North)	20	0	0	0	0	0	20
7-05 (Connacher Creek)	0	0	0	54	0	0	54
7-06 (Horse Creek North)	429	264	227	0	533	74	1,527
7-09 (Donald Lake)	0	0	163	194	47	0	404
7-65 (Horse Creek North)	0	0	0	201	0	0	201
8-07 (The Flats)	0	0	0	138	31	0	168
8-08 (Riverside)	0	0	152	46	84	0	282
8-10 (West Pine)	0	0	0	0	81	71	152
8-12B (South Pine)	0	252	0	161	8	302	723
TOTAL	1,095	1,508	969	1,063	1,749	977	7,361





TABLE 8-4: ANNUAL REPORT TABLE 3.2 – SUMMARY OF CONIFER VOLUME PREDICTED AND HAULED BY COMPARTMENT AND TIMBER YEAR

		Р	REDICTI	ED VS H	AULED (	CONIFE	R VOLUI	ME (M <sup>3</sup> )	BY TIME	ER YEA	.R		TO	FAI
COMPARTMENTS	2002	/2003	2003	/2004	2004	2005	2005	/2006	2006	2007	2007	/2008	10	IAL
	Pred. Conifer	Hauled Conifer	Pred. Conifer	Hauled Conifer	Pred. Conifer	Hauled Conifer	Pred. Conifer	Hauled Conifer	Pred. Conifer	Hauled Conifer	Pred. Conifer	Hauled Conifer	Pred. Conifer	Hauled Conifer
(Home Creek)	0	0	46,930	41,937	0	0	0	0	0	0	0	0	46,930	41,937
1-01 (Bird Creek)	45,732	50,630	60,130	88,460	8,233	0	2,236	3,333	0	0	10,676	21,955	127,007	164,379
1-02 (South Lake)	0	0	0	0	4,947	6,826	0	0	12,753	14,619	9,497	12,014	27,197	33,458
1-02E (South Lake East)	0	0	0	0	5,032	8,801	0	0	34,046	46,872	25,497	25,097	64,574	80,770
1-04 (Berland North)	0	0	0	0	0	0	0	0	52,347	70,985	13,881	15,328	66,227	86,313
1-13 (Grizzly Creek)	31,898	57,759	0	0	27,875	40,617	0	0	0	0	0	0	59,773	98,376
1-28	0	0	0	0	0	0	0	0	5,331	8,916	0	0	5,331	8,916
6-01 (Home Creek)	22,396	17,216	0	0	0	0	17,248	22,430	0	0	0	0	39,644	39,646
6-02 (Sandy Creek)	0	0	29,798	33,070	0	0	0	0	0	0	24,457	26,781	54,255	59,851
6-04	0	0	0	0	23,234	36,279	0	0	0	0	13,239	15,877	36,472	52,156
7-02 (Berland North)	0	0	0	0	0	0	16,268	9,316	0	0	0	0	16,268	9,316
7-02 (Berland South)	28,557	35,606	67,503	86,188	20,818	30,270	9,343	9,803	93,225	134,477	4,100	4,692	223,547	301,035
7-03 (Berland North)	4,551	8,500	0	0	0	0	0	0	0	0	0	0	4,551	8,500
7-05 (Connacher Creek)	0	0	0	0	0	0	8,445	9,376	0	0	0	0	8,445	9,376
7-06 (Horse Creek North)	89,112	97,718	48,159	41,752	48,347	44,757	0	0	113,247	56,146	17,304	16,570	316,168	256,943
7-09 (Donald Lake)	0	0	0	0	36,679	64,325	38,281	54,085	10,430	8,985	0	0	85,390	127,395
7-65 (Horse Creek North)	0	0	0	0	0	0	36,977	35,916	0	0	0	0	36,977	35,916
8-07 (The Flats)	0	0	0	0	0	0	32,247	23,140	7,083	4,666	0	0	39,331	27,807
8-08 (Riverside)	0	0	0	0	37,286	37,016	11,040	10,736	20,343	22,559	0	0	68,670	70,311
8-10 (West Pine)	0	0	0	0	0	0	0	0	20,542	21,092	18,210	16,528	38,752	37,619
8-12B (South Pine)	0	0	54,875	77,866	0	0	32,973	48,413	2,295	4,171	73,054	117,365	163,196	247,814
TOTAL	222,246	267,429	307,395	369,273	212,450	268,890	205,058	226,547	371,642	393,487	209,913	272,207	1,528,704	1,797,832

Note: Two nonparametric (viz., Wilcoxon Signed Rank & Sign) tests applied to cutblock and compartment level data show significant difference between predicted and hauled conifer volumes (p<0.001).





