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Ministry of Forests  
and Range

Revenue Branch

MEMORANDUM

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**BY EMAIL**

To: Regional Executive Directors

From: Bill Howard  
Director  
Revenue Branch

**Re: Amendment No. 7 to the Provincial Logging Residue and Waste Measurement Procedures Manual**



I hereby approve Amendment No. 7 to the Provincial *Logging Residue and Waste Measurement Procedures Manual*, and attach a copy for your use.

The purpose of this amendment is to enable a transition from waste benchmarks to course woods debris measures under the Forest Planning and Practices Regulation.

This amendment comes into force on April 1, 2007.

Bill Howard  
Director  
Revenue Branch

Attachment





<p>FOR FURTHER INFORMATION OR IF YOU HAVE A CHANGE OF ADDRESS, PLEASE CONTACT:</p> <p>John Wai Residue Forester and Log Salvage Policy Forester Revenue Branch Ministry of Forests and Range 6<sup>th</sup> Floor - 727 Fisgard Street Victoria, BC V8W 1R8 Phone: 356-7671 PROFS userid: John.Wai@gov.bc.ca FAX: 387-5670</p>	<b>MANUAL TITLE</b>	
	Prov. Logging Residue & Waste Measurement Procedures Manual	
	<b>AMENDMENT</b> Amendment No. 7	<b>ISSUE DATE</b> April 1, 2007
	<b>MANUAL CO-ORDINATOR</b>	
	Judy Laton Manuals Co-ordinator	
	<b>AUTHORIZATION (Name, Title)</b>	
	W. Howard Director, Revenue Branch	

Please make the following changes to your copy of the above Ministry manual.

ACTION (Remove/Insert)	(VOL.) CHAPTER-SECTION-SUBJECT	PAGE(S)	COMMENTS
	TABLE OF CONTENTS		
REMOVE	Table of Contents	i - vi	After Table of Contents Tab
INSERT		i - vi	
REMOVE	Chapter 2	1 - 2	After Chapter 4 Tab
INSERT		1 - 2	
REMOVE	Chapter 4	7 - 8 11 - 12	After Chapter 4 Tab
INSERT		7 - 8 11 - 12	
REMOVE	Chapter 5	1 - 4	After Chapter 5 Tab
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REMOVE	Chapter 7	1 - 4 7 - 10	After Chapter 7 Tab
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REMOVE	Appendix	9 - 10 13 - 26	After Appendix Tab
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# Assessment Planning

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# 2

There are two main levels of waste assessment planning:

- *Annual Planning* (for the entire year's waste assessments), and
- *Block Planning* (for each individual cutblock's waste assessment)

## **2.1 Annual Plan**

An Annual Plan must be developed using the Waste System for all blocks including road rights-of-way to be waste assessed during the year.

The annual plan is normally based on a twelve-month calendar year period and should include:

- a list of proposed cutblocks that will be available for waste assessments indicating their licence/CP/block numbers and the chosen reporting unit option for the cutblocks,
- the coefficients of variation proposed for each reporting unit subject to full sampling intensity surveys,
- if block exemption (Section 3.2) is to be used, the proposed parent block(s) (if known) and the related exempted blocks

If the sampling error objective for the previous year sampling was not met, the district manager may instruct the use of a higher coefficient of variation.

Refer to the Grid Spacing Worksheet (Table 4-1). The grid spacing is calculated from the formula of  $SQR(10\ 000 \times \text{ha/plots})$  where SQR means "take the square root of", and should be rounded down to the next 5 m.

If necessary, grid spacing is reduced or increased, in 10 m increments, to fit the required number of plots within the cutblock boundaries.

## **4.4 Plot Layout**

### **4.4.1 Dispersed**

Plots for dispersed types are to be located on a systematic, staggered grid. The steps required are as follows:

