

**Directive No.** 2005-1 **Date** April 7, 2006

**Subject** **Regeneration Stratum Declarations and Allowable Cut Adjustments**

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**Purpose** To provide procedures for determining and changing regeneration *stratum declarations* for timber harvest areas, and for temporary adjustment of forest tenure quadrant allowable cuts to reflect demonstrated reforestation results.

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**Policy** The *Alberta Regeneration Survey Manual* contains regeneration standards for the four major forest types or 'strata' in Alberta. Timber disposition holders are required to reforest harvested areas or 'openings' to the regeneration standard declared for that *opening*. However, it is recognized that, despite silvicultural efforts, not all harvested areas will reforest to declared regeneration *stratum*. In such cases, this directive provides procedures for changing *stratum* and assessing whether compensating area exists within the same Forest Management Unit (FMU). If such areas do not exist, the quadrant allowable cut (QAC) for the disposition holder will be temporarily adjusted to reflect potentially reduced regenerated yield for that *stratum*. The QAC adjustment will be in effect until the applicable timber supply analysis of the forest management plan is revised and approved.

*Stratum* change and re-treatment and/or re-survey proposals pursuant to Timber Management Regulation 141.9 or 142.1 will not be accepted by Alberta once a performance regeneration survey is submitted and results reported to Alberta. The intent is to establish that the reforestation phase ends once a performance survey has been reported to Alberta, and the resulting *stratum* is acknowledged for yield curve assignment.

**This directive is effective May 1, 2005** and will be implemented as follows:  
1) *Stratum declaration* and *stratum* change submissions approved prior to this date are valid and don't require re-submission. 2) Proposals that have been submitted but not approved will be re-evaluated according to this directive – Forest Management Branch will review discrepancies that cannot be resolved on a case-by-case basis. 3) Companies with an approved development plan for alternative regeneration standards will not be subject to the allowable cut adjustment portion of these procedures until Forest Management Branch approves such standards. However, performance surveys and reporting to the four provincial *strata* are still required. 4) Allowable cut adjustment will apply to all *openings* harvested since March 1, 1991.

This directive replaces previous directives on *stratum* area balance and cut adjustment from 2001 and 2004. The Executive Director of Forest Management Branch must approve any variation from the procedures in this directive.

The allowable cut adjustment procedures in this directive do not apply to timber license and permit *cutblocks* that were harvested on or prior to April 30, 1995 as such *cutblocks* do not require a performance survey according to Timber Management Regulation 141.7.

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**Procedure** The process for *pre-harvest stratum* assignment, *stratum declarations*, *stratum* changes, and allowable cut adjustment is outlined in a diagram in **Appendix 1**.

## 1.0 Harvest Planning

Each *cutblock* in the harvest plan should be designed to contain only one potential *opening* (and one *pre-harvest stratum*), if possible. The intent is to ensure that reforestation results by *stratum* can be easily monitored and located in the field, and that *stratum declarations* for *openings* can be achieved with area balance tolerances described later in this directive.

For harvest planning of *openings*, forest inventory polygons are translated to *pre-harvest strata* as follows:

If deciduous content is less than or equal to 20% = C stratum  
 If deciduous content is greater than 20% and less than or equal to 50% = CD stratum  
 If deciduous content is equal to 50% with coniferous leading species = CD stratum  
 If deciduous content is equal to 50% with deciduous leading species = DC stratum  
 If deciduous content is greater than 50% and less than 80% = DC stratum  
 If deciduous content is greater than or equal to 80% deciduous content = D stratum

Timber disposition holders with approved alternative regeneration standards will need to develop similar *pre-harvest stratum* translation protocol for approval by Alberta.

Disposition holders are responsible to have information (maps and summaries of area by AVI coertype) available to demonstrate translation of inventory to *pre-harvest strata* in the event of an audit by Alberta.

## 2.0 Stratum Declaration Procedures

### Step 1 – *Pre-harvest Stratum Assignment*

By May 15<sup>th</sup> of the first year following the *year of cut* of an *opening*, the *pre-harvest stratum* assignment from the harvest plan of the AOP is entered and reported to the Alberta Regeneration Information System (ARIS) in the 'STD\_MOD' and 'REF\_DESIG' domain codes from Appendix 3 of the *ARIS Industry Operations Manual*. The dominant *pre-harvest stratum* by area in a *cutblock* is determined in order to create the *opening* in ARIS as only one *stratum* and associated regeneration standard can be reported in ARIS for an *opening*.<sup>1</sup> However, all *pre-harvest stratum* within a *cutblock* must be accounted for and utilized in area calculations in the following steps 2-5 to determine the *stratum declaration* for the *opening*.

