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July 4, 2024

BY EMAIL

To: Regional Executive Directors

From: Allan Bennett, Director, Timber Pricing Branch

Re: Amendment No. 10 to the *Provincial Logging Residue and Waste Measurement Procedures Manual – Interior Version*

I hereby approve Amendment No. 10 to the *Provincial Logging Residue and Waste Measurement Procedures Manual – Interior Version*.


The manual can be found here:

[Provincial Logging Residue and Waste Measurement Procedures Manual – Interior Version](#)

The purpose of this amendment is to update the *Provincial Logging and Waste Measurement Procedures Manual – Interior Version*, which provides:

- Requirements to submit interim submissions in the Waste System instead of by email.
- Corrections to the procedures for calculating waste penalty rates.
- Standardized procedures to determine waste penalties where timber has been destroyed before the waste survey.
- Updates and Improved clarity of various roles, standards, and procedures.

Amendment No. 10 comes into effect on July 15, 2024.



Allan W. Bennett, RPF
Director
Timber Pricing Branch

pc: Melissa Sanderson, Assistant Deputy Minister, Timber, Range and Economics Division
Patrick Asante, Manager, Timber Pricing
Anthony Giannotti, Director, Regional Operations Division, North Area
Larry Henry, Director, Regional Operations Division, South Area
Darius Low, Revenue Team Lead, Regional Operations Division, North Area
Bruce Sullivan, Revenue Officer, Regional Operations Division, South Area

TIMBER PRICING BRANCH

Provincial Logging Residue and Waste Measurement Procedures Manual – Interior Version

Effective: April 1, 2019

Includes Amendments

Amendment No. 1
Amendment No. 2
Amendment No. 3
Amendment No. 4
Amendment No. 5
Amendment No. 6
Amendment No. 7
Amendment No. 8
Amendment No. 9
Amendment No. 10

Effective Date

July 22, 2019
September 1, 2020
April 1, 2021
June 17, 2021
November 15, 2021
April 1, 2022
November 21, 2022
May 15, 2023
September 1, 2023
July 15, 2024



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Amendment No. 10 – Provincial Logging Residue and Waste Procedures Manual – Interior Version Highlights

Section, Table or Appendix Number	Description
1.3.3	Waste surveys are not required on cruise based cutting authorities and other lump sum cutting authorities, where the entirety of merchantable volume is billed as harvest volume.
1.4.2, 1.4.4	Roles of the Regional Executive Director, Area Director of Pricing and Tenures, , and District Manager are updated.
3.2.2	Updated procedure to align with Waste System and HBS billing procedures.
4.2.1	Interim submissions must be submitted via the electronic Waste System. Interim submissions by email will not be accepted after July 15, 2024.
4.3	Reporting requirements are updated and reorganized by type of submission.
4.4	Procedures and penalties where piles are burnt before the waste survey are updated.
4.5	Procedures for using district averages are updated.
Table 6-1	Mapping requirements are updated to include identification of measure and prediction plots.
8.3	Diagram added to illustrate the right hand rule.
9.2.1	Timber used in corduroy trails or roads must be counted by 100% scale or percent estimate.
9.4.6	After a wildfire, pieces are measured and graded as presented.
9.5.8.1	Timber from road deactivation must be counted by 100% scale or percent estimate. Extraneous text has been deleted.
9.5.9	Coarse woody debris is tallied as waste.
10.1.2	Simplified waste procedures use the Percent Reduction cruise compilation where reductions were used in the appraisal. If there is no reduction, the procedures use the full volume compilation.
11.2.5	Dispute resolution is coordinated with the Area Director of Pricing and Tenures.
11.2.6	This section has been deleted. BCTS dispute resolution uses the same process as all other tenures.
Appendix 1	Pile definition has been revised. Differences between roadside piles and dispersed piles are covered in other sections.

1.3 Applicability

The manual is applicable to waste assessments located in the North Area, South Area, and Manning Park.

1.3.1 Application Dates

This manual applies to timber sales advertised, or cutting authorities issued on or after the dates specified in the most recent amendment of the *Provincial Logging Residue and Waste Measurement Procedures Manual*.

1.3.2 Scale Based Cutting Authorities

Where the amount of stumpage payable on the timber harvested from a cutting authority is calculated using the information reported in a scale of the timber, the holder of the agreement must conduct a waste assessment on that cutting authority.

1.3.3 Cruise Based Cutting Authorities

On a cruise based cutting authority, the entirety of merchantable volume is billed as harvest volume. Therefore, the holder of the agreement is not required to conduct a waste assessment on that cutting authority.

The following cutting authorities are billed in a similar manner and treated as cruise based cutting authorities. Hence, a waste assessment is not required:

- 1) Cash sale.
- 2) A cutting authority under Section 6.7(4) of the Interior Appraisal Manual, where the volume used for billing is estimated using an alternate method of scale approved by the Minister.
- 3) An area based cutting authority where the amount of stumpage payable is calculated using the Reserve Stumpage Rate (\$/hectare) listed in Table 6-8 of the Interior Appraisal Manual.

