

---

Canadian Forest Products Ltd.  
Grande Prairie Operations

Area Validation

June, 2001

Prepared by:

*Carol Ann Crouse*

---

Carol Ann Crouse, R.P.F. (B.C.)

Reviewed by:

*Randy Webb*

---

Randy Webb, R.P.F. (B.C.)

**OLYMPIC RESOURCE MANAGEMENT**

Suite 300, 475 West Georgia Street  
Vancouver, B.C. Canada  
V6B 4M9

---

---

## Table of Contents

	<b>Page</b>
<b>1. INTRODUCTION</b>	<b>3</b>
<b>2. HARVESTED AREAS</b>	<b>4</b>
<b>3. TIMBER HARVESTING LANDBASE</b>	<b>5</b>
<b>4. ASSIGNMENT OF CONIFER UNDERSTOREY TO DECIDUOUS YIELD GROUPS</b>	<b>8</b>
<b>5. SUMMARY OF LANDBASE BY YIELD GROUP</b>	<b>11</b>

## List of Tables

TABLE 1 NEW YIELD GROUP ASSIGNMENT FOR HARVESTED AREAS	4
TABLE 2 OLD YIELD GROUP ASSIGNMENT FOR HARVESTED AREAS (FROM TABLE 1 IN THE BENCHMARK REPORT)	4 4
TABLE 3 NEW LANDBASE SUMMARY	6
TABLE 4 OLD LANDBASE SUMMARY (FROM TABLE 2 IN THE BENCHMARK REPORT)	7 7
TABLE 5 NEW DECIDUOUS STANDS WITH CONIFEROUS UNDERSTOREY	10
TABLE 6 OLD DECIDUOUS STANDS WITH CONIFEROUS UNDERSTOREY (FROM TABLE 4 IN THE BENCHMARK REPORT)	10 10
TABLE 7 NEW AREA BY YIELD GROUP	11
TABLE 8 OLD AREA BY YIELD GROUP (FROM TABLE 5 IN THE BENCHMARK REPORT)	12 12

---

## **1. Introduction**

This report provides a land base summary for the inputs which will be used as part of the Timber Supply Analysis for Canadian Forest Products Ltd. Detailed Forest Management Plan (DFMP). This report is meant to act as a comparison document against the previous land base summary presented in the report entitled “Supplementary Timber Supply Analysis: Benchmark Run Results and Amended Timber Supply Analysis Information Package, February 2000”. There have been a number of changes in assumptions and inputs into the timber supply analysis since the Benchmark report was initially produced. Some of these changes have resulted in changes to the timber harvesting landbase. This report is meant to highlight and document these changes.

---

## 2. Harvested Areas

Tables 1 and 2 summarize the assignment of yield groups for harvested areas between the new and old landbases. The only changes from the previous version are some minor decimal adjustments due to rounding precision.

**Table 1**  
***New Yield Group Assignment for Harvested Areas***

Yield Group	Description	Areas Assigned to Each Yield Group				
		Harvested Before 1991, Weeded (ha)	Harvested Before 1991, Not Weeded (ha)	Harvested 1991 and Later, Weeded (ha)	Harvested 1991 and Later, Not Weeded (ha)	Total (ha)
3	AWSW/PBSW/BWSW	0.0	7 680.51	0.0	0.0	7 680.51
8	PL/PLFB+(H)	0.0	179.64	0.0	1 857.39	2 037.03
9	PLAW/AWPL	6 622.97	0.0	19.48	325.63	6 968.08
11	PLSW/SWPL+(H)	1 330.84	0.0	0.0	3 617.35	4 948.19
16	SW/SWFB+(H) – CD	494.17	2 630.73	0.0	6 106.39	9 231.29
17	SWAW/SWAWPL	431.25	18 431.56	0.0	3 996.88	22 859.69
Total		8 879.23	28 922.44	19.48	15 903.64	53 724.79