Please refer to Opening #102, in **Appendix 2** for an example. The *opening* contains *pre-harvest stratum* assignments of CD (15.0 hectares) and DC (12.0 hectares). The *stratum* entered into ARIS by May 15<sup>th</sup> of the year of cut would be CD (the largest/dominant *stratum* area). However, the *stratum declaration* for this *opening* two years later by May 15<sup>th</sup> is DC, as derived through *stratum* area balance procedures in the following steps 2-5. ***Openings cannot be sub-divided once entered into ARIS.***

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<sup>1</sup> Inventory polygons which are mistyped as non-forested, are within the boundary of a planned *cutblock*, and are planned for timber harvest, must be assigned a regeneration *stratum*.

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### Step 2 – *Summarize Harvested Area*

Summarize the total area harvested, by *stratum*, through listing each *opening* cut in a single timber year, with its associated *pre-harvest stratum* and area (hectares) and summarizing by *stratum*. This is the Harvested Area. This summary is done for a single forest management unit, and for a single timber disposition holder (or multiple holders if approved by Alberta in advance).

### Step 3 – *Apply Stratum Conversions (if applicable)*

Where the approved forest management plan requires conversion of *stratum* as an objective<sup>2</sup>, these are applied to specific *openings*. For example, if the plan assumes that 10% of the CD *stratum* harvested in the term of the plan will be reforested to the C *stratum*, then specific *openings* need to be identified for this conversion throughout the term of the management plan and the C *stratum* regeneration standard applied in the *stratum declaration*. Though the Harvested Area remains the same, the area of individual *stratum* is adjusted once the conversions are applied.

### Step 4 – *Calculate Stratum Target Area*

The Stratum Target Area is the same as the Harvested Area in Step 2 if conversions are not applied. If conversions are applied (Step 3) the Stratum Target Area is the result of adjustments to the Harvested Area for individual *stratum* due to conversion.

### Step 5 - *Determine Stratum Declarations & Report*

Assign the *stratum declarations* to the individual openings. Declarations result in a *Stratum Declaration Area*, which is +/- 5% (or 10 hectares, whichever is greater) of the Stratum Target Area from Step 4, for each *stratum*. This means that the disposition holder can change the *stratum* within an individual *opening* as long as the total Stratum Target Area for all *openings* and associated *stratum* is maintained within a tolerance of +/- 5%, or 10 hectares (whichever is greater). *The Forest Resource Improvement Association of Alberta (FRIAA) and quota holders who harvest less than 10,000 m3 annually may apply to the Area Manager for a waiver of this tolerance for specific proposals due to the small number of openings and associated hectares harvested annually by permit holders and small quota holders. See Appendix 2 for sample calculations to determine stratum declarations.*

By May 15<sup>th</sup> of the second year following the *year of cut*<sup>3</sup>, the *stratum declaration* must be reported to ARIS and the reforestation program in the Annual Operating Plan (AOP). The *stratum declaration* may be reported earlier, by May 15<sup>th</sup> of the year of cut for the *opening*. This must be specified in the AOP submission and supporting calculations from Appendix 2 must be available.

*Stratum declarations* are reported in the 'STD\_MOD' and 'REF\_DESIG' domain codes in ARIS, as a replacement to the *pre-harvest stratum* submission for the *opening*. See Section 4.0 Reporting for more details.

Each *opening* and associated declared *stratum* must be managed as a separate unit for reforestation purposes.

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<sup>2</sup> This does not include historical unplanned & non-desired stratum 'shifts' included in yield curve estimates.

<sup>3</sup> Example: Stratum declaration must be made by May 15, 2006 for the May 1, 2004 – April 30, 2005 year of cut.