1.3.4 Forestry Licence to Cut Issued Under *Licence to Cut Regulation Section 1 - Protecting Communities from Wildfire*

This section applies to Forestry Licences to Cut that are issued with a contract to intensively manage forest fuels for the purpose of protecting communities from wildfire. Waste in the dispersed subpopulation is minimized as part of the fuel management prescription.

This section applies to a Forestry Licence to Cut that meets all of the following conditions:

- 4) The Forestry Licence to Cut is issued under Licence to Cut Regulation Section 1 - Protecting Communities from Wildfire.
- 5) The cost of performing contract obligations is expected to be greater than the value of the forest products that are authorized for harvest. A documented process is used to ensure that

economic harvest opportunities are identified and in those scenarios this section does not apply.

- 6) The Forestry Licence to Cut is issued as part of a contract under a government of BC program to protect communities from wildfire.

The contract is supervised by a qualified receiver (QR) who is a Government of BC employee.

- 7) The amount of timber to be retained is described in the contract.

Where the conditions in this section are met, the waste assessment is determined using one of the methods below:

- 1) A waste survey is performed, such that:
 - a) The dispersed subpopulation is sampled using sampling methods described in the contract,
 - b) The accumulation subpopulation is sampled using single waste assessment area sampling methods described in other sections of this manual, or
- 2) District averages may be used for the entire waste assessment area if eligible under Section 4.3.5.

Cut pieces that may be required to meet coarse woody debris requirements are counted as avoidable waste and are included in the waste benchmarks.

Standing trees are not tallied as waste within these treatment areas. Previously existing windfall trees that are specified in the contract to be treated (branches removed) and left on the harvest site are not tallied as waste.

The District Manager may require the contract holder to conduct a full waste survey under other sections of this manual if contract requirements are not met.

1.4 Responsibility

The responsibilities are as follows:

1.4.1 Timber Pricing Branch

1.4.1.1 Director, Timber Pricing Branch

The Director, Timber Pricing Branch is responsible for:

1. Approving *Provincial Logging Residue and Waste Measurement Procedures Manual* and amendments.
2. Processing and maintaining waste data.
3. Billing licensees by issuing waste invoices.

1.4.1.2 Residue and Log Salvage Policy Forester, Timber Pricing Branch

The Residue and Log Salvage Policy Forester is responsible for:

1. Developing and maintaining standards and procedures for determining and reporting waste.
2. Providing training and technical support.
3. Providing policy interpretation to industry and ministry staff.
4. Maintaining software compilation programs and standards.
5. Conducting technical reviews of Forest Regions and Forest Districts for policy and procedure compliance.

1.4.2 Regional Executive Director

1. **Ensuring that district staff adhere to policy, procedures, and interpretations of their respective Area and Timber Pricing Branch.**

1.4.3 Area Director of Pricing and Tenures

The Area Director of Pricing and Tenures is responsible for:

1. Ensuring that district staff adhere to policy and procedures, and where necessary, provide training to district staff.
2. Recommending survey procedure changes where necessary, to the Director, Timber Pricing Branch.

3. Advising industry and forest district staff on matters relating to waste assessments.
4. Processing waste reports and FS 702 for waste monetary billing and cut control where required.
5. Providing Waste System guidance and training to district staff and industry users.

1.4.4 District Manager

The District Manager is responsible for:

1. Conducting check surveys in accordance with manual standards.
2. Implementing and administering the policy and procedures and recommending survey procedure changes where necessary to the **Area Director of Pricing and Tenures**.
3. Approving waste assessments and issuing reporting unit numbers in the Waste System.
4. Checking for completeness of licensees submitted reports.
5. Processing waste reports and FS 702 for waste monetary billing and cut control where required.

1.4.5 Timber Sales Manager

Unless otherwise specified in the agreement, the Timber Sales Manager is responsible for:

1. Ensuring BCTS Licensees submit waste assessments in accordance with licence agreements, Waste Policy and the *Provincial Logging Waste Measurement Procedures Manual*.
2. Where a BCTS Licensee does not submit a waste assessment as required under section 1.4.4(1) the Timber Sales Manager may carry out the assessment, and in a notice given to the holder, may require the holder to pay the costs incurred by the Timber Sales Manager in carrying out the assessment.

1.4.6 Licensees

Agreement holders are responsible for conducting waste assessments on their scale based cutting authorities in accordance with the *Forest Act*.

The licensees are responsible for:

1. Submitting waste assessment plans.
2. Conducting waste assessments in accordance with this manual.
3. Submitting waste data into the online Waste System.

3.2.2 Waste Rate

The application of a waste rate is dependent on whether there has been timber harvesting on a cutting authority. A waste rate is determined for each waste assessment area in the cutting authority when timber has been harvested.

The waste rate applies to dispersed waste, accumulations, and standing timber within the waste assessment area and will be determined as outlined in this section.