TABLE 8-5: ANNUAL REPORT TABLE 3.3 – SUMMARY OF DECIDUOUS VOLUME PREDICTED AND HAULED BY COMPARTMENT AND TIMBER YEAR

		Р	REDICT	ED VS HA	AULED D	ECIDUO	US VOLL	IME (M³)	BY TIME	ER YEA	R		TOI	r A I
COMPARTMENTS	2002/	2003	2003	/2004	2004	/2005	2005/	2006	2006	/2007	2007/	/2008	TOT	AL
	Pred. Dec.	Hauled Dec.												
(Home Creek)	0	0	14,585	12,394	0	0	0	0	0	0	0	0	14,585	12,394
1-01 (Bird Creek)	1,625	114	4,419	3,205	201	0	52	0	0	0	1,150	942	7,447	4,261
1-02 (South Lake)	0	0	0	0	255	35	0	0	353	67	256	26	865	128
1-02E (South Lake East)	0	0	0	0	106	0	0	0	553	239	680	109	1,339	347
1-04 (Berland North)	0	0	0	0	0	0	0	0	1,425	0	617	241	2,042	241
1-13 (Grizzly Creek)	5,387	5,764	0	0	4,954	10,644	0	0	0	0	0	0	10,340	16,408
1-28	0	0	0	0	0	0	0	0	434	615	0	0	434	615
6-01 (Home Creek)	9,421	11,819	0	0	0	0	17,533	19,491	0	0	0	0	26,954	31,309
6-02 (Sandy Creek)	0	0	10,001	10,261	0	0	0	0	0	0	6,201	8,202	16,202	18,463
6-04	0	0	0	0	1,077	786	0	0	0	0	1,487	996	2,564	1,782
7-02 (Berland North)	0	0	0	0	0	0	364	0	0	0	0	0	364	0
7-02 (Berland South)	1,304	1,776	6,253	9,541	430	194	183	172	3,422	6,488	116	516	11,708	18,687
7-03 (Berland North)	100	0	0	0	0	0	0	0	0	0	0	0	100	0
7-05 (Connacher Creek)	0	0	0	0	0	0	168	65	0	0	0	0	168	65
7-06 (Horse Creek North)	2,031	470	951	0	1,062	0	0	0	2,322	140	368	0	6,734	610
7-09 (Donald Lake)	0	0	0	0	805	0	692	745	224	0	0	0	1,721	745
7-65 (Horse Creek North)	0	0	0	0	0	0	822	189	0	0	0	0	822	189
8-07 (The Flats)	0	0	0	0	0	0	5,204	2,531	2,718	2,487	0	0	7,923	5,018
8-08 (Riverside)	0	0	0	0	4,622	2,180	776	444	1,650	952	0	0	7,048	3,576
8-10 (West Pine)	0	0	0	0	0	0	0	0	4,306	6,367	2,809	4,177	7,114	10,543
8-12B (South Pine)	0	0	5,631	554	0	0	4,339	1,503	378	0	11,481	3,785	21,829	5,842
TOTAL	19,868	19,943	41,840	35,954	13,512	13,840	30,133	25,140	17,785	17,354	25,164	18,991	148,301	131,221

Note: Two nonparametric (viz., Wilcoxon Signed Rank & Sign) tests applied to cutblock and compartment level data showed significant difference between predicted and hauled deciduous volumes (p<0.001).





TABLE 8-6: ANNUAL REPORT TABLE 4 - HASOC PLANTING AREA BY TIMBER YEAR

			HASOC	SEEDL	INGS ANI	D PLAN	ED ARE	4 (HA) B	Y TIMBE	R YEAR			ТОТ	A I
TYPE	2002/2	2003	2003	/2004	2004/	2005	2005/	2006	2006/2	2007	2007/	2008	1017	<b>₹</b> L
	HASOC Sdlngs	Area Planted												
HASOC 93-PLSB1	17,700	12	0	0	0	0	0	0	0	0	0	0	17,700	12
HASOC G147-S0- 2000	109,800	69	0	0	0	0	0	0	0	0	0	0	109,800	69
HASOC I G147- SO-2003	0	0	0	0	0	0	0	0	331,755	184	0	0	331,755	184
HASOC I G147- SO-2004	0	0	0	0	0	0	0	0	124,470	69	0	0	124,470	69
HASOC I G147- SO-2005 PI	0	0	0	0	0	0	0	0	0	0	325,350	181	325,350	181
HASOC I G147- SO-2005 Sw	0	0	0	0	0	0	0	0	0	0	26,640	15	26,640	15
Unknown	0	0	0	0	432,540	238	201,150	133	0	0	0	0	633,690	371
TOTAL	127,500	80	0	0	432,540	238	201,150	133	456,225	254	351,990	196	1,569,405	901

TABLE 8-7: ANNUAL REPORT TABLE 5(A)-1 – TREATMENT AREA BY TIMBER YEAR

		TREA	TMENT AREA (H	HA) BY TIMBER	YEAR		
TREATMENT	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
Clearcut	Not Reported	Not Reported	1,091	1,311	1,188	1,692	5,281
Competition Reduction	452	1,022	339	806	447	593	3,658
Establishment Survey	Not Reported	Not Reported	Not Reported	Not Reported	479	297	777
Performance Survey	Not Reported	Not Reported	Not Reported	Not Reported	31	1,084	1,115
Planting	2,483	2,993	1,495	2,019	1,593	2,668	13,250
Site Preparation	384	1,304	943	1,659	709	1,415	6,414
TOTAL	3,318	5,319	3,868	5,795	4,446	7,749	30,495