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### 3.0 Stratum Change & Allowable Cut Adjustment Procedures

It is recognized that despite silvicultural effort, some *openings* may not develop into the declared *stratum*. For example, a conifer-dominated *opening* (ie. CD *stratum*) can develop into a deciduous-dominated *opening* (ie. DC *stratum*). To accommodate this, a change in *stratum* for the *opening* may occur after the establishment survey according to procedures described in section 3.1 below. Another *stratum* change after a performance survey will be possible per procedures described in section 3.2 below. **A maximum of two stratum changes is permitted for an opening after stratum declaration.**

#### 3.1 Stratum Change Prior to Performance Survey

A disposition holder (including FRIAA) may change the *stratum* of an *opening* after an establishment survey if:

- The *opening* is Not Sufficiently Re-stocked (NSR) to the *stratum declaration*, but meets the regeneration standard (is Satisfactorily Re-stocked or SR) of another *stratum* regeneration standard as evidenced by the establishment regeneration survey. Such a change is an acceptable re-treatment strategy per the requirements of Timber Management Regulation 142.
- The *opening* is SR to the *stratum declaration* but a *stratum* change is required to maintain a balance in *stratum* area due to *stratum* changes to NSR *openings* (referenced above). Such *openings* must meet another *stratum* standard, be within the same FMU, and be establishment surveyed and reported in the same year as the *openings* that are NSR to the *stratum declaration* (described in previous bullet point). Further, the total area of *stratum* change to SR *openings* shall not exceed total area of *stratum* change to NSR *openings*

#### Key Decision Rules

- *Stratum* change cannot be applied to NSR *openings* when the survey indicates the *opening* is not SR to any other available *stratum* regeneration standard. Such *openings* must be re-treated according to the requirements of TMR 142.
- An *opening* that is declared to C, CD, or DC *stratum* can only be changed to D *stratum* if the *opening* is 5 years or less from the end of the *year of cut*.
- Only one *stratum* change is permitted to an *opening* after an establishment survey, and prior to performance survey. Further, only one SR establishment survey result for an *opening* shall be reported to Alberta.

**The *stratum* change will be recorded in the ‘STD\_MOD’ domain code in ARIS as SR to the changed *stratum* for the *opening*. The *stratum* change must also be reported in the second letter of the ‘REF\_DESIG’ domain code in ARIS as a change from the original *stratum declaration*. All *openings* with a *stratum* change from the *stratum declaration* must be reconciled at the time of performance survey through procedures described in section 3.2 below.**

Openings from permits and licences cut prior to April 30, 1995 do not require performance survey, so a *stratum* change approved by Alberta after an establishment survey is considered the *final stratum* if Alberta does not require further re-treatment of the NSR *opening*.

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### 3.2 *Stratum Area Balance and Quadrant Allowable Cut Adjustment*

The following is an outline of the steps to determine the balance of *stratum* area across the FMU due to *openings* where the *stratum* changed from the declaration and *openings* that are NSR to any *stratum*, and to adjust QAC for *strata* where a loss in area is observed. This process occurs annually and is based on the *final stratum* information reported on an *opening* after performance surveys conducted in a single timber year, and *openings* approved for landbase withdrawal in the same year.

*Openings* included in the annual assessment of *stratum* area balance and QAC adjustment:

- *Openings* that are NSR to the original *stratum declaration* after performance survey. This includes *openings* NSR to any *stratum*, and *openings* where the *stratum* change was done after an establishment survey.
- *Openings* withdrawn from the productive forest landbase prior to performance survey, as requested by the forest company.
- *Openings* that are SR to the *stratum* declaration but the *stratum* meets an alternate *stratum* regeneration standard (as evidenced by the performance survey) required for balancing *stratum* area as outlined in step 2 below.

Once a *final stratum* is determined for an *opening* it must be reported to ARIS and the AOP as per the requirements in Section 4.0 in order to be utilized in this assessment.

*Openings* that are SR to the *stratum declaration*, and not required for balancing of *stratum* area (through *stratum* change) are not included in this assessment. Note also that *openings* with a D *stratum declaration* that are SR at the 3-5 year regeneration survey are considered performance surveyed and no further survey is required. See the table in **Appendix 3** which outlines the steps below.

