

## 3 Alternative Methods

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Waste assessments may be conducted using:

- a. the Full Sampling Intensity survey method (FSI method),
- b. the Reduced Sampling Intensity survey method (RSI method),
- c. the Parent Block survey method (PB method),
- d. the Ocular Estimate survey method (OE method),
- e. the Pre Harvest Waste Assessment method (PHWA method),

as and when permitted by the provisions of this manual.

### 3.1 The RSI Method

1. The RSI Method may only be used in a dispersed stratum on a cutblock if:
  - a. the cutblock option is used on that cutblock, and
  - b. subject to subsection 2 of this section, the estimated volume per hectare of avoidable waste in the dispersed stratum is less than the maximum dispersed volume prescribed in the Table 3-1 of this manual.

Table 3-1, RSI Thresholds

Location of Cutblock	Stand Description	Maximum Dispersed Volume
In the Coast Forest Area	Second Growth	20 m <sup>3</sup> /ha
	Old Growth	35 m <sup>3</sup> /ha
In the Southern Interior Area or Northern Interior Area	Dry Belt *	8 m <sup>3</sup> /ha
	Transition *	20 m <sup>3</sup> /ha
	Wet Belt *	35 m <sup>3</sup> /ha

2. The District Manager may permit the use of the RSI survey method in a dispersed stratum where the estimated volume per hectare measurement of avoidable waste in the dispersed stratum exceeds the maximum dispersed volume prescribed in Table 3-1 of this manual if the district manager determines that there is not a significant revenue risk to the government.

#### 3.1.1 RSI Method Procedures

1. The number of dispersed plots on the cutblock:
  - a. must be in accordance with Table 4-2 of this manual where the cutblock is in the Coast Forest Region, and,
  - b. must be in accordance with Table 4-4 of this manual where the cutblock is in one of the Interior Forest Regions.
2. The coefficient of variation (C.V.) that must be used is 100 percent.
3. The number of dispersed plots that must be used is one quarter of the number of plots that are required by:
  - a. Table 4-2 of this manual where the cutblock is in the Coast Forest Region, or
  - b. Table 4-4 of this manual where the cutblock is in one of the Interior Forest

Regions.

4. The plot must be:
  - a. circular, rectangular, a line transect, and
  - b. at least 400 m<sup>2</sup> in size.
5.
  - a. Where the cutblock is a partial cutting cutblock specified under Section 4.7 of this manual, a plot size smaller than 400 square meters may be used.
  - b. Where a smaller plot size is used under this subsection the number of plots that must be used must be calculated in accordance with the new C.V. formula that is set out in:
    - i. Table 4-2 of this manual where the cutblock is in the Coast Forest Region, or
    - ii. Table 4-4 of this manual where the cutblock is in one of the Interior Forest Regions.
6. There is no requirement to meet the sampling error objectives in Tables 4-2 and 4-4 of this manual
7. The field measurements that must be made and the recording requirements that must be met when using the RSI method are the same as those that must be made and met when using the FSI method.

\* These site types are defined in the BEC zones link in the waste system homepage at:

<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/forest-residue-waste>

## **3.2 Parent Block (PB) Method**

The PB method includes the use of waste survey data from a surveyed cutblock hereinafter referred to as the “parent block” for applying the volume per hectare data to an unsurveyed cutblock hereinafter referred to as the “exempted block” which meets the conditions in Section 3.2.1.

### **3.2.1 Parent Block Method - Conditions**

The holder of an agreement may only use the PB method where:

- a. the area of the exempted block is 20 ha or less, unless the district manager determines that the use of the PB method on a larger cutblock will not create a significant revenue risk to the government,
- b. the parent block was surveyed using plots,
- c. the parent block waste survey is in the Waste System records, and on the Coast, the parent block was surveyed using Appendix 6, Coast grading procedures,
- d. the district manager determines that:
  - i. the anticipated amount of waste in the exempted block is similar to the amount of waste in the parent block, and
  - ii. the species composition in each of the two blocks was similar.

### 3.3 Ocular Estimate (OE) Method

1. Where the estimated volume per hectare of avoidable waste on the cutblock is below the maximum volume prescribed in Table 3-2 of this manual, the use of the OE method does not require approval of the district manager.
2. The use of the OE method will not be permitted on a cutblock if the estimated volume per hectare of avoidable waste on the cutblock exceeds the maximum waste volume prescribed in Table 3-2 of this manual, unless the district manager determines that the use of this method will not create a significant revenue risk to the government.

