REVENUE BRANCH

Coast Appraisal Manual

Effective February 29, 2004

BRITISH COLUMBIA

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Definitions and Interpretations 1

1.1 Definitions and Interpretations

In this manual:

"Act" means *Forest Act*;

"Appraisal Data Submission" means the information required by the person who determines the stumpage rate to determine that rate including the appraisal map, appraisal summary report, cruise compilation and any other information required by the regional manager or district manager in the form required by the director, signed by a registered professional forester (RPF) or registered forest technologist (RFT), registered with the Association of British Columbia Forest Professionals;

"Billing history record" means a record of log scale data derived from a record kept by the Revenue Branch of log scale data reported on stumpage invoices issued by the Revenue Branch for timber scaled under section 94 of the *Act*;

"BCTS" means British Columbia Timber Sales;

"Coniferous cruise volume" means that part of the total net cruise volume which is coniferous timber;

"Detailed engineering" means non-tabular;

"Cutting authority" means:

(a) a cutting permit issued under a forest licence, a timber sale licence, a timber licence, tree farm licence, a community forest agreement, a community salvage licence, a woodlot licence, or forestry licence to cut,

(b) a timber sale licence that does not provide for the issuance of a cutting permit,

(c) a licence to cut, or

(d) a road permit;

"Cutting authority area" means the area where timber may be harvested under authority of:

(a) a cutting permit,

(b) a timber sale licence that does not provide for the issuance of a cutting permit,

(c) a licence to cut, or

(d) a road permit;

"Deciduous timber" means timber that is any of the alder, birch, cottonwood and maple species;

"Director" means director of Revenue Branch of the Ministry of Forests;

"District manager" means district manager or district manager's designate;

"Licensee" means the holder of a cutting authority;

"Manual" means *Coast Appraisal Manual*;

"Mature coniferous timber" means coniferous timber that is 141 years old or older;

"Minister" means Minister of Forests;

"Ministry" means Ministry of Forests;

"**Net cruise volume**" means the gross volume of all species listed in section 4.2.3(1), plus alder, birch, cottonwood and maple in the cutting authority area minus the volume of decay, waste and breakage in that timber unless otherwise specified in the *Cruising Manual*;

"Regional manager" means regional manager or regional manager's designate;

"Regulations" means regulations under the *Act*;

"Remaining volume" means the total net cruise volume of a cutting authority area minus the total volume of timber in the billing history record of the cutting authority area on the effective date of the reappraisal of the cutting authority area;

"Revenue Branch" means revenue branch of the ministry;

"Second growth coniferous timber" means coniferous timber that is less than 141 years old;

"Selling price zone 51" means the table of coast market pricing system log values for mature logs, approved by the director, Revenue Branch;

"Selling price zone 52" means the table of coast market pricing system log values for second growth logs, approved by the director, Revenue Branch;

"Stumpage price" means the market stumpage price;

"Stumpage rate" means market stumpage rate;

"Skyline" means any method of yarding where the logs are fully suspended above the ground by a short span, long span, or multi-span system using a carriage with standing or running lines;

"Total net cruise volume" of a cutting authority area (tnvc) is the product of the net cruise volume per hectare of the cutting authority area (ncv/ha) multiplied by the total merchantable timbered area to be harvested under the cutting authority (tmta). Expressed as an equation: $\text{tncv} = \frac{\text{ncv}}{\text{ha}} \text{ x tmta}$;

"Tributary cutting authority area" means a cutting authority area from which timber must be transported over the road that is developed, or a cutting authority area to which bulk fuels, supplies, equipment and harvesting crews necessary to carry out the day-to-day harvesting activities on that area must be taken on a regular basis over the road that is developed;

"Unit cost" means cost estimate expressed in dollars per cubic metre.

Scope and Requirements 2

2.1 Terms of Reference

1. This manual contains the policies and procedures for determining rates of stumpage for Crown timber harvested in the Coast Forest Region, as established by the *Act* and *Regulations* except Manning Park.

2.1.1 Responsibility for Stumpage Determinations

1. The following employees of the Ministry are authorized to determine, redetermine and vary rates of stumpage:

    a. Regional Managers, regional appraisal coordinators and employees of the regional revenue section, and

    b. The Director, and employees of the Revenue Branch.

2.2 Numbering System

The following exemplifies the numbering system that is used in this manual.

1. =	Chapter
1.1 or 1.1.1.1 =	Section
1.1.1.1 (2) =	Subsection.
Table 4-2 =	Table 2 within chapter 4

2.2.1 Calculation Conventions

1. Every calculation required to be performed will be performed to the full capacity of a calculating machine with the results truncated at four places of decimals and rounded to two places.

2. A result from 5 to 9 will be rounded upward and a result from 1 to 4 will be rounded downward.

3. Each calculation of a tenure obligation adjustment or specified operation adjustment expressed in dollars per cubic metre will be rounded to the nearest cent.

4. Where a value is specified as a limit, for example a constraint or a requirement for an equation,

   a. the value will be treated as an absolute value, and

   b. an actual measurement or record will not be rounded before use unless otherwise specified in this manual.

2.2.2 Cutblocks within a Cutting Authority Area

1. All cutblocks within a cutting authority area must:

   a. constitute a logical unit,

   b. must be tributary to the same appraised point of origin, and

   c. be contained within the same timber supply block, or in the case of a cutting authority area under a tree farm licence, be contained within the same forest district.

2. Helicopter single standing stem selection as described in section 4.4.5 must not be combined with any other logging system within the same cutting authority area.

3. Except as provided in subsection (2) of this section, there are no other restrictions on what types of logging systems may be used in or which types of timber can be contained in a cutting authority area.

2.3 Cruise Information

1. A licensee or BCTS must gather and compile cruise data in accordance with the following ministry publications and the coast timber merchantability specifications in Table 2-1:

   a. *Cruising Manual*, (*Cruising Manual* web site: http://www.for.gov.bc.ca/hva/manuals/cruising/),

   b. *Cruise Compilation Manual*. http://www.for.gov.bc.ca/hva/manuals/cruisecompilation/Index.htm

Table 2-1 Coast Timber Merchantability Specifications

Description

The following coast timber merchantability specifications must be used in all appraisals.