#### Step 1 – *Determine Openings for Stratum Area Change and Area Balance Assessment*

##### *Openings NSR to Stratum Declaration but SR to Other Stratum*

For each *opening* performance surveyed in an FMU in a single timber year that does not meet the *stratum declaration* (including *openings* where the *stratum declaration* was revised after the establishment survey) determine the alternative *stratum*, which then becomes the *final stratum*. This involves assessing the stocking percentages of crop tree species, and assigning the *opening* to another the *stratum* for which it meets the regeneration standard. This procedure can only be applied where the *opening* meets the total stocking requirements (80%) of at least one of the available *strata*. For example, a performance survey indicates that an *opening* with a *stratum declaration* of CD is 40% conifer stocking and 50% deciduous stocking. The minimum conifer stocking requirement is 50% for the CD *stratum*. The *final stratum* for the opening can be DC, since it meets the conifer stocking requirement of 30% for DC.

##### *Openings NSR to All Stratum*

If the *opening* doesn't meet the stocking standards for any *stratum*, or if the *opening* was approved for removal from the productive forest landbase in the current timber year, it is listed in the NSR column of the table. The *final stratum* for such *openings* is reported as the same *stratum* as the *stratum declaration* for the *opening*.

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### *Openings SR to Stratum Declaration*

If an *opening(s)* meets the stocking requirement for another *stratum*, and is needed to provide an area balance in order to avoid QAC adjustment, the *stratum* may be changed. Only *openings* SR to the *stratum declaration* that are necessary to maintain an area balance are available for *stratum* change.

### **Step 2 – Determine the ‘Net Change’ in Stratum Areas**

List all *openings* from Step 1 in a table format (see Appendix 3). Show the harvested area, the *stratum declaration* area, *final stratum* area, and change in *stratum* area for each *opening*. Summarize the total areas for each category specified.

#### Key Decision Rules in Step 2

- Changing *stratum* between *openings* of different operators in the FMU is acceptable if the *openings* are from within the same FMU, and an agreement in writing between the operators is provided with the AOP submission to Alberta. Such *openings* must be clearly identified and can then be included in this assessment and report.
- Performance surveys cannot be reported in any year other than the year they are conducted. **Further, only one performance survey for an opening will be accepted by Alberta, and used in these procedures.** For example if a performance survey is reported as NSR at 9 years from the year of cut, the *final stratum* must be determined prior to ARIS reporting and if applicable, QAC adjustment applied. The *opening* is not available for further performance survey for a potential SR result.
- As with *stratum declaration* procedures, *openings* cannot be sub-divided as part of the *stratum* change procedures. **Further, only one stratum change can be conducted and reported for an opening based on a performance survey resulting in a final stratum for the opening.**

### **Step 3 – Calculate Quadrant Allowable Cut Adjustments**

Allowable cut adjustments are temporary adjustments to the disposition holder’s quadrant allowable cut (QAC), are applied in the following quadrant, and are in effect until the next forest management plan and/or timber supply analysis. QAC adjustment must be calculated annually for all *stratum* area losses after the net area change assessment outlined in Step 2.

The QAC adjustment for a loss in *stratum* area is determined as follows:

$$\text{QAC adj(m3)} = \text{Net Loss in Stratum Area (ha)} \times \text{MAI Factor} \times 12 \text{ years}$$

#### **Mean Annual Increment (MAI) Factor (m3/ha/year)**

<b>C</b>	<b>CD</b>	<b>DC</b>	<b>D</b>
1.7	1.9	2.0	1.8

12 years – This value was determined by taking the timeframe from year of cut to the final performance survey year (14) minus a 2 year regeneration lag. No distinction is made between coniferous/mixedwood and deciduous timeframes.

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Disposition holders can develop MAI factors specific to their Forest Management Unit when Alberta approves alternative regeneration standards. Positive values or upward allowable cut adjustment may be possible.

*Example Calculation:* Assume the net loss in area for the C *stratum* is – 10 hectares after a net *stratum* area change assessment.

$$\text{QAC adjustment} = 10 \text{ ha} \times -1.7 \text{ m}^3/\text{ha}/\text{yr} \times 12 = -204 \text{ m}^3$$

This value is added to QAC adjustment values for other *stratum* to get a total QAC adjustment value for this particular year of the timber production control quadrant of the specific tenure (quota or FMA) in the FMU. The summed QAC adjustment for all years of the quadrant is determined for application to following quadrant production period of the tenure.