1. Using the hectares and an estimate of C.V. specific to the reporting unit, look up the minimum number of plots required in either Table 4-2 (Coast) or Table 4-4 (Interior).
2. Compute the grid spacing distance (GSD) using the grid spacing worksheet (Table 4-1).
3. Locate the POC where the main road enters the cutblock, and establish the baseline in the cardinal direction which most closely parallels the contours. The POC for helicopter blocks is the most south-westerly point on the block.
4. Obtain the Starting Point Interval Factor (SPIF) from the forest district staff. The SPIF (must be in effect for the month in which primary logging for the cutblock is completed), multiplied by the GSD will determine the horizontal distance from the POC to the mapped location of the initial strip (IS). (SPIF will be randomly determined by Ministry of Forests staff to either be 1/4, 1/2, 3/4 or other fractions of GSD.).
5. Map the initial strip (IS) at the SPIF distance along and at right angles to the baseline from the POC.
6. Map all remaining strips at the full GSD along the baseline in both directions from the IS. Strips are mapped at right angles to the baseline.
7. Number the Strips:
  - a. on blocks with North/South baselines number the strips sequentially from South to North, and
  - b. on blocks with East/West baselines number the strips sequentially from West to East.
8. On odd numbered strips, locate the first two plots at one half the GSD along the strip in both directions from the baseline. Locate the remaining plots at full GSD along the strip.
9. On even numbered strips, locate one plot at the intersection of the strip and the baseline, and all remaining plots at full GSD along the strip.
10. Number the plots. Each plot in a given block should have a unique number.

5. Always stay to the right hand side of the road in the direction of travel when laying out the plots. When coming to a spur, go up the spur on the right hand side. At the end of the spur, turn around and come down on the right hand side.
6. For two sided accumulations when an odd number of plots are required, establish the last plot on one side of the road. If the last digit of the cutting permit is odd, establish it on the right hand side. If the last digit of the cutting permit is even, establish it on the left hand side.

Roadside accumulations must be marked on the map so the layout can be audited. When on-site stratification is done, it must be done on a non-bias basis.

#### 4.4.3 Spot Accumulations

Spot accumulations include highlead, spar, or tower landings, as well as skidder, helicopter landings.

Again, the number of plots is found from Table 4-3 (Coast) or 4-5 (Interior), and the minimum number of plots per stratum is two.

The method for selecting the first spot accumulation is to use the date of the month when the surveyor first arrives on site to do the survey.

Example 1:

- 31 piles requiring 6 plots, surveyed on the 23<sup>rd</sup> of the month  
 $31 / 6 = 5.17$  Survey every 5th pile  
Select the following piles: #23, #28, #2, #7, #12, #17

Example 2:

- 11 piles requiring 3 plots, surveyed on the 30<sup>th</sup>  
 $11 / 3 = 3.67$  Survey every 4<sup>th</sup> pile  
 $30 - 11 = 19$ ;  $19 - 11 = 8$   
Select the following piles: #8, #1, #5.

## **4.5 Stratification Procedures for Roadside Accumulations**

### **4.5.1 Roadside Consisting of Strip Accumulations**

If the roadside accumulations consist of strips (e.g., windrows), use a rectangular plot which covers the entire width of the strip or a 50 m<sup>2</sup> circular plot system with plot centres located alternatively at 4 m and 11 m from the roadside, for a 15 m wide strip. Strip accumulations are normally treated as one stratum but may need to be stratified according to different levels of waste or harvesting methods.

### **4.5.2 Spot Accumulations Resulting From Piling Roadside Slash**

Treat all spot accumulations from the same harvesting method in one stratum. The space intervals between spot piles must be treated as a separate roadside stratum.

For roadside piles where plots are established on the side of the pile, the surveyor must alternate locating the plots on the front and back of the piles selected for sampling, if it is safe to work around the back of the pile. If it is not safe to work around the back of the pile, establish the plot on the side of the pile closest to the POC for odd numbered plots and farthest away from the POC for even numbered plots.

Landing accumulations resulting from highlead, helicopter logging, etc., are always stratified separately from the roadside spot accumulations to form their own stratum.

### **4.5.3 Accumulations Within Dispersed Sub-population**

Accumulations found within the dispersed sub-population area which had not been previously stratified will be surveyed as part of the dispersed sub-population and all pieces that fall within a dispersed plot will be measured and recorded.

### **4.5.4 Debuilt Road**

If a road has been debuilt, the logs and stumps pulled back from the side-slopes and scattered over the top of the deactivated road, the debuilt road must be treated as a separate accumulation stratum and sampled accordingly. The stratum code for debuilt roads is WBOX.



# Field Procedures

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# 5

This manual chapter assumes the waste surveyor is knowledgeable in the principles of sampling and surveying and is familiar with log scaling and grading procedures.

If there are uncertainties over any aspect of the field procedures, waste surveyors are encouraged to direct questions to the district, regional or branch staff.