	Mature	Immature
1. Maximum stump height (measured from the top of the stump down to the highest ground level adjacent to the stump)	30.0 cm	30.0 cm
2. Minimum slab thickness for cedar only	15.0 cm	10.0 cm
3. Minimum top diameter (inside of the bark)	15.0 cm	10.0 cm
4. Minimum length of a log or slab	3.0 m	3.0 m

In this table "mature" means timber which has an average age of 121 years or older and "immature" means timber which has an average age of less than 121 years.

2. The licensee must provide, when requested by the district manager a photocopy of the tally sheets and an electronic version of the compilation in a format specified by the regional manager.

3. a. The cutting authority area will be appraised using the total net cruise volume of timber authorized for harvest in that area.

   b. The total area of merchantable timber in the cutting authority area is obtained from the appraisal summary of the cruise compilation report.

4. If the licensee or BCTS modifies its application for a cutting authority the applicant must recompile the cruise data when any of compiled plots used in the cruise lie outside the boundaries of the proposed cutting authority area.

5. a. Where a boundary of a cutting authority area has been changed after the appraisal or reappraisal of the cutting authority area, every reappraisal of the cutting authority area must use the total net cruise volume of the cutting authority area as it is after the boundary has changed.

b. If, after a cruise compilation or recompilation was used for an appraisal or reappraisal, the total of all additions or deletions of areas containing merchantable timber made to the cutting authority area exceeds twenty-five hectares or twenty-five percent of the area containing merchantable timber, whichever is less, the entire cruise must be recompiled.

2.4 Appraisal Data Submission

The form of the appraisal data submission required by the director may be found at:

http://www.for.gov.bc.ca/hva/ECAS/index.htm

2.5 Appraisal Map

The appraisal map must be completed in accordance with the requirements of Appendix V of this manual.

Appraisals, Reappraisals and Quarterly Adjustments 3

3.1 Types of Determination

1. A stumpage rate is determined, redetermined or varied by:

   a. an appraisal, reappraisal or a quarterly adjustment,

   b. an Order-in-Council under section 105 of the *Act*, or

   c. a procedure identified in chapter 7 of this manual.

3.2 Appraisals

1. An appraisal is a process used to determine a stumpage rate for a cutting authority area using the manual in effect on the effective date of the cutting authority. The appraisal is effective on the effective date of the cutting authority.

2. A licensee or BCTS shall submit the appraisal data submission to the district manager when the licensee or BCTS makes an application for a cutting authority.

3. The district manager may require the licensee or BCTS to complete and submit an estimated stumpage rate calculation for both helicopter and cable methods of harvesting when the district manager is not satisfied that the method proposed by the licensee or BCTS is the only method that is suitable for the area intended to be harvested.

4. The district manager may review the licensee or BCTS appraisal data submission and may inform the licensee or BCTS of any omissions, errors or provisions of the manual that, in the opinion of the district manager, the signing RPF or RFT may not have considered. The licensee or BCTS signing RPF or RFT may consider the district manager's information and may revise the appraisal data submission.

5. The district manager shall give any information supplied by the licensee or BCTS under this section to the person who determines the stumpage rate together with any other information that the district manager considers relevant to the appraisal.

6. The person who determines the stumpage rate may review the licensee or BCTS submission, and information supplied by the district manager, and may inform the licensee or BCTS of any omissions, errors or provisions of the manual that, in the opinion of the person who determines the stumpage rate, the signing RPF or RFT may not have considered. The licensee or BCTS signing RPF or RFT may consider the information and may revise appraisal data submission.

7. The person who determines the stumpage rate shall consider:

    a. the information provided by the licensee or BCTS and the district manager, and

    b. any information available to the person who determines the stumpage rate that is relevant to the appraisal.

8. Regional staff will notify the applicant of the stumpage rate determination.

3.3 Reappraisals

1. A reappraisal is a process used to redetermine a stumpage rate for a cutting authority using the manual in effect on the effective date of the reappraisal.

2. Except as provided for under sections 3.3.1(1)(d), 3.3.2 and 3.3.4, a reappraisal is based on a complete reassessment of the cutting authority area on the effective date of the reappraisal, as if the area has been returned to the condition as it was prior to development or harvesting.

3. Non-tabular cost estimates made in the appraisal of a cutting authority area may be re-estimated once in a subsequent reappraisal after works have been constructed using information required under section 5.3.4.

4. Road development costs originally estimated using ministry approved competitive bids may not be re-estimated in a reappraisal.

3.3.1 Changed Circumstances

1. In this section a changed circumstance means a circumstance where:

   a. (i) The licensee plans to use a method of harvesting to harvest at least twenty-five percent of the volume of timber in the cutting authority area that is different from the method that was planned to be used for that timber at the time of the most recent appraisal or reappraisal of the cutting authority area, and

      (ii) the different method of harvesting that is planned to be used:

         (aa) when used in the changed circustance reappraisal will produce the highest stumpage rate, and

         (bb) is different from the method of harvesting that was used in the most recent appraisal or reappraisal, or

   b. there has been or will be a change in the amount of road development of at least twenty-five percent in the total road development unit cost since the most recent appraisal or reappraisal caused by changes to the appraisal field data that will be used in the changed circumstances reappraisal, or

   c. land containing merchantable timber has been either added to or deleted from the cutting authority area since the most recent cruise compilation or recompilation was used in an appraisal or reappraisal that exceeds either:

      (i) twenty-five hectares or

(ii) twenty-five percent of the area of the cutting authority area as it was prior to the addition or deletion of the land, or

d. at least twenty-five percent of the total net cruise volume that was used in the most recent appraisal or reappraisal of the cutting authority area has been suddenly and severely damaged, unless the timber was damaged by a fire for which the licensee was responsible and the licensee failed to comply with any of sections 75 through 95 of the *Forest Practices Code of British Columbia Act* or the *Forest Fire Prevention and Suppression Regulation*.

2. The licensee must notify the district manager immediately of a changed circumstance.

3. Where the district manager believes that a changed circumstance has occurred, the district manager will notify the licensee of that belief.

4. A cutting authority area other than a cutting authority area that is the subject of a road permit or a cutting authority with fixed rates, must be reappraised when a changed circumstance has occurred.