Table 3-2 Ocular Estimate Thresholds

Location of Cutblock	Stand Description	Maximum Avoidable Waste Volume (sawlogs)
In the Coast Forest Area	Second Growth	10 m <sup>3</sup> /ha
	Old Growth	35 m <sup>3</sup> /ha
In the Northern Interior Area or the Southern Interior Area	Dry Belt	4 m <sup>3</sup> /ha
	Transition	10 m <sup>3</sup> /ha
	Wet Belt	20 m <sup>3</sup> /ha

3. Subject to subsection (4) of this section, the holder of an agreement may not use the OE method unless a licensed waste surveyor, licensed scaler, RPF or RFT certifies the accuracy of and submits the results of the assessment on behalf of the holder of an agreement to the district manager.
4. The district manager may permit the holder of the agreement to use the OE method and to submit the results of waste assessment directly to the district manager without the certification required by subsection (3) of this section where the agreement held by the holder is a woodlot licence, if the district manager determines that there is not significant revenue risk to the government by receiving the results of the waste assessment directly from the holder of the agreement.
5. Transect line or inspection plots:
  - a. should be used when using the OE method and
  - b. should be located in areas of the cutblock where the levels of avoidable waste reasonably represent the avoidable waste on the cutblock.
6. Where inspection plots are used, each plot should be:
  - a. Circular or rectangular, and

- b. At least 50 m<sup>2</sup> in size.
7. Where a field audit conducted on behalf of the district manager determines that the waste assessment conducted by the holder of an agreement on the cutblock using the OE method does not reasonably represent the avoidable waste on the cutblock, the district manager may reject the waste assessment.

### **3.3.1 Ocular Estimate Method – Best Field Practices**

For the purpose of maintaining uniform standards, the following procedures are available for use in deriving the ocular estimates.

The surveyor is responsible for ensuring that the ocular estimates derived are defensible and valid for the cutblock.

The supporting ocular field data need not be submitted but must be made available when requested by the Ministry of Forests, Lands and Natural Resource Operations staff.

#### **1. Dispersed Stratum**

##### **a. Plots:**

- Put in inspection plots, circular or rectangular (at least 50 m<sup>2</sup> in size) in areas that reasonably cover the different waste types on the cutblock, or

##### **b. Transect:**

- Put in transect lines that provide good sample coverage of the stratum being surveyed,
- Start from the road or a good tie point (marked and ribboned), traverse at an angle to the boundary and then traverse back to the road on a different pathway,
- The width of the transect line should provide good access for clean readily accessible measurement (usually 2 to 5 metres). Measure all the pieces within the transect area.

#### **2. Accumulated Stratum**

##### **a. Wrap Around:**

- Measure all waste pieces that can be reached on the outside of the entire pile  
or

b. Sectional Wrap:

- For very large piles, divide the pile into equal halves, mark the dividing points for the halves. Perform a wrap around one-half and if the half is unreasonably large, cut in half again and perform the wrap around on an equal quarter, or

c. Swath Method:

- This is the same as the dispersed transect method. The swath must be wide enough to give a reasonable sample (10 m) or use multiple smaller (5 m) swaths. This is usually appropriate for windrows, or

d. Plot on Top of Pile:

- Where there is no safety concern, use the procedures described in section 5.1.7.

Respecting each of above, apply a measure factor (MF) to the portion of the pieces or sampled areas that were measured. Strive to measure as many pieces as possible; the estimates will be more accurate with a higher MF.

### **3.4 The OE Method and Standing Timber**

1. Where a waste assessment is conducted on standing timber using the OE method, the average net piece volume for each 5 cm DBH class for each species contained in the Extended Type Stand and Stock Tables or the net merchantable volume per tree in the Timber Type Summary, in the cruise compilation may be used to derive the standing timber volume.
2. Subject to subsection (3) of this section, the species and grades for the standing timber on a cutting authority area must be derived from the HBS billing history records held by the Timber Pricing Branch of the Ministry of Forests, Lands and Natural Resource Operations for the timber that has been harvested on the cutting authority area during the 12-month period prior to the date that primary logging was completed on the cutting authority area.
3. The species and grades for the standing timber may be established by an RPF or RFT by conducting a visual on site examination of the standing timber if:
  - a. there are no billing history records, or,
  - b. the RPF, RFT or the Ministry employee who is responsible for reviewing waste assessments determines that the billing history records do not reasonably represent the species and grade profile of the standing timber on the cutting authority area.

### Waste Volumes

Forest District:				Licensee:			
Timbermark:				RU:		Return Number:	
Licence:		CP:		Block:			
Block Net Area: ① + ② + ③ ha							
Date Primary Logging Completed:		Avoidable Waste Benchmark: m <sup>3</sup> /ha		Block Leading Species:			
<b>Ocular Estimates</b>							
	DISPERSED		ACCUMULATED		STANDING TREES	TOTAL	
Stratum Code *							
Area (ha)	①		②		③		
Avoidable	m /ha	Total (m <sup>3</sup> )	m /ha	Total (m <sup>3</sup> )	Total (m <sup>3</sup> )	Total (m <sup>3</sup> )	
Sawlog waste (1)							
Sawlog waste (2)							
Grade 4 (Y)							
Total Avoidable							
Unavoidable							
Sawlog waste							
Grade 4 (Y)							
Total Unavoidable							
Grand Total							
<p><small>* Refer to Section 5.7.2 of the Provincial Logging Residue and Waste Measurement Procedures Manual.</small></p> <p>I hereby provide the above estimates in lieu of a waste survey. I agree to the use of these figures for cut control and waste monetary billing purposes.</p>							
Additional Comments:							
Surveyor/Scaler Name and No:				RPF/RFT Name and No:			
Signature (Licensee or Representative):				Forest Officer			
Date:							

2010/03

Please be advised that this information may be released under the *Freedom of Information and Protection of Privacy Act*.