#### **Step 4 – Report final stratum, QAC adjustment, & Net Stratum Area Changes**

*Final stratum* is reported for all *openings* performance surveyed in a single timber year as follows:

- *Openings* that are SR to the *stratum declaration* are reported as the same *stratum* as the declaration (reported directly to ARIS by May 15).
- *Openings* that are NSR to the *stratum declaration*, but SR to another available *stratum* are reported as the other available *stratum* (reported in the AOP and ARIS per section 4.0 below).
- *Openings* that are SR to the *stratum declaration*, but are changed to another *stratum* to which its SR for *stratum* area balance purposes are reported as SR to the revised *stratum* (in the AOP and ARIS per section 4.0 below).
- *Openings* that are NSR to any *stratum* are reported as the original *stratum declaration* (reported in the AOP and ARIS per section 4.0 below).

The QAC adjustment for each tenure (FMA or quota), and changes in net *stratum* area, are reported annually as part of the reforestation program in the AOP. A final performance report is a 5 year summary of the total QAC adjustment to be applied to the following quadrant for the tenure. If more than one tenure (quota primarily) exists in the FMU, the disposition holder will need to specify the tenure to which the QAC adjustment will apply as it can only apply to one. Further detail is found in section 4.0 on reporting.

## **4.0 Reporting**

Reporting of *stratum declarations*, *stratum* change after an establishment survey, *final stratum*, net *stratum* area changes, annual QAC adjustment calculations, and total QAC adjustment in the final performance report are considered submissions under the reforestation program of the AOP. Such information will be validated by a registered forest practitioner (RFP) under the Forestry Professions Act and accepted (approved on the date Alberta acknowledges submission). All information is subject to audit by Alberta .

### ***Reforestation Program of the Annual Operating Plan***

The following information is submitted as part of the reforestation program of the AOP and to ARIS. This information may be submitted at a separate time from the rest of the

AOP as agreed with the Public Lands & Forests Division (PLFD) Area, but by May 15 annually. The following information is required for *stratum declarations* by year of cut and FMU:

Stratum Declarations

*Year of Cut: 2003*

FMU	Opening Number	Opening Area (ha)	Stratum Declaration	Stratum conversion?
W11	5080331923	10	C	Yes – contributes to 10% CD to C per FMP strategy

Supporting calculations will be submitted to Alberta upon request. The expected format for such calculations are outlined in **Appendix 2**. *Stratum declarations* are required by May 15 of the second year following the *year of cut* for the *opening*.

Stratum Change After Establishment Survey

FMU	Opening Number	Area (ha)	Stratum Declaration	Stocking Status	Revised Stratum	Area Change (ha)	
						NSR-SR	SR - SR
Z10	8504520232	55.0	C	NSR	CD	55.0	
Z10	8504520233	46.5	CD	SR	C		46.5
...	...	...	...	...	...		
SR-SR cannot exceed NSR-SR					<b>Total</b>		

Final Stratum

Report only *openings* with *stratum* that are different from the *stratum declaration* and *openings* that are NSR to any *stratum*

FMU	Opening Number	Opening Area (ha)	Stratum Declaration	Final Stratum	Stocking Status of Final Stratum
R11	4500221233	10.3	DC	CD	SR
R11	4500221234	16.5	CD	CD	NSR

QAC Adjustment and Net Area Changes

The following information is to be reported annually, by FMU and tenure to which QAC adjustment will apply (Quota or FMA):

Stratum	Net Loss (hectares)	QAC Adjustment (m3)	Net Change in Stratum Area (hectares)
C	- 98	- 1999	-98
CD	0	0	+ 8.9
DC	-8.2	-197	-8.2
D	- 25.7	-555	-25.7
<b>TOTAL</b>		<b>2751 m3</b>	

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### ***Final Performance Report***

The final performance report is submitted no later than 6 months prior to the end of the of the final year of the quadrant for the applicable quota or FMA tenure. The report outlines the Quadrant Allowable Cut adjustment to be applied in the following quadrant as a result of summarized annual QAC adjustments in the previous 5-year quadrant production control period. It also outlines changes in *stratum* area to be used in assessment of landbase loss to other operators in the FMU and whether re-creation of specific *stratum* area is necessary in the next forest management plan.

Two copies of the final performance report are submitted to the Alberta - one to the Public Lands and Forest Division Area office, and one to the Executive Director of Forest Management Branch for adjustment to Quadrant Allowable Cuts.