TABLE 8-8: ANNUAL REPORT TABLE 5(A)-2 - NUMBER OF STEMS PLANTED BY TIMBER YEAR

TVDE	sтоск	SEEDLING	ODEOJEO.	N	JMBER OF S	STEMS PLA	NTED BY TI	MBER YEAR	₹	TOTAL
TYPE	TYPE	TYPE	SPECIES	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
	310C	Unimproved	PI	0	0	0	20,400	0	0	20,400
	BRT	Unimproved	PI	0	0	214,740	0	0	0	214,740
	S310	Unimproved	PI	4,490	44,740	55,800	82,800	100,800	0	288,630
		Improved	PI	0	0	0	0	0	28,350	28,350
	S410A	Unimproved	PI	0	0	0	0	0	665,960	665,960
		Ommproved	Sb	52,485	28,201	16,780	71,825	11,730	5,295	186,316
Container		Fill Plant	PI	0	0	0	0	86	0	86
	S410C	Improved	PI	84,665	0	384,062	218,700	441,860	0	1,129,287
		Unimproved	PI	1,049,514	1263582	626,429	670,744	932,854	0	4,543,123
	S412A	Unimproved	PI	0	49,200	0	0	55,800	0	105,000
	OTIZA	Ommproved	Sw	18,000	35,044	0	172,010	35,940	100,620	361,614
	S412D	Unimproved	PI	0	0	0	0	0	384,050	384,050
	04125	ommprovou	Sw	63,800	55,798	120,610	0	0	0	240,208
	BRT	Unimproved	PI	0	0	3,360	0	0	0	3,360
		Improved	PI	0	0	0	0	0	299,430	299,430
	S410A	Unimproved	PI	0	0	0	0	0	659,462	659,462
		ommprovou	Sb	0	0	0	0	0	5,955	5,955
	S410C	Improved	PI	42,957	0	30,038	0	14,365	0	87,360
Copper Treated	04100	Unimproved	PI	27,135	101,371	165,497	401,444	1,275	13,855	710,577
Plugs		Improved	PI	0	0	0	0	0	22,830	22,830
	S412A	improved	Sw	0	0	0	0	0	3,810	3,810
	OTIEN.	Unimproved	PI	0	0	0	0	0	51,105	51,105
		C.i.iipioted	Sw	0	0	0	0	25,770	89,280	115,050
	S412D	Unimproved	PI	0	0	0	0	0	300,430	300,430
	UT125	C.i.iipioted	Sw	0	0	10,700	0	0	0	10,700
Fill Planting	S410C	Improved	PI	0	0	2,090	0	0	0	2,090





TVDE	STOCK	SEEDLING	ODEOJEO	NU	JMBER OF S	STEMS PLA	NTED BY TI	MBER YEAR	₹	TOTAL
TYPE	TYPE	TYPE	SPECIES	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
	S410C	Unimproved	PI	97,370	0	0	0	1,785	0	99,155
Not Listed	34100	Ommproved	Sb	0	0	0	0	16,065	0	16,065
	S412A	Unimproved	Sw	0	0	0	0	12,240	0	12,240
Planting	S410C	Improved	PI	0	0	16,350	0	0	0	16,350
Planting	34100	Unimproved	PI	0	0	105,246	138,267	0	0	243,513
Re-planting	S410C	Unimproved	PI	0	0	510	0	0	0	510
Road	S410C	Unimproved	PI	0	0	3,033	0	0	0	3,033
Rehabilitation	S415D	Unimproved	Aw	0	0	0	2,700	0	0	2,700
Slash Piles	S410A	Unimproved	PI	0	0	0	0	0	42,585	42,585
Siasii Files	S410C	Unimproved	PI	0	0	0	0	840	0	840
TOTAL				1,440,416	1,577,936	1,755,245	1,778,890	1,651,410	2,673,017	10,876,914

TABLE 8-9: ANNUAL REPORT TABLE 5(A)-3 – AREA PLANTED BY TIMBER YEAR

TYPE	STOCK	SEEDLING	SPECIES		AREA (H	A) PLANTED	BY TIMBER	R YEAR		TOTAL
TIPE	TYPE	TYPE	SPECIES	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	IOIAL
	310C	Unimproved	PI	0	0	0	23	0	0	23
	BRT	Unimproved	PI	0	0	149	0	0	0	149
	S310	Unimproved	PI	46	81	42	201	122	0	492
		Improved	PI	0	0	0	0	0	14	14
	S410A	Unimproved	PI	0	0	0	0	0	547	547
Container		Ommproved	Sb	199	222	81	157	127	182	969
		Fill Plant	PI	0	0	0	0	3	0	3
	S410C	Improved	PI	119	0	237	112	243	0	711
		Unimproved	PI	1,302	1,912	579	641	875	0	5,308
	S412A	Unimproved	PI	0	34	0	0	21	0	55
	341ZA	Ommproved	Sw	14	29	0	236	133	194	605