**Table 2**  
***Old Yield Group Assignment for Harvested Areas***  
***(from Table 1 in the Benchmark Report)***

Yield Group	Description	Areas Assigned to Each Yield Group				
		Harvested Before 1991, Weeded (ha)	Harvested Before 1991, Not Weeded (ha)	Harvested 1991 and Later, Weeded (ha)	Harvested 1991 and Later, Not Weeded (ha)	Total (ha)
3	AWSW/PBSW/BWSW	0.0	7 680.52	0.0	0.0	7 680.52
8	PL/PLFB+(H)	0.0	179.64	0.0	1 857.38	2 037.02
9	PLAW/AWPL	6 622.97	0.0	19.48	325.63	6 968.09
11	PLSW/SWPL+(H)	1 330.83	0.0	0.0	3 617.34	4 948.18
16	SW/SWFB+(H) – CD	494.17	2 630.73	0.0	6 106.39	9 231.30
17	SWAW/SWAWPL	431.25	18 431.52	0.0	3 996.87	22 859.65
Total		8 879.24	28 922.42	19.48	15 903.63	53 724.79

### **3. Timber Harvesting Landbase**

The FMA covers a total area of 649,159 hectares (ha). A stepwise netdown procedure was used to determine the net landbase available for timber harvesting. Table 3 provides a summary of the netdown. Some of the relevant changes which have occurred in the landbase summary include:

#### **(1) Unproductive (Yield Group 13)**

One of the GIS inputs into the timber supply is an AOP coverage containing stands to be harvested in the near term. One of the assumptions built into the process is that all timber within an AOP block is economically operable. The AOP coverage that was present at the time of the Benchmark Report contained a block which overlaid approximately 5 ha of a Yield Group 13 type. This 5 ha, even though it was Yield Group 13, was assumed to be operable. Under the updated AOP coverage, this particular stand was either modified or removed. Therefore the 5 ha of Yield Group 13 reverted back to inoperable.

#### **(2) Non-Allocated Deciduous Areas**

The addition of stands classified as non-allocated deciduous areas which were removed from the THLB. These are hardwood stands within G8C and E8 that are not part of the hardwood quota allocation.

#### **(3) Height/Age Reductions Areas**

The addition of stands classified as height/age reduction areas which were removed from the THLB. These are stands which met the following height requirements:

- Yield group 12 stands with heights < 16 and ages > 80.
- All other coniferous stands with height < 13 and ages > 80.

#### **(4) Non-Allocated Birch Areas**

The addition of stands classified as non-allocated birch areas which were removed from the THLB. These are birch stands within Ainsworth's general operating area (EN1, EN4 and EN5).

#### **(5) AOP Reserve Areas**

The addition of stands classified as AOP reserve areas were removed from the THLB. These are polygons classified within the new AOP coverage as AOP blocks with a reserve status.

---

**Table 3**  
**New Landbase Summary**

<b>Classification</b>	<b>Area (ha)</b>	<b>Area (ha)</b>	<b>% of Total Area</b>	<b>% of Forested Area</b>
<b>Total landbase</b>		<b>649 159.89</b>	<b>100.0</b>	
<b>Reductions for non-forest</b>				
Natural non-vegetated	12 959.91		2.00	
Anthropogenic non-vegetated	4 939.35		0.76	
Anthropogenic vegetated	4 946.51		0.76	
Non-forest vegetated	32 884.48		5.06	
AVI Attribute MODCON1 = "sc"	0.18			
AVI Attribute MODCON1 = "cl"	0.68		0.00	
Roads not included in AVI	1 132.95		0.17	
Total non-forest reductions	56 864.06	56 864.06	8.76	
<b>Total forested landbase</b>		<b>592 295.83</b>	<b>91.24</b>	<b>100.00</b>
<b>Reductions to forested landbase</b>				
Steep slopes (from AVI)	10 522.07		1.62	1.78
Slumps (from AVI)	42.51		0.01	0.01
Gravesites	5.15		0.00	0.00
DRS	320.48		0.05	0.05
Fourth Creek special area of interest	303.82		0.05	0.05
Cactus Creek special area of interest	8.00		0.00	0.00
Peace River Dunvegan special area of interest	374.33		0.06	0.06
Sand Dunes special area of interest	5 480.31		0.84	0.92
Swan buffers	2 247.56		0.35	0.38
Lake > 16 ha buffers	248.41		0.04	0.04
Lake 4-16 ha buffers	506.86		0.08	0.08
Major river buffers	4 694.34		0.72	0.79
Perennial river buffers	1 202.22		0.18	0.20
Intermittent river buffers	31 064.03		4.78	5.24
Unproductive (Yield Group 13)*	<b>(1)</b> 25 821.55		3.98	4.36
River buffers (Beaver)	3.79		0.00	0.00
Non-allocated deciduous areas	<b>(2)</b> 9 37.93		1.51	1.66
Height/Age Reduction areas	<b>(3)</b> 18 383.65		2.83	3.10
Non-allocated birch areas	<b>(4)</b> 6 903.09		1.06	1.16
AOP Reserve Areas	<b>(5)</b> 132.69		0.02	0.02
Total reductions to forested landbase	118 102.79	118 102.79	18.19	19.94
<b>Timber harvesting landbase</b>		<b>474 193.04</b>	<b>73.05</b>	<b>80.06</b>