The following information is required in the final performance report for each quota or FMA unit being managed for cut control. Example of required information for a single coniferous timber quota:

Year of Quadrant	QAC Adjustment (m3)	Changes in stratum area (ha)			
		C	CD	DC	D
2001	- 228		-10	+10	
2002	-2,736		-120		10
2003	- 1,428	-70	15		5
2004	- 2,040	-100			55
2005	- 2,751	-98	8.9	-8.2	-25.7
<b>Total Adjustment to CTQZ10Q0001</b>	<b>- 9,183</b>	<b>-68</b>	<b>-106</b>	<b>2</b>	<b>44</b>

Supporting Calculations for QAC adjustments and net change in *stratum* area will be submitted with the above summary for audit by Alberta. The expected format of such calculations are outlined in **Appendix 3**.

*For administrative feasibility, QAC adjustments less than or equal to 1,000 m3 will not be applied to tenure QAC.*

## **5.0 Enforcement**

Improper application of *stratum declarations*, *stratum* change and QAC adjustment may result in one or more of the following actions depending on severity:

- Recinding of the ability to undertake *stratum* changes by notice from the Executive Director of FMB
- QAC adjustment determined by Alberta, by notice from the Executive Director of FMB.
- Administrative penalty

If there is a gain in *stratum* and associated landbase contributing to TSA by one disposition holder that results in a landbase loss to another disposition holder in the FMU, the party responsible for the loss may be required to re-create an equivalent area in the same FMU through strategies in the subsequent forest management plan. This decision will be made and reflected in the harvest area stratum assignment for the following Timber Supply Analysis (see Annex 1 of the Alberta Forest Management Planning Standard for details).

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## Definitions

**Cutblock** – An area of planned or actual timber harvest. May contain more than one *stratum* and therefore, more than one *opening*.

**Final Stratum** – The final reforestation *stratum* for an *opening* based on a performance regeneration survey result, and following *stratum* balancing and quadrant allowable cut procedures. The *final stratum* is the same as the *stratum declaration* if the opening is NSR to any available *stratum*. For *openings* that meet a *stratum* other than declared, the *final stratum* reported should be the *stratum* closest to the *stratum declaration*.

**Forest Management Unit (FMU)** – The administrative land unit for which a coniferous and deciduous annual allowable cut is calculated and managed. For the purpose of this directive an FMU can be an FMA boundary or FMU created by the Minister. The smaller FMU is utilized for procedures in this directive if the deciduous and coniferous AAC is calculated on different FMUs.

**Opening** – An area created by timber harvest which is the unit for reforestation management (ie. Regeneration surveys) and tracking of reforestation activities in the Alberta Regeneration Information System (ARIS). Openings have a unique administrative identification, contain one reforestation *stratum*, and a single operator with reforestation responsibility.

**Pre-harvest Stratum** – The stratum proposed in an Annual Operating Plan (AOP) for timber harvest, and entered into ARIS by May 15 of the *year of cut*. Is based on first translating inventory labelling to regeneration *stratum*, and then determining what the dominant *stratum* area is within the opening.

**Stratum** - The coniferous, deciduous, and mixedwood reforestation strata (plural) as outlined in the Alberta Regeneration Survey Manual (C,CD,DC,D), or stratum approved as alternative regeneration standards in a forest management plan.

**Stratum Declaration** – The target regeneration *stratum* for an *opening* based on *stratum declaration* procedures, entered into ARIS by May 15 of the second year following the end of the *year of cut*. Is based on a process of ‘balancing’ *stratum* area cut for all *openings* harvested in a single year of cut.

**Year / Year of Cut**– The period from May 1<sup>st</sup> to April 30<sup>th</sup>. Relevant in establishing when timber harvest occurs, timber production year, and year of performance survey (though reporting to ARIS is by May 15<sup>th</sup>).

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**Authorities** **Forests Act 14(2) and 19** – authorizes the Minister to determine the annual allowable cut for a forest management unit, and alter timber volume harvest.

**Forest Management Agreements** – section relating to when a forest management plan is obsolete or inadequate and a revision is required.