## **5.1 General Requirements**

### **5.1.1. Material to be Measured**

All waste volumes within the plot boundaries must be measured and recorded according to the *Timber Merchantability Specifications* specified in this manual.

For pieces that lie across the plot boundary, record the in-plot portion only but classify (kind, waste class, grade) based on the entire piece as if it were completely within the plot.

All coniferous and deciduous timber except reserved timber which are within the specifications of Timber Merchantability described in this manual must be measured and recorded.

#### **5.1.1.1 Road Deactivation Material**

Road deactivation material is timber previously used in the construction of a culvert, bridge or a right-of-way which has since been deactivated.

At the time of a waste assessment, all road deactivated material that has not been previously scaled must be included in the waste assessment. All road material must be one hundred percent measured unless it is unsafe, then the volume may be estimated using an accepted method.

#### **5.1.1.2 Decked Timber**

Decked timber is five or more logs that are mechanically placed together in a deck.

If a forest officer determines that a log deck is to be scaled at a scale site or field scaled, the log deck must be clearly marked and identified by the licensee in order that the timber in the log deck will not be included in the waste assessment.

For decked timber that is to be included in a waste assessment, the logs must be 100 % measured or estimated using the most practical method as determined by the licensed surveyor such as top scale or average piece size times number of pieces.

### **5.1.2 Recording Standards**

To measure waste material, follow the rules in the Ministry of Forests *Scaling Manual* except where otherwise described in this manual.

Record the (inside bark) gross dimensions of each piece including rot or other defects. In addition, the waste surveyor calculates the volume deductions for any defects and records

the deduction equivalent under "Deduction for Rot/Holes" in rads and/or metres, along with the most appropriate "decay type."

When netting-down the dimensions of a log because of defect, the gross length will be used to determine if the piece meets the 3 m minimum log length. Therefore, the net length of a log used for volume calculations can be less than 3 m.

Record gross length measurements to the nearest one-tenth (0.1) of a metre and gross diameter measurements in radius class units (rads, 1 rad = 2 cm). Record deductions in length to the nearest one-tenth (0.1) of a metre and deductions in radius to the nearest rad.

Top measurements on logs which have very little taper must be made carefully, due to the length of merchantable wood involved between radius classes. For oversized tops, the measurement is to be made at the last occurrence (i.e., uppermost on the tree) of the applicable timber merchantability top dimension specification. When using a scale stick, for a 10 cm top, it will be the mid-point of the 5 radius class. For a 15 cm top, it will be the line separating the 7 and the 8 radius class. All measurements are inside bark.

The measurement of the portion of borderline pieces outside the plot may be recorded but are not mandatory. The minimum requirement will be the measurements of the portions of the pieces within the plot, together with a code (when needed) that will override computer checks on minimum log length.

Detailed measurement protocol and standards are included later in this chapter.

### 5.1.3 Waste Class

Waste classification must not be biased for any reason such as accommodating inadequate planning and supervision, poor harvesting methods, inadequate/careless logging practices or a licensee's own manufacturing or market specifications.

All waste must be classified as either avoidable or unavoidable.

Unavoidable volumes are those which cannot be removed because of physical impediments, safety considerations, or environmental constraints.

By definition, all other volumes are *avoidable*.

### 5.1.3.1 Some Unavoidable Examples

1. Due to physical impediments:

- logs wedged between boulders, or
- a log stranded on a ledge.

2. Due to safety:

- the portion of a high stump (with a rock against it) between the maximum allowable stump height and the height where the stump could have been safely cut (Figure 5.4),
- logs with shards of imbedded rock from blasting (Section 5.3.10),
- log pieces that were cut to create escape paths for the fallers (Section 5.3.4.2),
- bucking waste with severe deformities as outlined in Figure 5.3.5.1, or
- logs that are unsafe to remove due to site specific circumstances.

3. Due to environmental constraint:

- a log if removed will cause excessive site disturbance or soil degradations, or
- approved high stumps due to snowpack (Section 5.3.4.4),
- stub trees to be used for biodiversity purposes.

### 5.1.4 Piece Numbers

Waste pieces are usually recorded with one set of measurements.

However, where high stumps or forks are found, the piece may have both avoidable and unavoidable segments.