The applicable rates charged will include any bonus bids and levies as applicable.

1. Avoidable coniferous species graded:
 - a. Grades 1 and 2 are billed using the weighted average sawlog stumpage rate for the period of 12 months **plus a day** multiplied by the waste monetary reduction factor (WMRF), and
 - b. Grade 4 is billed using the rates established in the *Interior Appraisal Manual*.
2. Avoidable deciduous species graded:
 - a. Sawlog is billed using either:
 - i. The appraised rate, or, if there is no appraised rate,
 - ii. The fixed rate for the species as specified in the *Interior Appraisal Manual*, and
 - b. Other than sawlog is billed using the fixed rate in the *Interior Appraisal Manual*.

3.2.2.1 Waste Assessment Areas with Harvesting

For waste assessment areas with harvesting, the waste rate for coniferous sawlogs is calculated using the weighted average stumpage rate invoiced for the sawlogs (grade code 1 and 2) using the following formula:

$$WR = TS / TV$$

Where:

1. **WR** = The waste rate for the cutting authority.
2. **TS*** = Total billed sawlog stumpage (sum of Upset Stumpage*, and Bonus Bid) for timber harvested under the applicable timber mark for the period of twelve-months **plus a day ending on the last day of the** month after the waste assessment area was PLC (as reported in the Harvest Billing System). For example, a PLC date of June 15, 2024 uses the period from July 31, 2023 to July 31, 2024.
3. **TV*** = Total billed volume (accumulated volume in cubic metres that derived the total billed

stumpage for the sawlogs) for the period of twelve-months **plus a day ending on the last day of the month** after the waste assessment area was PLC. **(as reported in the Harvest Billing System)**

- a. *TV includes silviculture and development levies.

Remaining areas of standing timber within a waste assessment area that are left unharvested at the expiry, surrender, termination, or cancellation of the cutting authority are waste billed using the PLC date for the cutblock.

3.2.2.2 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 conifer stumpage rate for the cutblock is derived using the average of the cutting authority's quarterly **or monthly** timber appraisal stumpage rates (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.

The formula to be used is:

$$WR = ACASR$$

Where:

1. **WR** = The waste rate for the cutblock
2. **ACASR** = Average Cutting Authority Stumpage Rate over the **12 months** preceding the expiry, surrender, termination, or cancellation date.

Example 1

If Cutting Authority A (CP A) became effective on September 5, 2017, and expires on September 4, 2018, then the ACASR is the simple average of the four quarterly stumpage rates for CP A from October 1, 2017, January 1, 2018, April 1, 2018 to July 1, 2018.

Example 2

If Cutting Authority B (CP B) became effective on April 20, 2016, and is surrendered on September 5, 2016, then the ACASR is the simple average of the April 20, 2016 and July 1, 2016 stumpage rates for CP B.

Field surveys must be coordinated to allow sufficient snow-free time for an interim submission and field audit as may be required by ministry staff, prior to the following activities:

1. The commencement of any silvicultural site treatments.
2. The reduction of the fuel hazard as required by the Wildfire Regulation section 12.1, or as required by the WUI practice requirement.

The activities above may commence 30 snow-free days after the interim submission where:

1. Ministry staff have not indicated that a field audit is planned for the cutblock.

The activities above may commence earlier than 30 snow-free days where:

1. Ministry staff have indicated that a field audit has met the standards in this manual and no further audit is planned.
2. Ministry staff have received and reviewed an interim or final submission and indicated that the cutblock will not be field audited.
3. The randomized block selection identified that the cutblock is a non-sample block in an aggregate population.
4. The endorsed HRC sampling plan identifies the cutblock as not requiring any plots.

Submissions must be complete and accurate to be considered submitted. Hazard abatement or site prep must not be conducted on a cutblock with a waste survey in rejected status, or where ministry staff have indicated that the cutblock will be field audited, or where ministry staff have indicated that the cutblock does not meet standards in this manual.

Where interim submissions are submitted later than September 15, the licensee accepts that hazard abatement or site prep will be delayed until a snow free period of at least 30 days for ministry checking has been provided. Ministry staff will coordinate with licensees if more time is required to conduct field audits on specific cutblocks.

Under the above timelines, seasonal snow will not restrict completion timelines, and extensions to the above due dates will not be granted. Extensions for a final aggregate submission to the waste system will not be granted.

In accordance with Table 4-1, survey plot data for individual waste assessment areas must be submitted to the **Waste System** within 30 days after the survey date. The interim submission must include:

1. Survey data (.efw file),
2. Marked up original survey plan map with all information that is required on the final map. It may have hand-written notes or iPad notations.

3. Stratum areas, and any supporting information that will affect compiled volumes (billable and cut control) and grades.

Woodlot licences and Community Forest Agreements must define the PLC date and submit waste surveys at least once for each year and each cutblock in which harvesting occurred.

Interim submissions by email are not acceptable after July 15, 2024. All interim submissions must be submitted via the Waste System.