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## Approved

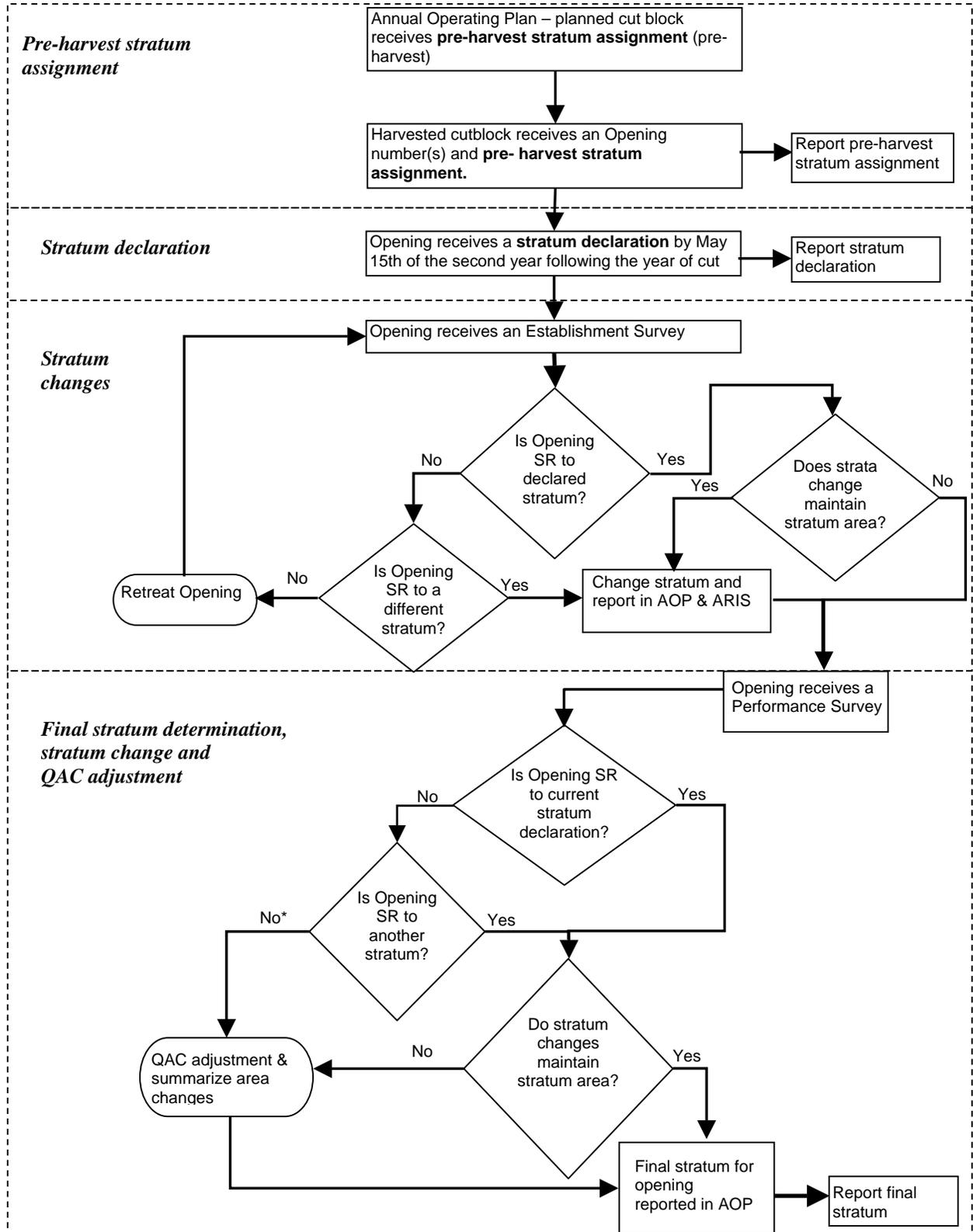
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**D.(Doug) A. Sklar, Executive Director**  
**Forest Management Branch**

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**Appendix 1 – Process for Stratum Declarations, Stratum Changes & QAC Adjustment**



\*For openings that are not SR to any other standard after a performance survey, the final stratum is same as the initial stratum declaration (there is no alternative stratum for the opening).

**Appendix 2 Stratum Declaration – Supporting Calculations**

The following is an example of *stratum declarations* completed based on the 2004-2005 harvest year for forest management unit (FMU) R11. The example includes **STEP 2** to **STEP 5** of the **Stratum Declaration Procedures**. *Stratum* conversions (from the FMP) are applied after harvest is complete.