TYPE	STOCK	SEEDLING	SPECIES		AREA (H	A) PLANTED	BY TIMBER	R YEAR		TOTAL
	S412D	Unimproved	PI	0	0	0	0	0	214	214
	34120	Unimproved	Sw	101	118	231	0	0	0	451
	BRT	Unimproved	PI	0	0	2	0	0	0	2
		Improved	PI	0	0	0	0	0	190	190
	S410A	Unimproved	PI	0	0	0	0	0	736	736
		Ommproved	Sb	0	0	0	0	0	104	104
	S410C	Improved	PI	435	0	17	0	8	0	460
Copper Treated	04100	Unimproved	PI	209	596	57	470	4	172	1,508
Plugs		Improved	PI	0	0	0	0	0	13	13
	S412A	Improved	Sw	0	0	0	0	0	2	2
	OTIZA	Unimproved	PI	0	0	0	0	0	31	31
		Ommproved	Sw	0	0	0	0	11	107	118
	S412D	Unimproved	PI	0	0	0	0	0	130	130
	04125	ommprovou	Sw	0	0	2	0	0	0	2
Fill Planting	S410C	Improved	PI	0	0	1	0	0	0	1
	S410C	Unimproved	PI	59	0	0	0	13	0	72
Not Listed		oprovou	Sb	0	0	0	0	13	0	13
	S412A	Unimproved	Sw	0	0	0	0	19	0	19
Planting	S410C	Improved	PI	0	0	17	0	0	0	17
	000	Unimproved	PI	0	0	76	156	0	0	233
Re-planting	S410C	Unimproved	PI	0	0	1	0	0	0	1
Road	S410C	Unimproved	PI	0	0	2	0	0	0	2
Rehabilitation	S415D	Unimproved	Aw	0	0	0	23	0	0	23
Slash Piles	S410A	Unimproved	PI	0	0	0	0	0	32	32
5.4011 1 1103	S410C	Unimproved	PI	0	0	0	0	1	0	1
TOTAL	S410C Unimproved PI				2,993	1,495	2,019	1,593	2,668	13,250





TABLE 8-10: ANNUAL REPORT TABLE 5(A)-4 – SITE PREPARATION AREA BY METHOD AND TIMBER YEAR

METHOD OF SITE		TREAT	MENT AREA (H	IA) BY TIMBER	RYEAR		TOTAL
PREPARATION	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	IOIAL
Brush Rake Fixed Tooth	0	0	4	51	8	37	100
Disc Trenching	0	0	162	145	342	621	1,269
Donaren Mounder	211	211	170	390	54	0	1,036
Drag - Heavy	0	271	562	206	284	424	1,747
Drag - Light	0	0	0	23	0	0	23
Drag - Shark Fins	143	806	0	224	0	0	1,173
Excavation Mounder	20	6	21	329	21	15	413
Piling - Brush Rake Blade	10	10	25	62	0	0	107
Ripper Plow - C & S	0	0	0	0	0	31	31
Ripper Plow - Modified C & S	0	0	0	228	0	88	316
Row Mounder Screef	0	0	0	0	0	200	200
TOTAL	384	1,304	943	1,659	709	1,415	6,414

#### TABLE 8-11: ANNUAL REPORT TABLE 5(A)-5 – SURVEY AREA BY TYPE AND TIMBER YEAR

SURVEY TYPE		SURVEY AREA (HA) BY TIMBER YEAR							
SURVETTIFE	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL		
Establishment Survey	Not Reported	Not Reported	Not Reported	Not Reported	479	297	777		
Performance Survey	Not Reported	Not Reported	Not Reported	Not Reported	31	1,084	1,115		
TOTAL	Not Reported	Not Reported	Not Reported	Not Reported	510	1,381	1,891		





TABLE 8-12: ANNUAL REPORT TABLE 5(A)-6 - COMPETITION REDUCTION AREA BY METHOD AND TIMBER YEAR

METHOD OF COMPETITION		TREAT	MENT AREA (H	IA) BY TIMBER	YEAR		TOTAL
REDUCTION	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
Aerial - Broadcast	452	711	269	161	158	278	2,028
Aerial - Selective	0	294	48	368	231	242	1,182
Brush Saw	0	0	0	74	0	0	74
Ground - Backpack Broadcast	0	10	22	95	0	30	157
Ground - Backpack Patch	0	7	0	0	0	28	35
Ground - Basal Spray	0	0	0	13	58	16	87
Ground - Cut Surface	0	0	0	96	0	0	96
TOTAL	452	1,022	339	806	447	593	3,658