5. Where a cutting authority area is reappraised because of a changed circumstance, any bonus bid in existence prior to the reappraisal does not change and remains in effect.

3.3.1.1 Changed Circumstance Reappraisal Procedure

1. Where the cutting authority area must be reappraised because of a changed circumstance, the licensee shall submit to the district manager an appraisal data submission.

2. Thereafter, the reappraisal procedure shall be the procedure required by section 3.2(2) through 3.2(8).

3.3.1.2 Effective Date of Changed Circumstance Reappraisal

1. Except as provided in subsections (2) and (3) of this section, the effective date of the reappraisal under section 3.3.1 is the first day of the month following the date of the licensee's notification to the district manager or the district manager's notification to the licensee that a changed circumstance has occurred.

2. Where the changed circumstance is because of amendments to the cutting authority area referred to in subsection 3.3.1 (1)(c), the reappraisal is effective on the first day of the month following the date that the district manager approves the last amendment.

3. Where the changed circumstance is because of sudden and severe damage to the appraised timber referred to in subsection 3.3.1(1)(d), the effective date of the reappraisal is the first day of the month following the date of the occurrence of the damage.

3.3.2 Annual Reappraisal of a Road Permit

1. Subject to section 7.3, a cutting authority area that is the subject of a road permit must be reappraised effective November 1, 2004 and annually on February 1st of every year thereafter.

2. The stumpage rate determined under subsection (1) of this section will be a fixed stumpage rate until the cutting authority area is reappraised.

3.3.3 Annual Reappraisal of Salvage Logging Stumpage Rates

1. Where a cutting authority area has stumpage rates determined under section 7.4 excluding those cutting authority areas subject to a bonus bid or bonus offer, that cutting authority area must be reappraised effective April 1, 2006 and annually on March 1st of every year thereafter.

2. The stumpage rate determined under subsection 1 of this section will be a fixed stumpage rate until the cutting authority area is reappraised.

3.3.4 Minister's Direction

1. The Minister may direct that a reappraisal be made at any time and that the redetermined stumpage rate will be effective on any future date.

2. The Minister may specify criteria and procedures for an appraisal or reappraisal.

3.3.4.1 Minister's Direction Reappraisal Procedure

1. Where the Minister directs a reappraisal to be made under section 3.3.4, and the district manager requests the licensee to submit an appraisal data submission, the submission shall be submitted to the district manager within forty-five days of the district manager's request.

2. Thereafter the reappraisal procedure shall be the procedure required by section 3.2 (2) through 3.2 (8).

3.4 Quarterly Adjustments

1. Unless a cutting authority, previous manual, or a provision of this manual specifies that the stumpage rates of a cutting authority are fixed, the stumpage rate of a cutting authority is adjusted quarterly on January 1, April 1, July 1, and October 1 of each year.

2. a. At the time of the quarterly adjustment referred to in subsection (1) of this section, the stumpage rate will be recalculated in accordance with the equations applicable for the appraisal effective date and the appraisal data submission which was used in the most recent appraisal or reappraisal. The log selling prices and CPI effective for the month of the adjustment will be used in the calculation of the adjustment. All other data, including the estimated number of bidders, will remain unchanged.

   b. The procedure referred to in this subsection is conducted each quarter until the cutting authority area is reappraised or the cutting authority expires.

3.5 Fixed Rates and Extensions of Term

Timber Sale Licences

1. A fixed stumpage rate for a timber sale licence means that the upset stumpage rate and bonus bid will not change during the term of the timber sale licence and all extensions, except where:

   a. a reappraisal is done under section 3.3.1(d) due to sudden and severe damage, or

   b. a reappraisal is done under section 3.3.4 due to the Minister's direction.

2. Every timber sale licence entered into under section 20 of the *Act* that was advertised on or after November 1, 2003 must have a fixed stumpage rate.

3. Notwithstanding anything to the contrary in this manual, a fixed stumpage rate for a timber sale licence may not be corrected where there has been an error in the appraisal.

Woodlots

4. a. The stumpage rate for a cutting authority issued under a woodlot licence shall be an adjusting stumpage rate unless:

      i) the stumpage rate for the cutting authority is changed to a non-adjusting stumpage rate under this section, or

      ii) the cutting authority is a road permit.

   b. A licensee may choose to have an adjusting stumpage rate changed to a non-adjusting stumpage rate under this subsection by giving written notice of that choice to the regional appraisal coordinator.

   c. Where the licensee gives notice to the regional appraisal coordinator of that choice, the adjusting stumpage rate shall become a non-adjusting stumpage rate three weeks after the regional appraisal coordinator receives the notice.

   d. On the date that the stumpage rate becomes a non-adjusting stumpage rate, the stumpage rate for the cutting authority continues to be the stumpage rate of the cutting authority that was in effect on that date.

e. Where a stumpage rate is changed from an adjusting stumpage rate to a non-adjusting stumpage rate, the stumpage rate for the cutting authority shall not change for the term of the cutting authority and all extensions from the date that the stumpage rate is changed to a non-adjusting stumpage rate, except where the cutting authority area is reappraised under section 3.3.1(d) or under section 3.3.3.

Average Stumpage Rates by District and Species

5. Where the stumpage rate for a cutting authority has been determined under section 7.1 or section 7.2 and the term of the cutting authority is extended, the stumpage rate shall not change during the term of the cutting authority and all extensions.

Miscellaneous Stumpage Rates

6. Except where miscellaneous stumpage rates are otherwise specified in a cutting authority the miscellaneous stumpage rates applicable to timber under section 7.6 are the rates that are in effect on the date that the timber is scaled.

3.6 Correctable Errors

1. In this section, a correctable error means:

   a. an error made by a Ministry employee in selecting or transcribing the correct log grade source, or

   b. a stumpage adjustment calculation that has not been made by using a stumpage appraisal parameter in effect on the effective date of the stumpage adjustment.

2. Where a person believes that a correctable error has been made in a stumpage determination, that person shall give written notice of the correctable error as follows:

   a. in the case of an appraisal or a reappraisal, the notice shall be given to the regional manager, and in the case of a quarterly adjustment, the notice shall be given to the director, and

   b. the notice shall identify the stumpage determination, the correctable error, and the cause of the correctable error to the extent reasonably possible.