Year of Cut: May 1, 2004 to April 30, 2005

FMU R11

	Opening #	Harvested Area (ha)				Total	Stratum Declarations				
		C	CD	DC	D		C	CD	DC	D	Total
<b>STEP 2: Summary of harvested area</b>	100	25.0	10.0			35.0	35.0				35.0
	101	46.2				46.2	46.2				46.2
	102		15.0	12.0		27.0			27.0		27.0
<b>STEP 3: Adjust for conversions</b>	103	62.5	15.8		4.0	82.3	82.3				82.3
	301	10.3	28.7		2.1	41.1		41.1			41.1
	302		5.6	7.8	4.9	18.3		18.3			18.3
<b>STEP 4: Calculate Stratum Target Area</b>	303	41.3			2.2	43.5	43.5				43.5
	304	29.6	11.2			40.8	40.8				40.8
	501	6.5	41.2	3.6		51.3		51.3			51.3
<b>Step 5 - Determine Stratum Declarations</b>	502			5.6	12.3	17.9				17.9	17.9
	503	82.1		4.0		86.1	86.1				86.1
	504	22.7		1.8		24.5		24.5			24.5
	701	1.4		8.7	15.6	25.7				25.7	25.7
	702		26.4	3.0	6.1	35.5		35.5			35.5
	703	41.3				41.3	41.3				41.3
	704		28.0			28.0			28.0		28.0
		<b>368.9</b>	<b>181.9</b>	<b>46.5</b>	<b>47.2</b>	644.5	<b>375.2</b>	<b>170.7</b>	<b>55.0</b>	<b>43.6</b>	644.5
		C	CD	DC	D		C	CD	DC	D	
planned FMP stratum conversions (% of harvested to another):	10% CD to C	18.2	-18.2				367.7	n/a	n/a	n/a	- 5%
							406.4	n/a	n/a	n/a	+ 5%
							n/a	153.7	36.5	37.2	- 10 ha
net change		18.2	-18.2				n/a	173.7	56.5	57.2	+ 10 ha
Stratum Target Area (adjusted)		<b>387.1</b>	<b>163.7</b>	<b>46.5</b>	<b>47.2</b>						
5% of strata or 10ha		19.4	8.2	2.3	2.4						

NOTE: use 10 ha tolerance for CD, DC & D Stratum Target Areas

**Appendix 3 – Sample Final Performance Report**

Summary of Performance Results for FMU Z10  
CTQ Z10Q0001

Year: 2005

MAI Factor (m3/ha/yr)

C	CD	DC	D
1.7	1.9	2	1.8

Opening #	Cut Year	Opening Area (ha's)	Stratum Declarations (ha)					Final Stratum (ha)					Net Change in Stratum Area (ha)				
			C	CD	DC	D	Total	C	CD	DC	D	NSR	C	CD	DC	D	
102	2000-2001	89.0			89.0		89.0		89.0					89.0	-89.0		
103	2000-2001	82.3	82.3				82.3					82.3	-82.3				
302	2001-2002	18.3		18.3			18.3	18.3					18.3	-18.3			
303	2001-2002	43.5	43.5				43.5		43.5				-43.5	43.5			
304	2001-2002	40.8	40.8				40.8					40.8	-40.8				
501	2003-2004	51.3		51.3			51.3			51.3			-51.3	51.3			
504	2003-2004	24.5		24.5			24.5	24.5					24.5	-24.5			
701	2004-2005	25.7				25.7	25.7	25.7					25.7				-25.7
704	2004-2005	29.5		29.5			29.5			29.5			-29.5	29.5			
			404.9	166.6	123.6	89.0	25.7	404.9	68.5	132.5	80.8	0.0	123.1	-98.1	8.9	-8.2	-25.7

QAC Adjustment = Net loss of stratum area (ha) x MAI Factor x 12 years

QAC Adjustment (m3)	-2001	0	-197	-555.1	<b>-2753</b>
Change in Stratum Area (Ha)	-98.1	8.9	-8.2	-25.7	

Year	2006																	X
Year	2007	REPEAT ABOVE CALCULATIONS FOR ALL QUADRANT YEARS																X
Year	2008																	X
Year	2009																	X
<b>TOTAL QAC ADJUSTMENT FOR CTQZ10Q0001</b>																		<b>5,000 m3</b>