TABLE 8-13: ANNUAL REPORT TABLE 5(B) – TREATMENT AREA BY YIELD STRATA AND TIMBER YEAR

YIELD	YIELD STRATUM		TREAT	MENT AREA (H	IA) BY TIMBER	YEAR		
CURVE NUMBER	NAME	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
0	Non-productive	79	2,199	60	212	162	Not Reported	2,712
1	10-AB-S-G	19	30	28	18	2	Not Reported	96
2	10-AB-S-M	145	118	86	106	0	Not Reported	455
3	10-AB-S-F	8	12	15	73	0	Not Reported	109
4	10-CD-S-G	431	453	256	436	148	Not Reported	1,724
5	10-CD-S-M	1,013	1,287	1,399	2,239	421	Not Reported	6,359
6	10-CD-S-F	168	225	239	396	33	Not Reported	1,061
7	11-AB-S-G	47	18	20	24	0	Not Reported	109
8	11-AB-S-M	33	48	48	48	0	Not Reported	177
9	11-AB-S-F	20	14	9	16	0	Not Reported	59
10	11-CD-S-G	250	231	205	220	4	Not Reported	910
11	11-CD-S-M	292	425	576	761	258	Not Reported	2,312
12	11-CD-S-F	217	234	35	170	1	Not Reported	657





YIELD	YIELD STRATUM		TREAT	MENT AREA (H	IA) BY TIMBER	YEAR		
CURVE NUMBER	NAME	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
13	A-AB-MX-A	42	38	56	60	0	Not Reported	196
14	A-CD-MX-A	280	177	236	295	234	Not Reported	1,222
15	A-AB-H-A	22	1	43	81	0	Not Reported	147
16	A-CD-S-A	40	92	77	140	113	Not Reported	462
17	TI-S-10-G	0	0	0	0	54	Not Reported	54
18	TI-S-10-M	0	0	0	0	61	Not Reported	61
19	TI-S-10-F	0	0	0	0	55	Not Reported	55
20	TI-S-11-G	0	0	0	0	140	Not Reported	140
21	TI-S-11-M	0	0	0	0	284	Not Reported	284
22	TI-S-11-F	0	0	0	0	36	Not Reported	36
23	25-S10-G	0	0	0	0	447	Not Reported	447
24	25-S10-M	0	0	0	0	2,388	Not Reported	2,388
25	25-S10-F	0	0	0	0	710	Not Reported	710
26	25-S11-G	0	0	0	0	196	Not Reported	196
27	25-S11-M	0	0	0	0	261	Not Reported	261
28	25-S11-F	0	0	0	0	96	Not Reported	96
TOTAL		3,107	5,603	3,386	5,297	6,103	Not Reported	23,495

TABLE 8-14: ANNUAL REPORT TABLE 6(A) – WATERCOURSE CROSSING INSTALLATIONS BY TIMBER YEAR

		ı	NUMBER OF CR	OSSINGS BY WAT	ERCOURSE TYP	Έ	
TIMBER YEAR	CROSSING TYPE	Cross Drain	Ephemeral	Intermittent	Small permanent	Muskeg	TOTAL
2002/2003	Log Fills	0	24	1	0	0	25
2002/2003	Snow Fills	0	0	0	0	0	0
2002/2003	Culverts	50	0	2	1	7	60
2002/2003	Native Timber Bridge	0	0	2	0	1	3
2002/2003	Steel Bridge	0	0	1	0	0	1





			NUMBER OF CR	OSSINGS BY WAT	ERCOURSE TYP	PE	
TIMBER YEAR	CROSSING TYPE	Cross Drain	Ephemeral	Intermittent	Small permanent	Muskeg	TOTAL
2003/2004	Log Fills	0	13	2	0	0	15
2003/2004	Snow Fills	0	0	0	0	0	0
2003/2004	Culverts	5	2	0	0	0	7
2003/2004	Native Timber Bridge	0	3	5	1	0	9
2003/2004	Steel Bridge	0	0	0	4	0	4
2004/2005	Log Fills	0	12	0	0	3	15
2004/2005	Snow Fills	0	0	0	0	0	0
2004/2005	Culverts	0	1	0	0	0	1
2004/2005	Native Timber Bridge	0	0	1	0	0	1
2004/2005	Steel Bridge	0	0	0	0	0	0
2005/2006	Log Fills	0	31	2	0	27	60
2005/2006	Snow Fills	0	0	0	0	0	0
2005/2006	Culverts	0	2	3	0	1	6
2005/2006	Native Timber Bridge	0	3	4	7	0	14
2005/2006	Steel Bridge	0	0	1	2	0	3
2006/2007	Log Fills	0	7	3	0	2	12
2006/2007	Snow Fills	0	0	0	1	0	1
2006/2007	Culverts	1	4	1	0	1	7
2006/2007	Native Timber Bridge	0	8	14	0	0	22
2006/2007	Steel Bridge	0	0	0	1	0	1
2007/2008	Log Fills	1	9	5	0	1	16
2007/2008	Snow Fills	0	0	0	0	0	0
2007/2008	Culverts	0	0	0	0	0	0
2007/2008	Native Timber Bridge	0	2	11	1	0	14
2007/2008	Steel Bridge	0	0	0	0	0	0
TOTAL			121	58	18	43	297