3. The regional manager or the director, upon receipt of the notice shall determine whether or not a correctable error was made.

4. Where the regional manager or the director determines that a correctable error has not been made, the person who determined the stumpage rate or director shall notify the person who gave the notice of the correctable error.

5. Where the regional manager or the director determines that a correctable error has been made, then:

   a. the regional manager or the director will notify the person who gave the notice of the correctable error,

   b. the regional manager or the director will take reasonable steps to ensure that all licensees who may have been affected by a similar correctable error are informed of the decision, and

   c. (i) where the regional manager determines that a correctable error has been made in an appraisal or a reappraisal the cutting authority area shall be reappraised to correct the error by the person who determined the stumpage rate, using the procedure under subsections 3.2(7) to 3.2 (8), and,

      (ii) the effective date of the reappraisal shall be the first day of the month following the date on which the notice of the correctable error was received by the regional manager.

d. (i) where the director has determined that a correctable error has been made in the calculation of a quarterly stumpage adjustment, the adjustment must be correctly recalculated unless the cutting authority, the appraisal manual or the application and tender for a timber sale licence specifies that the stumpage rate is fixed, and,

(ii) the effective date of the redetermined rate shall be the first day of the month following the date on which the notice of the correctable error was received by the director.

3.7 Redetermination of Stumpage Rate by Agreement

1. Where, within twenty-one days of the date of a Stumpage Advisory Notice, the person to whom the Notice has been sent and an employee of the Ministry of Forest authorized to redetermine a stumpage rate under section 1.4 of this manual agree, the stumpage rate set out in the Notice, hereinafter referred to as the original stumpage rate, may be redetermined by the employee, and the redetermined stumpage rate shall be effective on the effective date of the original stumpage rate.

2. The twenty-one day period referred to in subsection (1) of this section may be extended by agreement between the person to whom the Notice has been sent and the employee.

Estimated Winning Bid 4

4.1 Appraisal Methodology

1. The person who determines the stumpage rate must estimate the stumpage rate for a cutting authority area in a manner that will produce the highest stumpage rate for the cutting authority area.

2. For each part of the cutting authority area, the person who determines the stumpage rate must use the procedures in this manual that must be used for the harvest method that produces the highest stumpage rate other than a method that the district manager states is unsuitable for that part of the cutting authority area.

3. Regardless of the harvest method that the holder of a cutting authority uses or intends to use on the cutting authority area or a part of the cutting authority area, or any other fact or law pertaining to the harvest method to be used, the district manager when deciding whether a harvest method is unsuitable may only consider:

    a. the physical features and terrain stability of the cutting authority area and the areas through which access to the cutting authority area may be gained,

    b. the physical features of the areas outside of the cutting authority area that may be affected by the harvesting in or the transportation of the timber from the cutting authority area,

    c. visual quality objectives, and

    d. public safety.

4.2 Market Pricing System (MPS) Variables

STUMPAGE PRICE	The stumpage price for the cutting authority expressed in $/m^3$.
ALP	Average coniferous log selling price estimate expressed in $/m^3$. This is based upon a consideration of log grades and species for the cutting authority area, and schedules of log market values collected and published by the Revenue Branch.
DFIR 2G	If selling price zone in the appraisal data submission is 52, then DFIR 2G is the fraction of the coniferous cruise volume that is Douglas-fir. If the selling price zone is not 52, then DFIR 2G = 0.
HEMBAL 2G	The fraction of the coniferous cruise volume that is hemlock and balsam, if selling price zone is 52. If selling price zone is not 52, then HEMBAL 2G = 0.
HEMBAL OG	The fraction of the coniferous cruise volume that is hemlock and balsam, if the selling price zone is not zone 52. If the selling price zone is 52, then HEMBAL 0G = 0.
SLOPE	The average side slope percentage for that part of the cutting authority area that will not be helicopter yarded.
VPH	The volume of coniferous timber per hectare expressed in m^3/ha. This is calculated by dividing the total net coniferous cruise volume (m^3) by the total merchantable area (ha).
HELI	The fraction of the total net cruise volume, including deciduous volume, of timber in a cutting authority area that must be helicopter yarded or yarded by skyline where logs are fully suspended more than 600 m in a straight line to the centre of the closest possible landing. This is calculated by dividing the total volume of timber that must be helicopter yarded or skyline yarded over 600 m by the total net cruise volume of the cutting authority area.
HAUL	The haul distance expressed in km. This is calculated using the procedures prescribed in section 4.2.4.
PENB	The preliminary estimated number of bidders that would compete for the cutting authority.
VOL	That part of the total net cruise volume in the cutting authority area that is coniferous timber expressed in m^3 except that where the cutting authority is a timber licence or is issued under a licence with an AAC greater than 10 000 m^3, then VOL = 18 874.
CPIF	The BC Consumer Price Index (P110000) approved by the director for use on the effective date of the appraisal, reappraisal or

quarterly adjustment, divided by the base CPI of 109.3.

CABLE — The fraction of the total net cruise volume of timber in a cutting authority area where terrain conditions require timber to be cable yarded. Cable yarding is an overhead cable system including highlead (spar), mobile (grapple or dropline) and skyline less than 600 m in a straight line horizontal yarding distance. Timber from within road right-of-ways that traverse cutting authority areas will have its volume assigned to the harvest method used to determine the stumpage rate in the same area on which the road lies.

CRUISE — Where the source of the log grades of fifty percent or more of the total net cruise volume has been determined from the cruise compilation, then CRUISE = 1. In all other cases the CRUISE = 0.

LOCATION (Major Centre) — The net cruise volume weighted average straight line distance measured in kilometres between the geographic centre of each part of a cutting authority area and the latitude and longitude co-ordinate listed in table 4-1 that is closest to that part of the cutting authority area.

BARGEDIST — BARGEDIST is the barging distance expressed in kilometres determined under section 4.2.5.3.

NB — The estimated number of bidders that would compete for the cutting authority determined under section 4.3.2.