**Table 4**

**Old Landbase Summary**  
(from Table 2 in the Benchmark Report)

Classification	Area (ha)	Area (ha)	% of Total Area	% of Forested Area
<b>Total landbase</b>		<b>649 159.94</b>	<b>100.0</b>	
<b>Reductions for non-forest</b>				
Natural non-vegetated	12 959.92		2.00	
Anthropogenic non-vegetated	4 939.38		0.76	
Anthropogenic vegetated	4 946.45		0.76	
Non-forest vegetated	32 884.38		5.06	
AVI Attribute MODCON1 = "cl"	0.68		0.00	
Roads not included in AVI	1 132.93		0.17	
Total non-forest reductions	56 863.74	56 863.74	8.76	
<b>Total forested landbase</b>		<b>592 296.24</b>	<b>91.24</b>	<b>100.00</b>
<b>Reductions to forested landbase</b>				
Steep slopes (from AVI)	10 522.06		1.62	1.78
Slumps (from AVI)	42.51		0.01	0.01
Gravesites	5.15		0.00	0.00
DRS	320.47		0.05	0.05
Peace Parkland special area of interest	303.82		0.05	0.05
Cactus Hills special area of interest	8.00		0.00	0.00
Peace River Dunvegan special area of interest	374.33		0.06	0.06
Parabolic Sand Dunes special area of interest	5 480.31		0.84	0.92
Swan buffers	2 247.53		0.35	0.38
Lake > 16 ha buffers	248.41		0.04	0.04
Lake 4-16 ha buffers	506.87		0.08	0.09
Major river buffers	4 694.36		0.72	0.79
Perennial river buffers	1 202.23		0.18	0.20
Intermittent river buffers	31 061.26		4.78	5.24
Unproductive (Yield Group 13)*	<b>(1)</b> 25 816.15		3.98	4.36
River buffers (Beaver)	3.79		0.00	0.00
AVI Attribute MODCON2 = "sc"	0.18		0.00	0.00
Total reductions to forested landbase	82 838.43	82 838.43	12.76	13.99
<b>Timber harvesting landbase</b>		<b>509 458.83</b>	<b>78.47</b>	<b>86.0</b>

---

#### 4. Assignment of Conifer Understorey to Deciduous Yield Groups

The identification of deciduous stands with coniferous understorey is very important due to the substantial contribution to the coniferous annual allowable cut. Each forested polygon within the FMA was initially classified into one of the yield groups using the methodology outlined in the document *Landbase Stratification in the Canfor FMA* (Report #2, June 1999). Based on an analysis of temporary sample plots (please refer to *Coniferous Understorey Study in the Canfor FMA*, ( Report # 3, June 1999), it was determined that a proportion of stands in Yield Groups 1, 2, 4 and 7 contain coniferous understorey with sufficient stocking to be classified as coniferous landbase.

Because of the spatially explicit nature of the Timber Supply Analysis, it is necessary to assign the stands with understorey to specific polygons. Although this does not reflect operational reality, it provides consistency between scenarios and gives adequate information for strategic annual allowable cut determination.