TABLE 8-15: ANNUAL REPORT TABLE 6(B) – WATERCOURSE CROSSING REMOVALS BY TIMBER YEAR

TIMBER YEAR	CROSSING TYPE	Cross Drain	Ephemeral	Intermittent	Small permanent	Muskeg	TOTAL
2002/2003	Log Fills	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2002/2003	Snow Fills	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2002/2003	Culverts	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2002/2003	Native Timber Bridge	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2002/2003	Steel Bridge	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2003/2004	Log Fills	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2003/2004	Snow Fills	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2003/2004	Culverts	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2003/2004	Native Timber Bridge	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2003/2004	Steel Bridge	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported
2004/2005	Log Fills	0	19	2	0	0	21
2004/2005	Snow Fills	0	0	0	0	0	0
2004/2005	Culverts	0	0	0	0	0	0
2004/2005	Native Timber Bridge	0	0	4	1	0	5
2004/2005	Steel Bridge	0	0	0	0	0	0
2005/2006	Log Fills	0	16	7	0	10	33
2005/2006	Snow Fills	0	0	0	0	1	1
2005/2006	Culverts	0	0	1	0	2	3
2005/2006	Native Timber Bridge	0	4	5	4	0	13
2005/2006	Steel Bridge	0	0	0	5	0	5
2006/2007	Log Fills	0	78	5	0	51	134
2006/2007	Snow Fills	0	0	0	0	0	0
2006/2007	Culverts	0	1	3	0	2	6
2006/2007	Native Timber Bridge	0	2	12	8	0	22
2006/2007	Steel Bridge	0	0	1	5	0	6
2007/2008	Log Fills	1	88	4	0	52	145





			NUMBER OF CROSSINGS BY WATERCOURSE TYPE						
TIMBER YEAR	CROSSING TYPE	Cross Drain	Ephemeral	Intermittent	Small permanent	Muskeg	TOTAL		
2007/2008	Snow Fills	0	0	0	0	0	0		
2007/2008	Culverts	0	5	5	0	3	13		
2007/2008	Native Timber Bridge	0	12	19	13	0	44		
2007/2008	Steel Bridge	0	0	2	10	0	12		
TOTAL		1	225	70	46	121	463		

#### TABLE 8-16: ANNUAL REPORT TABLE 7 – REGENERATION SURVEY AREA BY STATUS AND TIMBER YEAR

SURVEY TYPE	STATUS		AREA (HA) SURVEYED BY TIMBER YEAR								
SURVETTIFE	314103	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL			
	CSR	Not Reported	118	Not Reported	0	0	0	118			
ESTABLISHMENT	NSR	Not Reported	151	Not Reported	8	0	0	158			
	SR	Not Reported	1,357	Not Reported	331	692	298	2,678			
	FTG	Not Reported	0	Not Reported	448	27	0	475			
PERFORMANCE	NSR	Not Reported	0	Not Reported	8	4	0	12			
	SR	Not Reported	0	Not Reported	0	0	1,619	1,619			
TOTAL		Not Reported	1,625	Not Reported	795	723	1,917	5,060			





TABLE 8-17: ANNUAL REPORT TABLE 8.1 – PERMANENT SAMPLE PLOTS (PSPS) ESTABLISHED BY TYPE AND TIMBER YEAR

TYPE		PSPS	ESTABLISHE	D BY TIMBER	YEAR		TOTAL
1172	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL
Component A (Grid Non-productive - PSPs)	0	1	3	5	0	Not Reported	9
Component A (Grid Productive - PSPs)	0	29	27	25	0	Not Reported	81
Component B (Non-Grid PSPs)	61	11	10	10	28	Not Reported	120
Component C (Regeneration PSPs)	0	0	20	10	10	Not Reported	40
Component D (PSPs in enhanced areas)	0	0	4	2	0	Not Reported	6
NIVMA Sample Plots	20	0	0	0	0	Not Reported	20
Reforestation Performance Monitoring Sample Plots	16	8	8	16	0	Not Reported	48
TOTAL	97	49	72	68	38	Not Reported	324

TABLE 8-18: ANNUAL REPORT TABLE 8.2 – PERMANENT SAMPLE PLOTS (PSPS) RE-MEASURED BY TYPE AND TIMBER YEAR

TYPE	PSPS REMEASURED BY TIMBER YEAR								
TIPE	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	TOTAL		
Component B (Non-Grid PSPs)	13	8	20	9	11	16	77		
Component C (Regeneration PSPs)	0	0	0	0	22	15	37		
NIVMA Sample Plots	0	14	12	0	0	0	26		
Reforestation Performance Monitoring Sample Plots	0	16	16	24	32	32	120		
TOTAL	13	38	48	33	65	63	260		





#### 8.2 PROPOSED MONITORING PROGRAM

The following table outlines what things will be measured and reported on from this point forward. The components indicated as "Annual" under the Reporting Period column will be summarized for the preceding year's activities. Every fifth year the components indicated as 5 year stewardship will be summarized for the preceding five-year period. In addition all aspects of the Report will be summarized and analyzed in the 5 year Stewardship Report for identification of necessary Management Strategy Amendments based on identified trends and/or changes.