Table 4-1: Latitude and Longitude Co-ordinates

Degrees and Minutes:		At or Near	Code
Latitude	**Longitude**		
50°01'	125°15'	Campbell River	CARV
49°11'	121°55'	Chilliwack	CHWK
54°23'	126°39'	Houston	HOUS
50°07'	120°46'	Merritt	MERR
49°10'	123°57'	Nanaimo	NANA
54°18'	130°19'	Prince Rupert	PRRU
54°31'	128°36'	Terrace	TERR
49°16'	123°06'	Vancouver	VANC
48°25'	123°21'	Victoria	VICT

4.2.1 Log Selling Prices

1. The Revenue Branch shall:

    a. Compile invoiced free on board log market values using prime, domestic, arm's-length sales reported to the Revenue Branch prior to sixty days before the stumpage rate adjustment date that have occured in areas adjacent to:

        i. the Strait of Georgia;

        ii. the Strait of Juan de Fuca;

        iii. Alberni Inlet east of a line drawn south from Amphitrite Points;

        iv. Johnstone Strait;

        v. the Queen Charlotte Strait south of a line drawn west from Cape Caution; and

        vi. Fraser River west of the bridge at the confluence of the Pitt River.

    b. Subject to subsection 2 of this section compile schedules of average log market values by species and log grade using sales data for each one-month reporting period. The data shall be summarized into a three-month schedule of average log market values by species and log grade for mature timber stumpage rate determinations. A three-month schedule of average log market values by species and log grade for second growth stumpage determinations shall also be produced. These schedules can be found at http://www.for.gov.bc.ca/hva/timberp/parameters.htm.

2. The volumes and prices of alder, birch, cottonwood and maple shall not be included in the schedules of average log market values.

3. The director shall approve schedules of average log market values for use in stumpage appraisals, reappraisals and quarterly adjustments.

4.2.1.1 Coniferous Timber

1. The volume of mature coniferous timber and the volume of second growth coniferous timber in a cutting authority area will each be compiled from the timber cruise of the cutting authority area on a tree by tree basis.

2. Where the volume of second growth coniferous timber in a cutting authority area is at least eighty percent of the volume of all of the coniferous timber in that cutting authority area, the cutting authority area will be appraised and reappraised as if all of the coniferous timber in that cutting authority area were second growth coniferous timber.

4.2.2 Log Grade Percentages

Log grade percentages are obtained for each species of timber in each cutting authority area being appraised or reappraised as described in section 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.3.1, 4.2.2.3.2 and 4.2.2.4.

4.2.2.1 Billing History Record

Except as provided in section 4.2.2.2, 4.2.2.3, 4.2.2.3.1, 4.2.2.3.2 and 4.2.2.4, the part of the billing history record that will be used when the person who determines the stumpage rate does an appraisal or reappraisal of a cutting authority area will be the two year billing history record as determined in Table 4-2 and Table 4-3. The date of issue on the stumpage invoice determines whether or not the log scale data is included in the two year billing history record.

Where the effective date of the appraisal or reappraisal falls within the period of the year listed in Column 1 of Table 4-2, the two year billing history record for the licence or timber supply area shall end on the corresponding date in Column 2 of Table 4-2 which immediately precedes the effective date of the appraisal or reappraisal.

Table 4-2: Billing History Record for Licence or Timber Supply Area

Column 1 Date of Appraisal or Reappraisal	Column 2 Billing History Record Ends on the Preceding
January 1 to March 31	November 30
April 1 to June 30	February 28/29
July 1 to September 30	May 31
October 1 to December 31	August 31

Where the effective date of the appraisal or reappraisal falls within the period of the year listed in Column 1 of Table 4-3, the two year billing history record for the cutting authority shall end on the corresponding date in Column 2 of Table 4-3 which immediately precedes the effective date of the appraisal or reappraisal.

Table 4-3: Billing History Record for Cutting Authority (Mark)

Column 1 Date of Appraisal or Reappraisal	Column 2 Billing History Record Ends on the Preceding
January 1 to 31	November 30
February 1 to 28/29	December 31
March 1 to 31	January 31
April 1 to 30	February 28/29
May 1 to 31	March 31
June 1 to 30	April 30
July 1 to 31	May 31
August 1 to 31	June 30
September 1 to 30	July 31
October 1 to 31	August 31
November 1 to 30	September 30
December 1 to 31	October 31

4.2.2.2 Log Grade Percentage Criteria

To determine the log grade percentages to be used for the cutting authority area being appraised or reappraised, the person who determines the stumpage rate will apply the following criteria:

1. The log grade percentage is the percentage by volume that log grade is of the total net cruise volume for the species of timber being considered.

2. Except as provided in subsections (6), (7), (8) and (9) of this section and section 4.2.2.4, the log grade percentages for a species of timber are derived from the billing history record.

3. The source of log grade percentages may vary by species of timber.

4. Before a two year billing history record for a species of timber can be used in an appraisal or reappraisal, that two year billing history record must be at least 25

percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater. For timber licences outside a tree farm licence the volume in the two year billing history record must also be at least 25 percent or 2 000 m^3 for each species that comprise at least 20 percent of the cutting authorities' total net cruise volume.

5. Where there is not at least 25 percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater, within the two year billing history record of a tree farm licence area or a timber supply area.

    a. The billing history record that will be used for that species of timber will be the five year billing history record, and

    b. where the effective date of the appraisal or reappraisal falls within the period of the year listed in Column 1 of Table 4-2 or Table 4-3, the five year billing history shall end on the corresponding date in Column 2 of Table 4-2 or Table 4-3, which immediately precedes the effective date of the appraisal or reappraisal.

6. Where the cutting authority area of a cutting authority is issued under a woodlot licence is appraised or reappraised the log grade percentages for each species of timber will be derived from the cruise compilation algorithm predictions.

7. Where less than eighty percent of the timber in a cutting authority area of a cutting authority that is entered into with a timber sales manager, or a cutting permit issued under a cutting authority entered into with a timber sales manager, or of a replaceable timber sale licence is second growth coniferous timber, the log grade percentages for each species of timber in an appraisal or reappraisal of the cutting authority area will be derived from:

    a. The two year billing history record, where the two year billing history record for that cutting authority includes at least 25 percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater, or

    b. the cruise compilation algorithm predictions, where the two year billing history record for that cutting authority does not include at least 25 percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater.