Based on the conclusions from the *Coniferous Understorey Study in the Canfor FMA* (Report # 3, June 1999) report, the following generic methodology was used to assign the presence of understorey to specific stands:

1. Initially flag all stands as having understorey if they meet specified criteria as outlined in the *Coniferous Understorey Study in the Canfor FMA, June 1999* report. This is completed without reference to the timber harvesting landbase.
2. Add or subtract stands as necessary to meet the specified percentage. The procedure used attempts to distribute the additions/subtractions across the FMA in a random manner from within a subset of candidate stands. This process is completed without reference to the timber harvesting landbase.
3. Evaluate the proportion of stands flagged as having understorey within the net timber harvesting landbase. Add or subtract stands as necessary to meet the targets within the net timber harvesting landbase using a similar procedure to that used in Step 2.
4. No attempt is made to adjust the percentages further for stands not within the net timber harvesting landbase since there should be no effect on available harvest volumes.

Specific criteria for each yield group are described below.

##### **Yield Group 1**

All stands with understorey indicated on the AVI classification were initially flagged as having understorey present. A procedure was used to adjust the number with understorey down to the target of 29%. This procedure selected stands without any coniferous species in the combined inventory label on a random basis from across the FMA. A further reduction was required within the net timber harvesting landbase.

---

---

### **Yield Group 2**

All stands with understorey indicated on the AVI classification and within the Lower Foothills Natural Subregion were initially flagged as having understorey present. To increase the resulting proportion up to the required 22%, a random procedure was used to select additional Yield Group 2 stands from across the FMA. A reduction was required within the net timber harvesting landbase.

### **Yield Group 4**

All stands with understorey indicated on the AVI classification were initially flagged as having understorey present. To increase the resulting proportion up to the required 40%, a random procedure was used to select additional Yield Group 4 stands containing coniferous species in the combined inventory label from across the FMA. A reduction was required within the net timber harvesting landbase.

### **Yield Group 7**

All stands in Yield Group 7 and containing coniferous species in the combined inventory label were initially flagged as having understorey present. To reduce the resulting proportion to the required 14%, a random procedure was used to select stands from across the FMA. Additional stands were required within the timber harvesting landbase.

The above procedures still apply to the timber supply analysis, however the following steps were applied to address deciduous concerns within the analysis. Table 5 provides an area summary of deciduous stands classified as having coniferous understorey. There are some significant changes from the previous version of this summary table, which are summarized below.

- (1) The difference within the total landbase area is due to precision rounding as a result of the GIS processing.
  - (2) The amount of area within the total landbase that is classified as being part of the understorey has been reduced by approximately 11,254 ha. Of this, 10,129 ha is due to the re-classification necessary to maintain the deciduous/coniferous priority balance found in the previous DFMP. The remaining 1,125 ha is due to stands located in the new AOP coverage which were assumed to be cut for their overstorey volume.
  - (3) Within the new THLB, there is a reduction of approximately 16,775 ha. This is due to the addition of areas classified as reserve. These areas include the non-allocated deciduous and birch areas and height/age reductions previously discussed under the section 3.
  - (4) There is a total reduction of approximately 10,746 ha of stands within the THLB which are coniferous understorey. Approximately 9,621 ha of this is due to the shift to pure deciduous stands due to the previous DFMP mentioned in point (2). The remaining 1,125 ha is due to
-

stands located in the new AOP coverage which were assumed to be cut for their overstorey volume.

**Table 5**  
***New Deciduous Stands with Coniferous Understorey***

Yield Group	Description	Total Landbase		Timber Harvesting Landbase	
		(1) Total Area (ha)	(2) With Understorey (ha)	(3) Total Area (ha)	(4) With Understorey (ha)
1	AW+(S) – AB	19 382.95	5 268.45	16 196.63	4 672.69
2	AW+(S) – CD	107 353.21	12 042.43	88 957.75	11 016.59
4	BW/BWAW+(S)	15 449.12	6 156.16	6 977.34	5 694.52
7	PB+(S)	27 709.35	3 968.04	25 927.56	3 603.81
Total		169 894.63	27 435.08	138 059.28	24 987.61