ANC Timber Ltd. is not the only forest products company planning, harvesting, and reforesting land within the FMA area. In order to do a complete job of reporting on the metrics in the table information regarding Quota holder operations will also be of great value. Alberta Sustainable Resource development will be considered the entity that holds the most accurate version of those activities carried out by quota holders. ANC Timber will acquire the necessary data from ASRD in order to complete both the Annual and Stewardship Reports.

#### **8.3 VEGETATION INVENTORY UPDATES**

The Alberta Forest Management Planning Standard Version 4.1 – April, 2006 says the following:

"The Alberta Vegetation Inventory (AVI) is the inventory standard for the foreseeable future. Alberta believes it is desirable to have in place a credible and cost-effective system for updating AVI to further enhance its utility. Alberta will publish a vegetation inventory and update standard and forest management directives from time to time to address update mechanisms and standards.

The Alberta Vegetation Inventory (AVI) is a critical input for a FMP since the stand attributes shall be used to forecast the desired future forest conditions, to implement the FMP through the spatial harvest sequence, and to complete more detailed operational planning. Any shortcomings or deficiencies found in the AVI must be addressed promptly in an update process approved by Alberta.

The ToR for the FMP shall identify and allow time to complete the inventory, inventory updates and approval. The AVI approval is a separate, pre-requisite process to the FMP approval process. If additional information is to be used in the FMP (e.g., understorey inventories) the inventory methodology and resulting data must be approved by Alberta, and any process used to convert such information into an approved format must be documented fully."

It is ANC Timber Ltd.'s intent to follow the direction of the Planning Standard as described above. When any DFMP is being developed subsequent to this one ANC Timber Ltd. will follow the direction of the standard of the day. ANC recognizes the significant value of the vegetation inventory associated with a Detailed Forest Management Plan and as a result will ensure it meets the expectations of the Alberta government in terms of its utility for the writing of a DFMP.