4.2.2 Overdue Waste Assessments and Reports

The Waste Assessment Regulation is in effect. The Minister or their delegate may issue penalties for late waste assessments:

[Waste Assessment Regulation \(gov.bc.ca\)](http://gov.bc.ca)

Late submission of a waste survey may also result in billing delays.

For the purposes of the Waste Assessment Regulation, interim submissions and submissions to the Waste System are both considered to be proposed waste assessments. As such, late waste penalties may be applied if timelines for either of these are not met.

Where the holder of an agreement, other than an agreement entered into with the timber sales manager, does not complete the waste assessment and submit it to the District Manager as required under section 4.2, the District Manager may, in a notice given to the licensees, take actions to complete and submit a waste assessment for a block or blocks. The District Manager may complete a survey or hire a contractor and require the holder to pay the costs incurred in carrying out the assessment.

Where the holder of an agreement entered into with the Timber Sales Manager that is required by that agreement to conduct a waste assessment, fails to conduct that waste assessment, the Timber Sales Manager may carry out the assessment, and in a notice given to the holder, may require the holder to pay the costs incurred by the Timber Sales Manager in carrying out the assessment.

4.2.3 Waste Survey Extensions in 2022

Timelines for compilation and submission into the Waste System have been extended in 2022. Surveys that were required by this manual to be submitted in June 30, 2022 or September 15, 2022 are now due on December 31, 2022.

4.3 Reporting Requirements

Waste assessment data must be completely and accurately uploaded to the Waste System to generate billing amounts. The following attachments in the Waste System are required for all types of waste submissions:

1. A final survey map for each waste assessment area as required in Table 6-1.
2. A post-harvest certification that reconciles remaining trees, standing waste, and reserved timber in the final appraisal or reappraisal. See section 9.5.2 and Appendix 12 for details.
 - a. This form is not required for cutblocks within cutting authorities that are billed using tabular rates, since standing waste does not apply.
 - b. This form is not required for cutblocks within BCTS tenures, since post-harvest reappraisal does not apply and all uncut trees that remain within the cutting authority area are tallied as standing waste.
 - c. This form is required for non-sample cutblocks within an aggregate population.
3. The sharing agreement between parties when a population contains waste assessment areas from different client codes.
4. Professional rationale, if applicable, as per Section 6.6.
5. If the person submitting the survey information into the Waste System is not a Registered Forest Professional, an endorsed cover letter from a Registered Forest Professional accepting responsibility for the submission information must be submitted. This letter must include the Registered Forest Professional's designation and registration number.
6. The Timber Pricing Branch Area Calculator must be included in the submission.

Additionally, the following attachments must be included in waste assessments for specific types of waste submissions:

4.3.1 Single Block and Aggregate Submissions

1. The Timber Pricing Branch Area Calculator must be included in the submission.
2. The following files must be uploaded into the Waste System using a zip file:
 - a. The final version of the sample plan report from HRC (**aggregates only**),
 - b. The Original Aggregate Sample Plan (**aggregates only**),
 - c. The EFW file, and
 - d. The HRC file used for compilation.
 - e. Original survey map.

- f. Plot prediction report from EForWasteBC.
3. If paper plot cards are used, the individual piece data must be keyed into the Waste System and the plot cards must be attached in pdf format. (Paper plot cards can only be used on single cutblock SRS surveys). Illegible data will not be accepted.
4. High stump exemption letter if applicable.

GPS shapefiles, PRP tables, traverse notes, and **original** plot cards **must** be stored by the Licensee and made available to the Ministry upon request.

4.3.2 Simplified Waste Survey Submissions

1. A copy of the Simplified Waste Survey Calculator with values and calculations to determine eligibility and waste assessment volumes. The template for this spreadsheet can be found on the Timber Pricing Branch website. The most recent version at the time of submission must be used.
2. HBS Cut to Cruise Comparison Report.
3. HBS scale reports (Mark Monthly Billing History Selection Report) showing total harvest volume delivered secondary fibre facilities, if applicable.
4. Cutting Permit Summary of the full volume cruise as submitted in ECAS. (For cutting authorities with reductions use the Percent Reduction compilation. Otherwise, use the Full volume compilation.)

4.3.3 Waste Submissions Using District Averages

1. The letter describing which District Average criteria applies.
2. A final map with areas of cutblock, including road permit if applicable.
3. A copy of the Mark Monthly Billing History Selection Report from HBS. The report must use the 12 months ending on the last day of the month after the Primary Logging Complete date.
4. Document outlining the calculations of volumes, species and grade determinations.

4.4 Material Disposed of Prior to Waste Assessments

The procedures in this section do not supersede the requirement to complete a survey to the applicable standards described in this manual. It is a contravention of the Act to burn or dispose of timber before requirements or approvals in this manual are achieved.

If waste materials within any strata of a waste assessment area are burnt or disposed of prior to the completion and submission of a waste assessment as specified in section 4.2, the licensee must notify the District Manager.