8. Where at least eighty percent of the timber in a cutting authority area being appraised or reappraised is second growth coniferous timber and the cutting authority area is not a cutting authority area referred to in subsections (6) or (7) of this section, the log grade percentages for each species of timber will be derived from either:

    a. The two year billing history record, where the two year billing history record for that cutting authority includes at least 25 percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater, or

b. the cruise compilation algorithm preditions, where the two year billing history record for the cutting authority does not include at least 25 percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater.

9. Where the entire net cruise volume of the cutting authority area being appraised or reappraised will be harvested using helicopter single standing stem selection, the log grade percentage for each species of timber will be derived from the cruise compilation algorithm predictions.

10. a. For cruises compiled before April 1, 2002, the cruise summary log grade data for grades D and K, F and L, and I and M of cedar must be separated by using the proportional grade percentages from the first appropriate level in section 4.2.2.3.

    b. For cruises compiled on and after April 1, 2002, the cedar grades will be separated by the cruise compilation program.

11. Where a forest licence is subdivided into one or more new forest licences under section 19 of the *Act*, for a period of two years after the date of the subdivision the log grade percentages for the cutting authority area determined under section 4.2.2.3.2 will be the combined billing history record for both the new licence(s) and the original licence that existed prior to the subdivision.

4.2.2.3 Source of Log Grade Percentage for Each Cutting Authority

1. Except for those cutting authorities or cutting authority areas referred to in subsection 4.2.2.2(6), 4.2.2.2(7), and 4.2.2.2(9), and 4.2.2.2(11) the log grade percentages for each species of timber for the cutting authority area being appraised or reappraised will be determined in accordance with:

    a. Section 4.2.2.3.1, where the cutting authority area is entirely within the geographic boundaries of one tree farm licence, or

    b. section 4.2.2.3.2, where the cutting authority area is entirely within the geographic boundaries of one timber supply area.

4.2.2.3.1 Log Grade Percentages for a Cutting Authority Area Within the Geographic Boundaries of a Tree Farm Licence

Where the cutting authority area being appraised or reappraised is entirely within the geographic boundaries of a single tree farm licence area, the log grade percentages for the cutting authority area will be determined in the following manner:

1. a. Where the cutting authority area is comprised of at least eighty percent second growth coniferous timber, the log grade percentages for that cutting authority area will be determined in accordance with the requirements of subsection

4.2.2.2(8).

b. Where the cutting authority area is not comprised of at least eighty percent second growth coniferous timber, then the person determining the stumpage rate will proceed to subsection 2 of this section.

2. a. Where the cutting authority area is the only cutting authority area in the cutting authority and is entirely within the geographic boundaries of a single timber licence, the person determining the stumpage rate will proceed to subsection 3 of this section.

b. Where subsection 2 (a) of this section is not applicable, the person determining the stumpage rate will proceed to subsection 4 of this section.

3. a. Where the species being considered has a billing history record for that timber licence that meets the criteria of subsection 4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

b. Where there is no such billing history record, the person determining the stumpage rate will proceed to subsection 4 of this section.

4. a. Where the species being considered has a billing history record for the portion of the tree farm licence area that lies within the geographic boundaries of the forest district that contains the cutting authority area and that meets the criteria of subsection 4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

b. Where there is no such billing history record, the person determining the stumpage rate will proceed to subsection 5 of this section.

5. a. Where the species being considered has a two year billing history record for the entire tree farm licence area that contains at least twenty-five percent of the cutting authorities' net cruise volume of that species or 2 000 m^3 whichever is greater, then that billing history record will be the source of the log grade percentages for that species.

b. Where there is no such billing history record, the person determining the stumpage rate will determine the log grade percentages for that species in accordance with subsection 4.2.2.2(5).

4.2.2.3.2 Log Grade Percentages for a Cutting Authority Area Within a Timber Supply Area

Where the cutting authority area being appraised or reappraised is entirely within the geographic boundaries of a single timber supply area, the log grade percentages for the cutting authority area will be determined in the following manner:

1. a. Where the cutting authority area is comprised of at least eighty percent second growth coniferous timber, the log grade percentages for that cutting authority area will be determined in accordance with the requirements of subsection 4.2.2.2(8).

   b. Where the cutting authority area is not comprised of at least eighty percent second growth coniferous timber the person determining the stumpage rate will proceed to subsection 2 of this section.

2. a. Where the cutting authority area is entirely within the geographic boundaries of a timber licence or licences, the person determining the stumpage rate will proceed to subsection 3 of this section.

   b. Where the cutting authority area is not entirely within the geographic boundaries of a timber licence or licences, the person determining the stumpage rate will then proceed to subsection 4 of this section.

3. a. Where the species being considered has a billing history record for that timber licence or licences that meets the criteria of subsection 4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

   b. Where there is no such billing history record, the person determining the stumpage rate will proceed to subsection 6 of this section.

4. a. Where the species being considered has a billing history record for the supply block of the timber supply area for the cutting authorities that were issued under the same licence as the cutting authority area being appraised or reappraised and that billing history record meets the criteria of subsection 4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

   b. Where there is no such billing history record, the person determining the stumpage rate will proceed to subsection 5 of this section.

5. a. Where the species being considered has a billing history record for the timber supply area for the cutting authorities that were issued under the same licence as the cutting authority area being appraised or reappraised and that billing history record meets the criteria of subsection 4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

   b. Where there is no such billing history record, the person determining the stumpage rate will proceed to subsection 6 of this section.

6. a. Where the species being considered has a billing history record for the entire supply block in the timber supply area that meets the criteria of subsection

4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

b. Where there is no such billing history record, the person determining the stumpage rate will proceed to subsection 7 of this section.

7. a. Where the species being considered has a two year billing history record for the entire timber supply area that meets the criteria of subsection 4.2.2.2(4), then that billing history record will be the source of the log grade percentages for that species.

b. Where there is no such billing history record, the person determining the stumpage rate will determine the log grade percentages for that species in accordance with subsection 4.2.2.2(5).

4.2.2.4 Damaged Timber

Where the regional manager determines that timber in a cutting authority area is suddenly and severely damaged, then notwithstanding section 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.3.1 and 4.2.2.3.2 the log grade percentages for the cutting authority area being appraised or reappraised may be estimated from available site specific information.