In these situations, the segments are recorded separately, *each with its own piece number*. Record MP on the comment column of FS 161 to indicate multiple pieces. Mark all pieces measured in the plot clearly with the piece number, using tree marking paint.

# Reporting

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**7**

## **7.1 Data Compilation**

A web-based system has been developed for processing waste assessment data. The system can be accessed at:

<http://apps29.for.gov.bc.ca/waste/>

For the Production system, users may follow the step by step procedures laid out in the *Waste System User Procedures Manual* that can be accessed at:

<http://www.for.gov.bc.ca/hva/rh/rwtraining/>

Effective January 1, 2005 all waste assessment data must be entered and submitted using the web based waste system.

## 7.2 Reporting Requirements

Licensees who utilize the web based Waste System must enter data and submit completed cutblock within thirty days of completion of the field survey as specified under Section 2.4. The final survey map for each cutblock must be included in the submission.

If delays in the loading-out phase postpone the survey and report, the delay time and reason should be submitted to the District Manager.

The District Manager *may* extend these deadlines.

For major licensees, survey reports submitted to the District Manager after November 15th may result in having invoices issued in the year following.





#### 4. Sampling Statistics:

##### a. Cut Block Option only.

- i. For blocks over 25 ha check that the sampling error requirement for the dispersed area has been met.

The sampling error requirement for blocks under 25 ha has been waived.

- ii. For blocks that have at least 3 ha of accumulation piles check that the accumulation sampling error requirement has been met.

The sampling error requirement for blocks with less than 3 ha of accumulations has been waived.

##### b. Aggregate Option only

- i. The sampling statistics and sampling summary reports don't need to be checked until the entire aggregate has been completed.
- ii. If the aggregate has been completed check that the sampling error requirements have been met.

If the sampling error requirements have not been met, check whether the licensee used a reasonable C.V. to determine the number of plots required and whether they established the required number of plots.

If the answer is yes then the aggregate is acceptable.

If the answer is no, a higher C.V. may be required from the licensee before approving the licensee's Annual Waste Assessment Plan for the following year.

#### 5. FS 702 Waste Volume Estimate

Check the following:

- a. The waste surveyor number and return number (each subsequent FS 702 is incremented by one) have been filled out and that the waste surveyor has a valid Waste Surveyor Licence or Scaling Licence Number. If not, check for sponsoring forestry professional's name and number if plot surveys are submitted.

The old FS 72 format is no longer acceptable and must be converted to the current FS 702 format as in Figure 7.1.

## **7.4 Waste Rate**

The application of a waste rate is dependent on whether there has been timber harvesting on a cutting authority. If timber has been harvested on a cutting authority, then a waste rate is determined and applied on a cutblock basis.

### **1. Cutblocks with Harvesting**

For cutblocks with harvesting, a waste rate is calculated for the cutblock using the weighted average stumpage rate charged for the sawlogs (graded sawlogs\* on the Coast, and grade code blank sawlogs and/or grade code 1 and 2 sawlogs in the Interior) from invoices issued for a twelve-month period in respect of timber harvested under the applicable timbermark. The twelve-month period ends the month after the month that primary logging was completed for the cutblock. This applies to dispersed waste, accumulations and standing timber within the cutblock. Remaining areas of standing timber within the cutblock, that are left unharvested at the expiry, surrender, termination or cancellation of the cutting authority, would be waste billed using the same method, that is, the waste rate is based on the primary logging completion date for the cutblock. Refer to Appendix 3.1 for a description of determining the waste rate for cutblocks with harvesting.

Note that cutblocks may be split for waste assessment purposes (refer to page 5-38).

\* Exclude all coniferous species Grade X, Hemlock and Balsam, Grade U.

### **2. Cutblocks with No Harvesting but Harvesting has Occurred on the Cutting Authority**

If there has been no harvesting on the cutblock but there has been harvesting for the cutting authority, then the waste rate for the cutblock is derived using the average of the cutting authority's four quarterly timber appraisal stumpage rate (plus any bonus and levies where applicable) in effect during the twelve-months preceding the date of cutting authority's expiry, surrender, termination or cancellation, as the case may be. Refer to Appendix 3.2 for a description of determining the waste rate for cutblocks where no harvesting has taken place but there has been harvesting from the cutting authority.

### **3. Cutblocks with No Harvesting and No Harvesting has Occurred on the Cutting Authority**

If there has been no harvesting on the cutblock, and there has been no harvesting on the cutting authority, then waste billings do not apply to cutblocks upon expiry, surrender, termination or cancellation of the cutting authority, as the case may be.