Where timber that **was** required to be included in a waste assessment **has been disposed of**, the licensee will be required to submit assessed waste levels using this section. Those volumes may be higher, but must not be lower than the district averages on the Timber Pricing Branch website.

Where an assessment is required for dispersed strata or an entire cutblock, the district averages on the Timber Pricing Branch website will be used to calculate waste volume. For any areas that the District Manager or the Area Director of Pricing and Tenures deems appropriate, higher volumes than the district average will be used in the assessment, as directed by the District Manager or Area Director of Pricing and Tenures.

Where an assessment is required for a burnt pile stratum, the following calculated volume, or a higher volume per ha as deemed appropriate by the District Manager or Area Director of Pricing and Tenures, must be used for that stratum:

$$\text{Pile Stratum (m}^3\text{/ha)} = \text{District Average (m}^3\text{/ha)} \times \text{Total WAA area (ha)} / \text{Total Pile Stratum area (ha)}$$

Example 1: All piles in a block were burnt with a pile stratum area of 0.6 ha in Cariboo District Transition Zone (Total district average = 22.00 m³/ha, Avoidable Sawlog = 8.66 m³/ha, Avoidable Grade 4 = 13.21 m³/ha, Unavoidable = 0.13 m³/ha). The total WAA area for this example is 30.0 ha.

$$\text{Pile stratum (m}^3\text{/ha)} = 22.00 \text{ m}^3\text{/ha} \times 30.0 \text{ ha} / 0.6 \text{ ha} = 1,100 \text{ m}^3\text{/ha}$$

$$\text{Total volume for the pile stratum} = 660 \text{ m}^3$$

The total volume is subdivided into

$$\text{Avoidable sawlog} = 259.8 \text{ m}^3$$

$$\text{Avoidable Grade 4} = 396.3 \text{ m}^3$$

$$\text{Unavoidable} = 3.9 \text{ m}^3$$

Example 2: In the block from Example 1, half of the piles were burnt before the survey. In this example, 0.3 ha of the pile stratum is burnt, and 0.3 ha is available for sampling.

In this case, the total pile area remains at 0.6 ha and the volume of the burnt piles remains at 1,100 m³/ha. This volume per ha is applied to the burnt piles with an area of 0.3 ha. The unburnt piles, with an area of 0.3 ha, must be sampled as a separate accumulation stratum from the burnt piles.

4.5 Conditions for Using District Averages

The following waste assessment areas may not require field sampling:

1. Forestry Licence to Cut with a volume limit of 2,000 m³ or less, written in the licence agreement.
2. Occupant Licence to Cut with a volume limit of 2,000 m³ or less, written in the licence agreement.
3. Forestry Licence to Cut issued under 47.6 (3) of the Act in conjunction with an activity funded out of the BCTS account.
4. Forestry Licence to Cut issued under Section 47.6 (2)(d) of the Act and Section 4 of the LTC Regulation, and utilizes Section 6.2.1 (1)(d) of the Interior Appraisal Manual (with set sawlog stumpage rate of \$1.20/m³) in conjunction with an activity funded by the Forest Investment Program (i.e. Forests for Tomorrow).
5. A scale based right of way accessing a cruise based cutblock.
6. A cutblock within a blanket salvage cutting authority (under the Interior Appraisal Manual section 6.4.2).
7. A cutblock smaller than 2.0 ha. This paragraph does not apply to partial cutblocks or patch cut cutblocks.

Where this method is used, a letter must be attached to the waste system submission that describes which criterion applies.

The waste volume for the waste assessment areas described in this section will normally be billed using district average waste volumes and grades published on the Timber Pricing Branch website. **The table of district averages provides a breakdown of the following categories: Avoidable sawlog, avoidable Grade 4, and unavoidable.** Species percentage is determined using Mark Monthly Billing History Selection Report in HBS. **The report must use the 12 months ending on the last day of the month after the Primary Logging Complete date.**

This section does not apply to tenures in which an excessive volume of timber has been left on site or where all timber has been cut and left on the cutting authority area. (E.g. glading or “felled and bucked” timber.) The District Manager **must** determine higher waste volumes using other information if district averages do not provide a reasonable assessment. The District Manager or the **Area Director of Pricing and Tenures** may direct the licensee to complete a full waste survey involving field sampling according to other sections of this manual.

6.6 Amendments

The integrity of a sample design depends on the identification of a population prior to sampling, and an unbiased plan that remains unchanged. Changes to a plan can significantly impact the sample size and the number of plots required. Since all waste assessment areas must be “primary logging complete” when the sample design is created, any amendments to a sample plan are expected to be very rare. Population and stratum areas affect the number of required plots and plot spacing; therefore, the sampling plan must be correct and durable. A waste survey may be rejected if there are unsubstantiated changes between the plan and the final submission.

Changes to a sampling plan should only be related to issues that affect good forest management or other operational issues (i.e. wildfire or landslide occurred after the sampling plan was submitted).