4.2.3 Stand Selling Price

1. The stand selling price shall be calculated in an appraisal or reappraisal by using the net cruise volumes and species selling prices of the following species of timber:

Balsam	Lodgepole Pine
Cedar	White Pine
Cypress	Sitka Spruce
Fir	Engelmann Spruce
Hemlock	

4.2.3.1 Stand Selling Price Calculation

1. Subject to subsection 2 of this section:

a. a species grade value for a species of timber in a cutting authority area is the product of the percentage of that grade of that species as derived from section 4.2.2 multiplied by the average log market value for that grade of that species of timber,

b. a species selling price for a species of timber in a cutting authority area is the sum of all of the species grade values for that species of timber in the cutting authority area,

c. the rounded species selling price is the species selling price for a species of timber in a cutting authority area rounded to the nearest cent,

d. a species value is the product of the rounded species selling price multiplied by the species net cruise volume in the cutting authority area, and

e. the stand selling price is the quotient of the sum of all of the species values in a cutting authority area divided by the total net cruise volume of all of the species in the cutting authority area.

2. For the purposes of determining a stand selling price:

   a. in the Pemberton, Yale and Nahatlatch timber supply blocks:

      i. all spruce is deemed to be Engelmann spruce, and

      ii. the hemlock and balsam average log market value will be used to determine the species grade values for all spruce in the cutting authority area,

   b. where outside the Pemberton, Yale and Nahatlatch timber supply blocks:

      i. Engelmann spruce is identified as the predominant spruce species in the cruise of the cutting authority area, or

      ii. the district manager determines that Engelmann spruce is the predominant spruce species in the cutting authority area,

      the hemlock and balsam average log market values will be used to determine the species grade values of all spruce in the cutting authority area,

   c. where a cutting authority area is located on Cortes Island or on an Island between Vancouver Island and the British Columbia mainland west of a line drawn between Grief Point near Powell River and the Tsawwassen ferry terminal, and south of 50 degrees north latitude, the second growth Douglas-fir average log market values will be used to calculate the species selling price for all Douglas-fir timber.

4.2.4 Haul Distance

1. The haul distance (HAUL) for a cutting authority area being appraised or reappraised shall be determined as follows:

   a. For each cutblock in the cutting authority area from which any timber may be removed by road from that cutblock:

      i. determine for that cutblock the point that is the closest point on a road to the geographical centre of the cutblock,

      ii. determine the shortest distance by road from the point on the road determined in subparagraph (i) of this paragraph to the appraisal log dump for that cutblock, measured in kilometres (km) and rounded to the nearest 0.1 km,

      iii. weight for that cutblock the distance determined in subparagraph (ii) of this paragraph by the net cruise volume of timber on the cutblock.

   b. Determine the average weighted distance of all the cutblocks for which a weighted distance was determined in subparagraph (iii) of paragraph (a), rounded to the nearest 0.1 km.

   c. HAUL is the average weighted distance calculated in paragraph (b) of this subsection plus the rehaul distance if required for inland water transportation as provided for under section 4.4.2.

   d. Where a rehaul is required for inland water transportation, the appraisal log dump is the final log dump at the end of the rehaul.

4.2.5 Marine Log Transportation

4.2.5.1 Point of Appraisal

1. The Points of Appraisal are:

Points of Appraisal	Location
Alberni	At the head of Alberni Inlet.
Chemainus	At Chemainus Bay.
Gambier Island	At Gambier Harbour on Gambier Island.
Pitt River Bridge	At the confluence of the Fraser and Pitt Rivers.

4.2.5.2 Log Towing

1. a. The information in table 4-4 is not used in the calculation of a stumpage rate but must be used by the licensee when completing the appraisal data submission.

   b. Where the appraisal log dump is at a towing point of origin listed in table 4-4, that towing point of origin must be reported in the appraisal data submission.

   c. Where the appraisal log dump lies between two towing points of origin, both towing points of origin must be reported in the appraisal data submission.

4.2.5.3 Log Barging and the Determination of Barging Distance (BARGEDIST)

1. Log barging is a log transportation method that may be considered in an appraisal or reappraisal.

2. a. Table 4-5 lists barging points of origin, the corresponding point of appraisal for each barging point of origin, and the distance between a barging point of origin and the corresponding point of appraisal.

   b. Where an appraisal log dump is at a barging point of origin, the bargedist is the distance between that barging point of origin and the corresponding point of appraisal for that barging point of origin.

   c. Where an appraisal log dump lies between two barging points of origin that both have the same corresponding point of appraisal the bargedist is the average of the two distances between the two barging points of origin and the point of appraisal.

   d. Where an appraisal log dump lies between two barging points of origin where each barging point of origin has a different corresponding point of appraisal the bargedist is the average of the distances between each barging point of origin and its corresponding point of appraisal.