7.4.1.1

This section removed.

7.4.1.2

This section removed.

## **7.5 Interior Log Grade Changes**

This section removed.

waste volume is found in their intercept, for any trees over 120 cm dbh, use the 120 dbh values.

To further illustrate, refer to the example below:

	A # Stems	B Average dbh (cm)	C Average Top (cm)	D Table Waste Volume (m <sup>3</sup> )	A x D Total Waste Volumes (m <sup>3</sup> )
D. Fir	500	90	40	0.70	350.0
W. Cedar	750	100	35	0.36	270.0
Y. Cedar	250	110	30	0.08	20.0

The waste FS 702 will be entered as:

Avoidable	FI U	350.0
Avoidable	CE U	270.0
Avoidable	CY U	20.0

The grade profile for the waste is taken from the cruise compilation for the cutting authority. Multiply the percentage for each grade, by species, times the total volume of that species to determine the volume for each species/grade combination.

### A2.3 Standing Stem Harvesting Tables

#### A2.3.1 Species – Douglas Fir

Dbh	Top Diameters								
	40			35			30		
	Harv	Waste	%Waste	Harv	Waste	%Waste	Harv	Waste	%Waste
60	1.28	1.31	51%	1.94	0.66	25%	2.26	0.33	13%
65	2.10	1.10	34%	2.62	0.59	18%	2.90	0.30	9%
70	2.91	0.97	25%	3.34	0.54	14%	3.59	0.29	7%
75	3.73	0.87	19%	4.10	0.50	11%	4.33	0.27	6%
80	4.59	0.80	15%	4.92	0.47	9%	5.13	0.26	5%
85	5.46	0.74	12%	5.76	0.44	7%	5.96	0.25	4%
90	6.38	0.70	10%	6.65	0.42	6%	6.84	0.24	3%
95	7.32	0.66	8%	7.58	0.40	5%	7.75	0.23	3%
100	8.30	0.62	7%	8.54	0.38	4%	8.70	0.22	2%
105	9.31	0.59	6%	9.53	0.37	4%	9.69	0.21	2%
110	10.32	0.57	5%	10.54	0.35	3%	10.68	0.20	2%
115	11.39	0.54	5%	11.59	0.34	3%	11.73	0.20	2%
120	12.43	0.52	4%	12.63	0.33	3%	12.76	0.19	1%

Dbh	Top Diameters								
	25			20			15		
	Harv	Waste	%Waste	Harv	Waste	%Waste	Harv	Waste	%Waste
60	2.44	0.15	6%	2.54	0.05	2%	2.59	0.00	0%
65	3.06	0.14	4%	3.15	0.05	2%	3.20	0.00	0%
70	3.74	0.14	4%	3.83	0.05	1%	3.88	0.00	0%
75	4.47	0.13	3%	4.55	0.05	1%	4.60	0.00	0%
80	5.26	0.13	2%	5.34	0.04	1%	5.39	0.00	0%
85	6.08	0.12	2%	6.16	0.04	1%	6.20	0.00	0%
90	6.96	0.12	2%	7.03	0.04	1%	7.07	0.00	0%
95	7.86	0.11	1%	7.94	0.04	1%	7.98	0.00	0%
100	8.81	0.11	1%	8.88	0.04	0%	8.92	0.00	0%
105	9.79	0.11	1%	9.86	0.04	0%	9.90	0.00	0%
110	10.79	0.10	1%	10.85	0.04	0%	10.89	0.00	0%
115	11.83	0.10	1%	11.89	0.04	0%	11.93	0.00	0%
120	12.86	0.10	1%	12.92	0.04	0%	12.95	0.00	0%

Figure A2.1 Douglas Fir.

## Appendix 3 Waste Rate Determination

The determination of the waste rate is dependent on whether there has been timber harvesting on a cutblock.