The submitting forest professional recognizes that changes to a plan, such as the addition or removal of a waste assessment area or a significant change in area will significantly alter the sample plan requirements. The forest professional will assess the impact of the changes against the principles of sampling identified in these standards.

The submitting forest professional will submit a rationale for any changes to a sample plan. This model is consistent with the direction of professional reliance.

The District Manager, applying the principles identified in this manual, will make a determination on each change on a case-by-case basis and decide if the amended plan is acceptable.

New cutblocks cannot be added to an existing sample plan.

Table 6-1 Waste Assessment Area Survey Plan Map and Final Waste Submission Map Requirements

Requirements	Waste Assessment Area Survey Plan Map	Final Waste Submission
Tenure, CP, timber mark areas	Yes	Yes
Forest Region and District	Yes	Yes
Cutblock identifier	Yes	Yes
Map scale	Yes	Yes
Harvest boundary (with verifiable reference points such as falling corners)	Yes	Yes
Non-harvest areas (non-productive etc.)	Yes	Yes
Biogeoclimatic zone(s) (Interior)	Yes	Yes
North arrow, declination, map base	Yes	Yes
Cutblock maturity (where applicable)	Yes	Yes
Roads and other NP areas	Yes	Yes
Areas of reserved timber and zones of partial cutting (when identified in a cutting authority and appraisal)	Yes	Yes
Areas of high stump exemptions	Yes	Yes
Strata type lines and identifier	If known	Yes
Waste assessment area and strata net areas	If known	Yes
POC, point of intersection, local grid, baseline, Starting Point Interval Factor (SPIF), and plot locations	Yes	Yes
Identify measure plots and prediction plots	If known	Yes
Strip line direction of travel	No	Yes
Contour lines - clearly legible	Yes	Yes
Physiographic features	Only if they affect sampling	Only if they affect sampling
Reporting unit number	If known	Yes
Surveyor name(s)	If known	Yes
Sampling design	Yes	Yes

8.3 The Right-Hand Rule

The right-hand rule is an unbiased selection procedure where an action or a direction of travel is chosen by selecting the first option available from the right-hand side or direction.

The right-hand rule is used when determining accumulation (roadside stratum) plot locations for a waste assessment area survey map or when counting spot accumulations in the field.

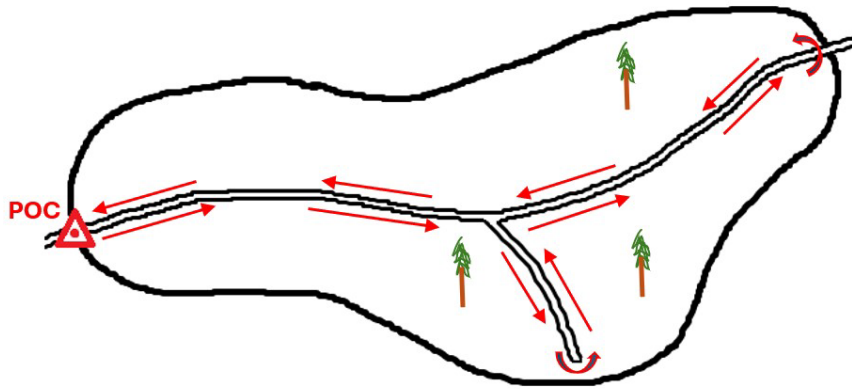


Figure 8-1 Right Hand Rule

9.2 Plot Establishment

Sample plots must be established at the location identified on the waste survey plan. Moving plot centers from the measured or traversed location presents significant bias and is only permitted in accordance with section 9.2.6 of this manual. If the plot cannot be completed safely, the procedures outlined in section 9.2.7 of the manual are to be used.

9.2.1 Plot Sizes

Plots in dispersed must be 200 m².

Plots in accumulations and roadside strata may be rectangular or circular, or other shapes as required and must be 50 m². External right of way areas must use 50 m² rectangular plots when sampled as a separate stratum (OT0X).

The formula for calculating the horizontal plot radius is: $SQR(\text{plot size in m}^2 / \text{PI})$, where SQR means "the square root of", and PI means 3.1415927.

The plot sizes and recommended shapes are as follows:

Open slash	200 m ² round (radius = 7.98 m)
Felled and bucked	200 m ² round (radius = 7.98 m) or 100% scale if area is small
Accumulation strata not listed below	50 m ² round (radius = 3.99 m) or rectangular (i.e. 5 m x 10 m)
Roadside accumulations	50 m ² rectangular (for strips 10 m wide or less). 50 m ² circular (for a 15 m wide strip, locate plot centers alternatively at 4 m and 11 m from the roadside). 50 m ² rectangular (for strips greater than 15 m wide).
Cold decks	100% scale or percent estimate.
Corduroy or timber used to stabilize road or trail	100% scale or percent estimate.
Road deactivation material	100% scale or percent estimate.