**Table 6**  
***Old Deciduous Stands with Coniferous Understorey***  
***(from Table 4 in the Benchmark Report)***

Yield Group	Description	Total Landbase		Timber Harvesting Landbase	
		Total Area (ha)	With Understorey (ha)	Total Area (ha)	With Understorey (ha)
1	AW+(S) – AB	19 383.14	5 471.71	16 799.28	4 868.26
2	AW+(S) – CD	107 355.85	23 048.71	97 832.45	21 522.60
4	BW/BWAW+(S)	15 449.28	6 167.51	14 265.58	5 705.79
7	PB+(S)	27 706.63	4 001.25	25 937.80	3 636.88
Total		169 894.90	38 689.18	154 835.11	35 733.53

## 5. Summary of Landbase by Yield Group

Table 7 provides a summary of the area by yield group for the FMA. Differences between Tables 7 and 8 are directly related to landbase changes discussed in previous sections of this report.

**Table 7**  
**New Area by Yield Group**

Yield Group	Description	Excluded From Timber Harvesting Landbase (ha)	Included In Timber Harvesting Landbase (ha)	Total (ha)
1	AW+(S) – AB	2 590.56	11 523.95	14 114.51
2	AW+(S) – CD	17 369.62	77 941.16	95 310.78
3	AWSW/PBSW/BWSW	3 002.97	29 049.70	32 052.67
4	BW/BWAW+(S)	8 010.14	1 282.82	9 292.96
5	FB+OTH	844.85	7 600.48	8 445.33
6	H+(S)/S	3 722.09	49 737.73	53 459.82
7	PB+(S)	1 417.56	22 323.75	23 741.31
8	PL/PLFB+(H)	4 793.12	48 294.40	53 087.52
9	PLAW/AWPL	1 350.65	18 251.67	19 602.32
10	PLSB+OTH	1 062.41	9 555.74	10 618.15
11	PLSW/SWPL+(H)	2 786.46	20 358.66	23 145.12
12	SBLT/LTSB(G,M,F)	22 738.59	34 448.90	57 187.49
13	SBLT/LTSB(U)	30 005.40	11.39	30 016.79
14	SBPL/SBSW/SBFB	2 217.45	16 686.44	18 903.89
15	SW/SWFB+(H) – AB	5 922.78	24 058.12	29 980.90
16	SW/SWFB+(H) – CD	3 576.36	32 909.22	36 485.58
17	SWAW/SWAWPL	4 244.30	45 171.29	49 415.59
US	Deciduous moved to Dec. with Con. US	2 447.48	24 987.62	27 435.10
Total		118 102.79	474 193.04	592 295.83

**Table 8**  
**Old Area by Yield Group**  
**(from Table 5 in the Benchmark Report)**

Yield Group	Description	Excluded From Timber Harvesting Landbase (ha)	Included In Timber Harvesting Landbase (ha)	Total (ha)
1	AW+(S) – AB	1 980.41	11 931.02	13 911.43
2	AW+(S) – CD	7 997.30	76 309.84	84 307.14
3	AWSW/PBSW/BWSW	2 977.78	29 075.04	32 052.82
4	BW/BWAW+(S)	721.98	8 559.79	9 281.77
5	FB+OTH	836.18	7 609.06	8 445.25
6	H+(S)/S	3 710.78	49 749.28	53 460.06
7	PB+(S)	1 404.45	22 300.93	23 705.38
8	PL/PLFB+(H)	4 740.47	48 347.33	53 087.79
9	PLAW/AWPL	1 346.13	18 256.08	19 602.21
10	PLSB+OTH	979.67	9 638.49	10 618.15
11	PLSW/SWPL+(H)	2 780.19	20 364.99	23 145.17
12	SBLT/LTSB(G,M,F)	5 002.46	52 184.90	57 187.36
13	SBLT/LTSB(U)	29999.98	16.85	30 016.83
14	SBPL/SBSW/SBFB	1 732.95	17 170.93	18 903.88
15	SW/SWFB+(H) – AB	5 891.30	24 089.28	29 980.58
16	SW/SWFB+(H) – CD	3 548.40	32 937.19	36 485.58
17	SWAW/SWAWPL	4 231.20	45 184.24	49 415.44
US	Deciduous moved to Dec. with Con. US	2 955.64	35 733.53	38 689.17
Total		82 837.27	509 458.71	592 296.01