### A3.1 Cutblocks with Harvesting

For cutblocks with harvesting, the waste rate for the cutblock is derived from the weighted average stumpage rate charged for the sawlogs (graded sawlogs on the Coast, grade code blank sawlogs and/or grade code 1 and 2 sawlogs in the Interior) in invoices issued during the 12-month period ending one month after the month in which primary logging on the cutblock area was completed. The formula to be used is:

$$WR = TS/TV$$

Where:

WR	=	Waste Rate for the cutting authority.	
TS*	=	Total billed sawlog stumpage (sum of Upset Stumpage*, and Bonus Bid) for the twelve-months prior to one month after the month primary logging was declared completed on the cutblock.	
		*	Include silviculture and development levies.
TV*	=	Total billed volume (accumulated volume in cubic metres that derived the total billed stumpage for the sawlogs) for the twelve-months prior to one month after the month primary logging was declared completed on the cutblock.	

\*Effective April 12, 2007, TS and TV will exclude (on the Coast only), all coniferous species X grade, and Hemlock and Balsam, U grade.

### A3.2 Cutblocks with No Harvesting

If there has been no harvesting on the cutblock, but there has been harvesting from the cutting authority, then the waste rate for the cutblock is derived using the average of the cutting authority's four quarterly timber appraisal stumpage rates (plus any bonus and levies where applicable) in effect during the twelve-months preceding the date of the cutting authority's expiry, surrender, termination or cancellation, as the case may be. The formula to be used is:

$$WR = ACASR$$

Where:

WR	=	Waste Rate for the cutblock.
ACASR	=	Average Cutting Authority Stumpage Rate over the four quarters preceding the expiry, surrender, termination or cancellation date.

Example 1

If Cutting Authority A (CP A) became effective on September 5, 2003, and expires on September 4, 2005, then the ACASR is the simple average of the four quarterly stumpage rates for CP A as at October 1, 2004, January 1, 2005, April 1, 2005 and July 1, 2005.

Example 2

If Cutting Authority B (CP B) became effective on April 20, 2005, and is surrendered on September 5, 2005, then the ACASR is the simple average of the April 20, 2005 and July 1, 2005 stumpage rates for CP B.

### A3.3 Deciduous Waste Rate

For deciduous species, the waste rate is either the appraised stand as a whole reserve rate, or if there is no appraised rate, use the specified fixed rate for the species in the Coast or Interior Appraisal Manuals, plus any bonus bid and levies where applicable.



## Appendix 4 Riparian Management Zone (RMZ)

### A4.1 Assessment Method

For waste assessments to be conducted within the riparian management zone, the assessment method should commensurate with the silvicultural system used, as follows:

•	single tree selection	-	100 percent piece scale, or 50 m <sup>2</sup>
•	group selection	-	100 percent piece scale or (circular or rectangular) plot of 50 to 400 m <sup>2</sup> that best fits the group selection harvested area.

Refer to Section 4.7 for assessing partial cutting (variable retention) cutblocks, and Section 5.7.2 for stratum codes.

### A4.2 Stream Clean-out

For stream clean-out conducted in accordance with the Riparian Management Area Guidebook, the waste classification procedures are as follows:

1. Where a log is left across a creek, classify the log as unavoidable for environmental reasons.
2. If a creek was machine cleaned and it was reasonable to recover the log pieces, classify the pieces as avoidable.
3. If a creek was hand cleaned and the log was bucked into small segments and thrown out of the creek channel, classify the pieces as unavoidable.

## **Appendix 5 Waste Benchmarks and CWD**

### **Appendix A5.1 Waste Benchmarks**

#### 1. Benchmarks

Waste benchmarks will be in effect until September 30, 2007.

On an individual cutblock basis, the following waste benchmarks in cubic meters per hectare will be used for monetary billing of avoidable waste:

Coast	Immature	Mature
Normal	10 m <sup>3</sup> /ha	35 m <sup>3</sup> /ha

Interior	Dry Belt	Transition Zone	Wet Belt
Normal	4 m <sup>3</sup> /ha	10 m <sup>3</sup> /ha	20 m <sup>3</sup> /ha

The waste benchmark volume of a cutblock is derived by multiplying the value of the benchmark with the total of the dispersed, accumulation and standing trees sub population areas reported in a waste assessment of the cutblock.

#### 2. Benchmark Calculations and Billings

Avoidable waste volumes in sawlog grades X or better (Coast), 1 and 2 (Interior) from the dispersed, accumulated and the standing tree subpopulations of the cutblock will be applied to the benchmarks.

Where the avoidable waste volumes in sawlog grades are below the established benchmark for the cutblock, no monetary billing of avoidable waste in sawlog grades will be made.