9.4.5 Deductions

It is a standard convention in the *Scaling Manual* to account for the volume of decay by reducing the gross dimensions of a piece by a length and/or diameter (rad) deduction (computed using the volume data on the scale stick). This gives net dimensions that will produce a volume equal to the net volume of the piece.

Deductions for defect must be calculated in the field using the British Columbia metric scale stick.

For waste assessments, the length and/or diameter (rad) deductions must be recorded along with the gross dimensions of the piece. The compilation program will subtract the deduction values (if any) in the deduction columns for length, top and/or butt dimensions respectively. The resulting dimensions will then be used to calculate volume.

The values recorded in the deduction columns are not the actual dimensions of the decay or missing wood. The decay values represent the deduction equivalent in rads and/or metres, along with the most appropriate "decay type" to be applied to the gross piece dimensions as a result of the decay or missing wood.

Example: a log with gross dimensions of 4.2 m and 18 rad top / 20 rad butt with 0.6 m length deduction and a 2 rad top deduction would be calculated as a 3.6 m, 16 rad top / 20 rad butt.

9.4.6 Grading Pieces

All waste pieces must be measured and graded according to their condition (i.e. grade and decay) at the time the timber was felled. The effect of time and weather since the date the timber was felled (i.e. sun checking) is not taken into account when grading waste pieces, except when a wildfire affects the timber. **After a wildfire, pieces are measured and graded as presented at the time of the waste survey.**

Bucking waste and stumps must be graded according to the rules in this manual.

Logs and trees must be graded according to the rules in the *Scaling Manual* except where the waste rules are different and then waste rules are used. For example, the minimum log length for waste is 3.0 m (instead of 2.5 m in the *Scaling Manual*).

9.4.6.1 Summary of Grade Code 4 Grade Rule

All waste pieces graded as dead lumber reject (i.e. cut from trees which were dead when harvested) were previously identified as grade code 5. These pieces are to be recorded as grade 4.

9.5.8 Cold Decks

Cold decks are five or more grade 1, 2, 4 or 6 (when required to be measured) logs that are mechanically placed together in a deck.

Cold decks that are to be included in a waste assessment must be measured using a 100% scale or percent estimate method. Another acceptable estimation method is a top scale which is the determination of the average piece size multiplied by the number of pieces. Cold deck pieces are not limited to logs. All waste that falls within the cold deck stratum area must be tallied.

9.5.8.1 Road Deactivation Material

Road deactivation material is timber previously used in the construction of a culvert, bridge, other required structure.

At the time of a waste assessment, all road deactivation material that has not been previously scaled must be included in the waste assessment. All road material must be measured within a cold deck stratum using the 100% scale or percent estimate measurement methods.

9.5.9 Coarse Woody Debris

Coarse woody debris is tallied as waste.

9.5.10 Special Cases

Waste surveyors often encounter pieces that are hard to classify as waste or breakage, or as avoidable or unavoidable. A few of these circumstances are listed here:

1. Embedded rock, usually resulting from blasting. If the pieces are trimmed within 20 cm of the rock, such pieces may be classified as unavoidable. If the pieces have been trimmed longer, the segment beyond the rock should be classified as avoidable, without making any trim allowance,
2. Chunks on the tail-spar or skidding trails used to support the roadbeds, that resulted in the breakage of pieces greater than the minimum log length. Such pieces are classified as avoidable, and may be graded according to the characteristics of the whole piece,
3. Windfalls will be tallied in the usual manner for in-plot portions. The exceptions are windfalls that are blown down after harvesting with their roots sitting outside the block. These pieces will not be tallied,
4. Helicopter bucking waste. Incorrect estimation of log weights may result in having to buck the logs shorter after attempting to lift them. Such waste is always regarded as avoidable, or
5. Chunks in the landing, bucked at both ends and used to support a steel tower. Classify as avoidable waste and grade as per the parent log.

to further conditions below.

The following additional requirements must be met to use the simplified waste survey:

1. The cutblock must be within a cutting authority that was cruised with a sampling error of 15.0% or less. (For cutting authorities with reductions use the Percent Reduction compilation. Otherwise, use the Full volume compilation.)
2. All cutblocks in the cutting authority are PLC at the time of waste assessment calculation.
3. This method cannot be used if any cutblock within the cutting authority has an outstanding late waste assessment or the waste submission has been submitted later than the date required in this manual.

10.1.3 Waste Volume Calculation

The total waste assessment volume is determined for the cutblock as follows:

The difference of

Net Cruise Volume – Total Harvest Billing Volume

Where

Net Cruise Volume = (the total net cruise volume for the cutting authority as submitted in ECAS) * (the net merchantable area of the cutblock) / (the net merchantable area of the cutting authority)

Total Harvest Billing Volume = the total scaled volume from the cutting authority as invoiced in HBS * (the net merchantable area of the cutblock) / (the net merchantable area of the cutting authority)

If this calculation results in a waste volume less than 1.0 m³/ha, the simplified waste survey volume is submitted as 1.0 m³/ha.