**Figure 3-1 RW01 Estimate Form - Interior.**

### Waste Volumes

Forest District:		Licensee:				
Timbermark:		RU:	Return Number:			
Licence:	CP:	Block:				
Block Net Area: ① + ② + ③ ha		Stand (check box)		<input type="checkbox"/> Immature <input type="checkbox"/> Mature		
Date Primary Logging Completed:	Avoidable Waste Benchmark: m <sup>3</sup> /ha	Block Leading Species:				
<b>Ocular Estimates</b>						
	DISPERSED		ACCUMULATED		STANDING TREES	TOTAL
Stratum Code *						
Area (ha)	①		②		③	
Avoidable	m <sup>3</sup> /ha or #	Total (m <sup>3</sup> )	m <sup>3</sup> /ha or #	Total (m <sup>3</sup> )	Total (m <sup>3</sup> )	Total (m <sup>3</sup> )
Conifer U grade or better						
HemBal U grade						
Conifer X grade						
Conifer Y grade						
Decid sawlog						
Decid Y grade						
Unavoidable						
Piles						
Decked wood						
* Refer to Section 5.7.2 of the Provincial Logging Residue and Waste Measurement Procedures Manual. Conifer U grade or better excludes HemBal U grade. Piles = Avg. Vol/Pile * number of Piles. Enter number of decks and volume of decked wood under Accumulated.						
I hereby provide the above estimates in lieu of a waste survey. I agree to the use of these figures for cut control and waste monetary billing purposes.						
Additional Comments:						
Surveyor/Scaler Name and No:			RPF/RFT Name and No:			
Signature (Licensee or Representative):			Forest Officer			
Date:						

2010/03 COAST

Please be advised that this information may be released under the Freedom of Information and Protection of Privacy Act.

**Figure 3-2 RW01 Estimate Form - Coast.**

### 3.5 The Pre Harvest Waste Assessment Method

The Pre Harvest Waste Assessment (PHWA) method is a pilot project in the Interior that provides a mechanism to transport and manufacture Special Forest Products (SFP) concurrent with primary harvest. SFPs under the PHWA process are defined as chip or hog fuel, orientated strand board chips or post and rail which include log form material that will be converted at a Secondary Manufacturing Facility (SMF) into SFPs. The PHWA method is a temporary waste reporting method effective August 1, 2016 and expires April 30, 2018. The intent of the process is to encourage increased utilization of lower quality timber by SMFs while imposing limits on the volume of grade 1 and 2 sawlog material that can be billed at the SFP rate.

The process is voluntary and if used replaces the normal waste reporting methods outlined in the *Provincial Logging Residue & Waste Procedures Manual*. The process is available to all Major Licenses as defined under s.1 of the *Forest Act*, s.20 Timber Sale Licences and Community Forest Agreements. Other tenures may be considered for inclusion in the pilot after further review. Applications will only be accepted for cutting authorities and/or TSLs where no cutting has occurred on a cut block.

If a licensee is interested in harvesting SFPs concurrent with primary harvesting they may apply to a District Manager for a PHWA SFP authorization which requires submission of a PHWA into the Waste System (*Forest Act* s.94.1).

Once a PHWA SFP authorization is approved by the District Manager a licensee is billed for waste based on the PHWA prior to the commencement of harvesting. The licensee is then authorized to transport SFP to a SMF concurrent with primary harvesting subject to the conditions of the authorization.

The existing scaling and SFP billing processes apply to material transported to a SMF. SFP material will also be subject to sampling procedures that require reporting of SFPs by species and grade. Sample data will be submitted to Timber Pricing Branch (TPB) using conventional scale data/system protocols. The data will be used to identify the timber profile being manufactured into SFP, and may also be used to update the historic waste tables and/or future waste benchmark policy. Identification and reporting of dead dry timber will be required as part of this process. Grades 1, 2, 4, 5, 6, Z will be recorded, note that dry grade 4 is being recorded as grade 5.

At the block level, the volume of grade 1 and 2 sawlogs that can be processed into SFPs at the SFP rate (\$0.25/m<sup>3</sup>) will be capped based on the existing waste benchmark values (4, 10 and 20m<sup>3</sup>/ha). If the cap volume is exceeded the grade 1 and 2 sawlog volume above the cap is subject to full stumpage in effect at the time of delivery. In accordance with current policy, the SFP volume does not apply to cut control, however any additional grade 1 and 2 sawlog volume billed above the cap is subject to cut control.

When logging is complete, licensees are required to complete and submit to TPB a post harvest waste assessment using a template available on the TPB website at:

<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/forest-residue-waste>

All of the SFP material delivered to the scale site associated with the SMF facility must be scaled according to these procedures.

For further information see:

1. An outline of the PHWA process is identified in Appendix 7.
2. An example of the PHWA SFP authorization requirements:  
<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/forest-residue-waste>
3. The PHWA eligibility requirements and other conditions specified in Appendix A7.6
4. The procedures for completing the PHWA historic waste survey identified in section A7.4.
5. The procedures for the post-harvest waste survey identified in section A7.7