## Alberta Newsprint Company DETAILED FOREST MANAGEMENT PLAN

TABLE 8-19: MONITORING PROGRAM: MEASUREMENT AND REPORTING DETAILS

TSA VALIDATION REPORT	DESCRIPTION	MEASURE	REPORTING PERIOD	CALCULATION/METHODOLOGY
Annual and Periodic Harvest	Report by leading species for each yield strata.	Hectares	Annual	An annual report will include a summary listing the number of hectares cut by leading species for each yield strata.
	Compare 5-year planned harvest area to actual harvest area (i.e. net landbase comparisons to determine planning losses).	Hectares	5 year stewardship	Every five years, in the Five Year Stewardship Report the area harvested for that period will be compared to the simulated harvest from the TSA by yield strata.
	Rationalize differences between the 5-year planned harvest area and the 5-year actual harvested area and demonstrate how the next period (5 year) harvest sequence will be adjusted.	Adjust harvest sequence, compare harvest sequence to thresholds (20% by area, 10% by yield strata/age class)	5 year stewardship	Variations between actual harvest area and simulated area will be discussed and any potential sustainability consequences will be rationalized in the Five Year Stewardship Report.
	Report volume harvested by leading species for each yield strata on a cutblock basis and compare to predicted volumes. This will include a report of the amount of merchantable volume retained for structure retention purposes.	M3, hectares	Annual and 5 year stewardship	Actual areas and volumes harvested will be summarized annually by cutblock. In the Five Year Stewardship Report differences between simulated volumes and actual volumes will be analyzed for potential sustainability consequences.
Silviculture	Report treatments completed by Silviculture regime and standard strata (C, CD, DC, D).	# stems planted, stock type, species, site preparation tools	Annual	Silviculture treatment records will be submitted annually as per ARIS submission requirements. This information will be summarized and reported in the annual report.
	Report treatments completed using genetically improved stock.	Deployment strategy as per Management and Conservation Standards for Forest Tree Genetic Resources in Alberta.	Annual	Silviculture treatment records will be submitted annually as per ARIS submission requirements including treatments using genetically improved stock. This information will be summarized and reported in the annual report.
	Compare area treated over the previous 5 years by silviculture treatment and yield strata to the DFMP harvest sequence.	Hectares	5 year stewardship	ARIS information will be summarized, compared, analyzed and reported in the five-year stewardship report.
Regeneration Surveys	Submit regeneration survey data and information to ARIS.	Per regen survey manual	Annual	Regen survey information will be submitted annually as per ARIS submission requirements.
	Report regeneration survey results and compare them to DFMP regenerated yield assumptions.	Number of plots, results of compilations, trends in growth	5 year stewardship	In the Five Year Stewardship Report regen survey results for the previous 5 year period will be summarized and analyzed for consistency with the DFMP TSA assumptions.
Growth and Yield	Report new permanent sample plots established.	Number and geographic location	Annual	Within the Annual report a list and map(s) will be provided showing the locations of all new PSPs installed in the current year.
	Report existing permanent sample plot re-measurements.	Number and geographic location	Annual	Within the Annual report a list and map(s) will be provided showing the locations of all remeasurements of existing PSPs in the current year.
	Report results of any plot compilations from permanent sample plot re-measurements that were carried out.	Number of plots, results of compilations, trends in growth	5 year stewardship	In the Five Year Stewardship Report a summary analysis of PSP data will be provided.
Forest Structure	Report age class distributions by yield strata by Compartment.	Numbers of hectares for each yield strata by Compartment, Natural Sub-Region and Caribou zone.	5 year stewardship	The Five Year Stewardship Report will summarize the number of hectares in each Compartment by yield strata and age class. This will be done for each Natural Sub-Region and the Caribou zone.
	Report area projections by species groups.	Number of hectares by species group by Natural Sub-Region and Caribou Zone	5 year stewardship	The Five Year Stewardship Report will summarize the number of hectares in each Compartment by Species Groups defined in the DFMP and age class. This will be done for each Natural Su-Region and the Caribou zone.
	Report structure retention accomplishments.	M3, hectares, species, arrangement(s) by cutblock	5 year stewardship	Any significant activities demonstrating retention of vertical structure post harvest will be reported in the Five Year Stewardship Report.
				Significant activities will include the number/frequency, volume and area within each of the categories of structure retention defined in the Operating Ground Rules (i.e. Large Patch, Small Patch, Reforested Area, Un-harvested Area, Non Merchantable Area).
				Merchantable volume retained will also be summarized in the 5 year Stewardship Report.
	Report land use changes	Roads, seismic lines, well sites, etc.	5 year stewardship	The Five Year Stewardship Report will summarize the status of land use changes by area based on information received from Sustainable Resource Development as per FMA referrals. This will include Forest Companies non harvesting land use activities as well.



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# Alberta Newsprint Company DETAILED FOREST MANAGEMENT PLAN

TSA VALIDATION REPORT	DESCRIPTION	MEASURE	REPORTING PERIOD	CALCULATION/METHODOLOGY
Buffers	Harvested areas within buffers (deviations from OGRs)	Hectares by strata, watercourse classification	5 year stewardship	The Five Years Stewardship Report will include a summary of the number of hectares harvested from buffers by overlaying actual harvest areas on buffer areas in the GIS.
Watercourse Crossings	Report number of crossings by crossing type	Number by type by watercourse classification	Annual and 5 year stewardship	All crossings installed by ANC will be reported annually and in the 5 year Stewardship Report.



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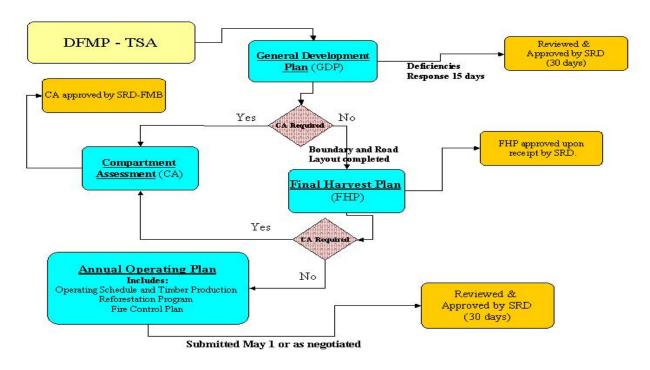
SECTION 9

# LINKAGES BETWEEN SHORT TERM AND OPERATIONAL PLANS



## 9 LINKAGES BETWEEN SHORT TERM AND OPERATIONAL PLANS

Higher level plans such as DFMPs need to be linked to lower level plans and operational programs. The following schematic describes the linkages between various levels of planning that require approvals from Alberta Sustainable Resource Development.



As can be seen from the schematic the DFMP is at the top of the planning hierarchy. It sets the stage, so to speak, for all lower level plans. The DFMP provides the context under which all other levels of plans are developed and executed.

One the most significant components of the DFMP that affects the lower level plans is the spatial harvest sequence. Adherence to (or variance from) the spatial harvest sequence can have significant implications to maintaining consistency between all levels of plans. Section 6.4.3.10 describes how Companies will track adherence to the SHS. Although allowed under certain circumstances variance from the SHS is discouraged and requires ASRD approval.