10.1.4 Species, Grade, and Classification

The species distribution is calculated using the percentage breakdown that is reported for the cutting authority in the Cutting Permit Summary of the full volume cruise as submitted in ECAS.

The grade distribution is calculated using the district average waste reports produced by Timber Pricing Branch. For each species, three categories must be reported:

1. Avoidable Sawlog waste m³/ha
2. Avoidable Grade 4 waste m³/ha
3. Unavoidable waste m³/ha

- c. The distance and bearing between the waste surveyor's PRP (if established) and waste plot must meet the same standards as those for hand traverse methods:
 - i. Horizontal distance: plus or minus 2.0%
 - ii. Bearing: plus or minus 2.0 degrees
4. In order to require a resurvey based on these standards, a minimum of 5 measure plot locations, or 10% of the measure plot locations, whichever is greater, must be checked.

11.2.3 Acceptability of Check Survey Results

If the net value and volume of the checked plots falls within the specified variance, then the survey is deemed to be acceptable unless the procedures specified in the manual were not adhered to (i.e., incorrect area used, log decks not included in the survey). Any obvious bias in volumes, grades and/or waste class which affect monetary billing will also result in rejection of the survey.

If the net volume or value parameters are not met, then the check survey will pinpoint the areas of weakness and allow that portion or entire survey to be redone.

If more than two check surveys or 20% of the checked waste assessment areas within a reporting unit or sampling plan are rejected, the District Manager may order that all the waste assessment areas within that reporting unit or sampling plan be resurveyed. However, if continuous or repeated errors are identified, the District Manager may order a resurvey of the reporting unit or sampling plan after one check survey.

11.2.4 Non-Compliance with Check Survey Standards

If the survey work is rejected after a check survey, the District Manager may order the licensee to resurvey the entire waste assessment area or those portions of the original survey that do not meet the standards. The resurvey must be completed prior to any post harvest treatment occurring and/or within 60 days of the District Manager's notification.

The licensee will be responsible for any costs they incur in the resurvey.

A full or partial resurvey may be subject to a second check survey carried out at the District Manager's discretion.

11.2.5 Dispute Resolution

A licensee who has been ordered to perform a resurvey **or corrections** may request a second check survey in writing to the District Manager.

The Area Director of Pricing and Tenures will coordinate the second check survey. The results of the second survey are binding and final.

If the second check survey:

1. Finds the original survey in non-compliance with check survey standards:

an average diameter equal to or larger than the timber merchantability specification diameter for at least 3.0m of length;

“**Manual**” means the Provincial Logging Waste and Measurement Procedures Manual-Interior Version;

“**Merchantable Timber**” means timber that meets or exceeds the timber merchantability specifications that are described in Table 3-1 in this Manual. Timber that is graded 6 or Z (Interior) is not merchantable;

“**Minister**” means the Minister of Forests, Lands, Natural Resource Operations and Rural Development;

“**Ministry**” means the Ministry of Forests, Lands, Natural Resource Operations and Rural Development;

“**Net Waste Area**” means the area of a waste assessment area in hectares reported in a waste submission;

“**North Area**” means Northeast, Omineca, and Skeena Regions excluding that portion that lies geographically within the North Coast Timber Supply Area;

“**Number of Samples**” means the number of samples of either waste assessment areas or plots in a waste survey;

“**Other related sections**” in the context of the *Forest Act*, means sections 13(3)(b)(ii), 14(1)(d)(ii), 20(3)(b)(ii), 22(f)(ii), 30(f)(ii), 33(5)(b)(ii), 35(1)(c)(ii), 43.3(1)(d)(ii), 43.55(1)(d)(ii), 43.7(2)(e)(ii), 43.8(e)(ii), 45(1)(d)(ii), 47.5(1)(a)(ii), 47.5(2)(b)(ii), 47.7(f)(ii), 118(1)(c)(ii);

“**Partial cutblock**” means a portion of a cutblock that is to be surveyed as a distinct submission;

“**PDOP**” means positional (3D) dilution of precision, which is a measure of the precision of GPS results related to the satellite positions. As PDOP decreases, the level of precision increases;

“**Pencil Buck**” means the act of recording bucking waste or stumps as two or more pieces of waste material. Surveyors will divide (pencil buck) the piece of waste at the point where the waste class changes from avoidable to unavoidable waste as a result of a defect in the piece;

“**Pile**” means an accumulation of woody material created by a machine, **generally for the purpose of fire hazard abatement, facilitation of reforestation, or for wildlife habitat.**

“**POC**” means ‘Point of Commencement’ – a point in or near a cutblock used to locate sample plots or to start a sampling procedure;

“**Population**” means a single item or group of items for which an estimate through the sampling process is made including but not limited to an estimate for a group of cutblocks, sample cutblocks, plots or waste pieces;

“**Primary Logging**” means the cutting of timber and the yarding of that timber to a central landing,