Where the avoidable waste volumes in sawlog grades are above the established benchmark for the cutblock, monetary billings will be made on the sawlog grade volumes exceeding the benchmark.

Avoidable waste volumes in grade Y or 4 will not be applied to the benchmark but will be billed monetarily in all cases.

### 3. Benchmark Eligibility

The benchmarks are administered on an individual cut block basis, regardless of whether the cutblock is in the Cutblock, the Aggregate or the Ocular Reporting Unit. Therefore, each cut block must be individually assessed to determine whether the avoidable waste within the cutblock is above or below the benchmark.

No waste benchmarks will be applied to log decks that in the determination of a forest officer are subject to scaling at a scale site or being field scaled. Such log decks must be clearly marked by the licensee and not to be included in the waste assessment.

Waste benchmarks do not apply to the unharvested cutblocks.

No waste benchmark will be applied to an area of a cutblock where the wasted timber volume compromised the site-specific forest management objective(s). The area must be delineated, waste assessed and billed separately from the remaining area of the cutblock.

Figure A5.1a removed.



**Appendix A5.2 Coarse Woody Debris (CWD)**

CWD procedures will take effect on October 1, 2007, and will be implemented as per provisions stated in the Forest Planning and Practices Regulation (FPPR).

1. Rules and Transition Procedures

	<b>Block Status</b>	<b>Apply Waste Benchmark</b>	<b>Apply CWD</b>
Coast and Interior	Logging Complete	Cutblocks where primary logging is completed before October 1, 2007	Cutblocks where primary logging is completed after October 1, 2007
Coast Only	Logging Incomplete	Cutblocks where area harvested on September 30, 2007 > 50% of the block net area	Cutblocks where area harvested on October 1, 2007 < 50% of the block net area
Interior Only	Logging Incomplete	On areas logged prior to October 1, 2007	On areas logged after October 1, 2007

Licensees have until October 31, 2007 to submit to the District Manager (or for timber sale licence, the Timber Sale Manager) a listing of cutblocks where timber harvesting is completed and/or partially completed as of September 30, 2007. The listing for completed cutblocks must include: Licence, CP, Block #s, Geographic Location, Block net area, and in addition for partially completed blocks, the areas harvested as of September 30, 2007 and maps clearly showing the harvested areas.



	<b>COAST</b> Worksheet for Waste Billing Against Benchmarks	Ministry of Forests	
<b>To be Completed by Licensees</b>			
Licence No.	CP No.	Cut Block	
Timber Mark		Reporting Unit No.	
Primary Logging Completion Date		Cut Block Net Area <span style="float: right;">ha</span>	
Location		Stand/Site Type	
<b>Calculations</b>			
Avoidable waste sawlog (X or better)	=	_____	M <sup>3</sup> /ha..... (A)
Established benchmark	=	_____	M <sup>3</sup> /ha..... (B)
(A) - (B)	=	_____	M <sup>3</sup> /ha..... (C)
If (C) < or = 0.0000, stop			
If (C) > 0.0000, proceed as follows:			
Waste Monetary Reduction Factor (WMRF)	=	(C)/(A) = _____	.....(D)
		(to four decimals)	
<b>To be Completed by Forest Service</b>			
<b>Processing</b>			
If (C) is < or = 0.0000, on FS 702, code:			
Avoidable all species sawlogs (X or better):		\$0.00/m <sup>3</sup>	
Avoidable all species grade Y:		\$0.25/m <sup>3</sup>	
Unavoidable all species all grades:		\$0.00/m <sup>3</sup>	
If (C) is > 0.0000, request average sawlog rate from HBS			
Average coniferous sawlog rate (HBS) =		\$ _____ /m <sup>3</sup>	.....(E)
Deciduous sawlog rate =		\$ _____ /m <sup>3</sup>	.....(F)
On FS 702, code			
Avoidable hembal (J or better) and all other conifer (U or better)	(D x E) =	\$ _____ /m <sup>3</sup>	
Avoidable hembal U and grade X all species	= D x \$0.25/m <sup>3</sup>	\$ _____ /m <sup>3</sup>	
Avoidable deciduous species sawlogs: (D x F)	=	\$ _____ /m <sup>3</sup>	
Avoidable all species grade Y:		\$0.25/m <sup>3</sup>	
Unavoidable all species all grades:		\$0.00/m <sup>3</sup>	
Approved by Forest Officer (signature)		Date	

**Figure A5.1 Sample of Worksheet for Waste Billing Against Benchmarks (Coast).**

Figure A5.2a removed.

