

Alternative Methods

3

Waste assessments may be conducted using:

- (a) the Full Sampling Intensity survey method (the FSI method),
 - (b) the Reduced Sampling Intensity survey method (RSI method),
 - (c) the Parent Block survey method (the PB method), and
 - (d) the Ocular Estimate survey method (the OE 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.

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

Table 3-1, RSI Thresholds

- (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 m² 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://www.for.gov.bc.ca/hva/waste/index.htm>

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.

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

Table 3-2, Ocular Estimate Thresholds

- (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 m² 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 Field Best 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 m² 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 Merch 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 Revenue Branch of the Ministry of Forests and Range 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 ³ /ha		Block Leading Species:			
Ocular Estimates						
	DISPERSED		ACCUMULATED		STANDING TREES	TOTAL
Stratum Code *						
Area (ha)	①		②		③	
Avoidable	m /ha	Total (m ³)	m /ha	Total (m ³)	Total (m ³)	Total (m ³)
Sawlog waste (1)						
Sawlog waste (2)						
Grade 4 (Y)						
Total Avoidable						
Unavoidable						
Sawlog waste						
Grade 4 (Y)						
Total Unavoidable						
Grand Total						
<p>* Refer to Section 5.7.2 of the Provincial Logging Residue and Waste Measurement Procedures Manual.</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) ☐ Immature ☐ Mature			
Date Primary Logging Completed:	Avoidable Waste Benchmark: m³/ha	Block Leading Species:			
Ocular Estimates					
	DISPERSED		ACCUMULATED	STANDING TREES	TOTAL
Stratum Code *					
Area (ha)	①	②	③		
Avoidable	m³/ha or #	Total (m³)	m³/ha or #	Total (m³)	Total (m³)
Conifer U grade or better					
HemBal U grade					
Conifer X grade					
Conifer Y grade					
Decid sawlog					
Decid Y grade					
Unavoidable					
Piles					
Decked wood					
<p>* 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.</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:					

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Figure 3.2 RW01 Estimate Form - Coast.