Figure A5.2b removed.

Figure A5.2c removed.

	<b>INTERIOR</b> <b>Worksheet for Waste Billing Against Benchmarks</b>	Ministry of Forests 
<b>To be Completed by Licensees</b>		
Licence No.	CP No.	Cut Block
Timber Mark	Reporting Unit No.	
Primary Logging Completion Date	Cut Block Net Area <span style="float: right;">ha</span>	
Location	Stand/Site Type	
<b>Calculations</b>		
Avoidable waste (sawlog) (grades 1 and 2)	= _____	M <sup>3</sup> /ha..... (A)
Established benchmark	= _____	M <sup>3</sup> /ha..... (B)
(A) - (B)	= _____	M <sup>3</sup> /ha..... (C)
If (C) < or = 0.0000, stop		
If (C) > 0.0000, proceed as follows:		
Waste Monetary Reduction Factor (WMRF) =	(C)/(A) = _____	.....(D) <small>(to four decimals)</small>
<b>To be Completed by Forest Service</b>		
<b>Processing</b>		
If (C) is < or = 0.0000, on FS 702, code:		
Avoidable all species sawlogs (grades 1 and 2):	\$0.00/m <sup>3</sup>	
Avoidable all species grade 4:	\$0.25/m <sup>3</sup>	
Unavoidable all species all grades:	\$0.00/m <sup>3</sup>	
If (C) is > 0.0000, request average sawlog rate from HBS		
Average coniferous sawlog rate (HBS) =	\$ _____ /m <sup>3</sup>	.....(E)
Deciduous sawlog rate =	\$ _____ /m <sup>3</sup>	.....(F)
On FS 702, code		
Avoidable coniferous species sawlogs (D x E) =	\$ _____ /m <sup>3</sup>	
Avoidable deciduous species sawlogs: (D x F) =	\$ _____ /m <sup>3</sup>	
Avoidable all species grade 4: \$0.25/m <sup>3</sup>		
Unavoidable all species all grades: \$0.00/m <sup>3</sup>		
Approved by Forest Officer (signature)	Date	

**Figure A5.2 Sample of Worksheet for Waste Billing Against Benchmarks for Blocks.**

## **Appendix 6 Coast Grading**

Due to the timber pricing changes made to Hembal U grade and all coniferous X grade, the followings grade rules apply to blocks surveyed after May 1, 2006.

### **A6.1.1 Bucking Waste and Long Butts**

- Old Growth - No change other than default to J grade.
- Second growth:
- Bucking Waste with less than an 8 rad top default to U grade,
- Bucking Waste with an 8 rad or larger top default to J grade.

### **A6.1.2 Stumps**

- Old/Second Growth:
- < or = to 12R default to U grade,
- > or = to 13R default to J grade.
- Unavoidable grades are the same as avoidable grades.
- Severe Ring shake = X grade. (Severe ring shake is defined as covering at least 50% of the volume of the stump).
- Stumps cannot be graded as U, X or Y grade due to rot or missing wood.

### **A6.1.3 Logs**

Use the following rules:

- Logs less than 5 meters in length and bucked on the butt end will be graded as if they were 5 metres long.
- Logs (except spruce and cypress) with an undercut butt and less than 5.0 metres to the point where 8 rads disappears cannot be better than U grade. Spruce and Cypress logs with an undercut butt and less than 4.0 metres to the point where 8 rads disappears cannot be better than U grade.
- Logs broken at both ends or broken at the butt end will be graded according to the scaling grade rules.



- Logs greater than 12.8 metres in length, the diameter used for determining the grade of the entire log is the diameter (inside bark) measured at the point 12.8 meters from the large end. Do not pencil buck, scale and grade as one piece.

#### **A6.1.4 Standing Trees**

Use the following rules:

- Old Growth/Second Growth.
- Trees that are greater than 12.8 metres to the timber merchantability specifications top diameter will be pencil bucked in 12.8 metre segments with each segment classified and graded accordingly.

For example, a 15.0 metre tree would be entered as a 12.8 metre log and a 2.2 metre piece of bucking waste with each piece graded according to its dimensions. However, if the grade of all pieces in the pencil bucked tree is the same, then record the tree as one piece.

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