Table 4-4: Towing Points of Origin

Code	Point of Origin	P/A	Code	Point of Origin	P/A
ALBE	ALBERNI	A	BUIM	M. OF BUTE INLET	G
CHCK	CHINA CREEK	A	KIIM	M. OF KINGCOME INLET	G
COCK	COLEMAN CREEK	A	KNIM	M. OF KNIGHT INLET	G
SARV	SARITA RIVER	A	LOUM	M. OF LOUGHBOROUGH	G
SPCK	SPENCER CREEK	A	TOIM	M. OF TOBA	G
TOBY	TOQUART BAY	A	NACK	NAKA CREEK	G
UCHU	UCHUCKLESIT	A	NOBY	NORTHWEST BAY	G
UCLU	UCLUELET	A	PHAR	PHILLIPS ARM	G
CHEM	CHEMAINUS	C	PTEB	PORT ELIZABETH	G
COBY	COWICHAN BAY	C	PTHD	PORT HARDY	G
JORV	JORDAN RIVER	C	PTHV	PORT HARVEY	G
LADY	LADYSMITH	C	PTMN	PORT McNEILL	G
NANA	NANAIMO	C	PTNE	PORT NEVILLE	G
SOOK	SOOKE	C	PORV	POWELL RIVER	G
VICT	VICTORIA	C	SENA	SECOND NARROWS	G
AGAM	AGAMEMNON	G	SYIN	SEYMOUR INLET	G
BECV	BEAVER COVE	G	SEBY	SOUTHWEST BAY	G
COUR	COURTENAY	G	SQUA	SQUAMISH	G
DRIN	DRURY INLET	G	STIL	STILLWATER	G
EVRV	EVE RIVER	G	TEAR	TEAKERNE ARM	G
FOHA	FORWARD HARBOUR	G	THIN	THEODOSIA INLET	G
FRAR	FREDERICK ARM	G	THSO	THOMPSON SOUND	G
BUIH	H. OF BUTE INLET	G	WASA	WAKEMAN SOUND	G
JEIH	H. OF JERVIS INLET	G	GAMB	GAMBIER ISLAND	G
KIIH	H. OF KINGCOME INLET	G	CHWK	CHILLIWACK	P
KNIH	H. OF KNIGHT INLET	G	HALF	FOOT HARRISON LAKE	P
LOUH	H. LOUGHBOROUGH	G	PILF	FOOT OF PITT LAKE	P
SEIH	H. OF SECHELT INLET	G	HABY	HARRISON BAY	P
TOIH	H. OF TOBA INLET	G	HATZ	HATZIC	P
INAR	INDIAN ARM	G	HALH	HEAD HARRISON LAKE	P
KLBY	KELSEY BAY	G	PILH	HEAD OF PITT LAKE	P
MNCK	McNAB CREEK	G	HALM	MID HARRISON LAKE	P
MEBY	MENZIES BAY	G	PIRV	PITT RIVER BRIDGE	P
MESD	MEREWORTH SOUND	G	SICK	SILVERHOPE CREEK	P
JEIM	MOUTH JERVIS INLET	G	WHON	WHONNOCK	P

P/A = Point of Appraisal as follows:

A = ALBE = Alberni
C = CHEM = Chemainus
G = GAMB = Gambier Island
P = PIRV = Pitt River Bridge

Table 4-5: Barging Distances

Code	Point of Origin	P/A	km	Code	Point of Origin	P/A	km
BACK	BARR CREEK	A	295	BOIN	BOSWELL INLET /SECURITY BAY	G	462
BLBY	BLOWHOLE BAY	A	259	CAIS	CAMPBELL ISLAND	G	560
CLCK	CLEAGH CREEK	A	394	DIBY	DINAN BAY	G	1047
COHA	COAL HARBOUR	A	418	ELHA	ELCHO HARBOUR	G	577
CYRV	CYPRE RIVER	A	184	FEBY	FERGUSON BAY	G	1032
EAIN	EASY INLET	A	325	RIIH	HEAD OF RIVERS INLET	G	498
ESIN	ESPINOSA INLET	A	298	SBEH	HEAD OF SOUTH BENTINCK ARM	G	636
GORV	GOLD RIVER	A	265	HNRV	HONNA RIVER	G	921
HEBY	HEAD BAY	A	256	KMBY	KEMANO BAY	G	810
BESH	HEAD OF BEDWELL SOUND	A	196	KHIN	KHUTZEYMATEEN INLET	G	948
HENO	HECATE CHANNEL - NOOTKA	A	260				
HOLB	HOLBERG	A	448	KIMS	KIMSQUIT	G	648
HORV	HOUSTON RIVER	A	250	KLEM	KLEMTU	G	610
HUCK	HUSHAMU	A	430	KUIN	KUMEALON INLET	G	820
INGE	INGERSOLL	A	397	KWBY	KWATNA BAY/MINERVA CREEK	G	564
JELA	JEUNE LANDING	A	415	KWRV	KWINAMASS RIVER	G	942
KEIN	KENDRICK INLET	A	244	MCBY	McCLINTON BAY	G	1053
KOHA	KOPRINO HARBOUR	A	382	MOIN	MOSES INLET/INRIG BAY	G	501
KUCV	KULTUS COVE	A	403	NAHA	NADEN HARBOUR	G	1014
MCCK	McCURDY CREEK	A	262	NABY	NASS BAY	G	972
MORV	MOOYAH RIVER	A	244	NORV	NOOTUM RIVER	G	519
OUIN	OUOUKINSH INLET	A	334	OCFA	OCEAN FALLS	G	564
PLHA	PLUMPER HARBOUR	A	238	POIS	PORCHER ISLAND	G	852
PTEL	PORT ELIZA	A	280	PRRU	PRINCE RUPERT	G	867
RACV	RANKIN COVE	A	211	RESO	RENNELL SOUND	G	927
STCV	STEAMER COVE	A	199	REPA	RENNERS PASSAGE	G	924
TLRV	TLUPANA RIVER	A	253	SCRV	SCOTIA RIVER	G	891
TSRV	TSOWWIN	A	250	SWIN	SEWELL INLET	G	864
WIHA	WINTER HARBOUR	A	382	SKIN	SKIDEGATE INLET	G	918
ZEBA	ZEBALLOS	A	307	SOBY	SOUTH BAY	G	927
ALAR	ALICE ARM	G	1029	STEW	STEWART	G	1068
ALBY	ALLIFORD BAY	G	918	TASU	TASU SOUND	G	860
BEAN	BEATTIE ANCHORAGE	G	858	TUIN	TUCK INLET	G	879
BECO	BELLA COOLA	G	609	WECK	WEEWANIE CREEK	G	765
BIBY	BISHOP BAY	G	723	WOCH	WORK CHANNEL	G	948

P/A = Point of Appraisal as follows:

A = ALBE = Alberni
G = GAMB = Gambier Island

4.3 Estimated Winning Bid (EWB) Equation

1. The equation in subsection (2) of this section shall be used in the calculation of the preliminary estimated winning bid (PEWB).

2. EWB = [-22.1404 + 3.4604 (CRUISE) - 19.0026 (HEMBAL2G) + 0.7844 (ALP/CPIF) - 2.8796 (Ln (0.01 + HEMBAL OG)) - 0.1662 (SLOPE (1 - HELI)) - 40.0910 (HELI) + 11.9470 (Ln (VPH/1000)) + 10.0684 (Ln NB) - 0.0342 (HAUL) - 0.0113 (BARGEDIST)] CPIF

4.3.1 Estimated Number of Bidders (ENB) Equation

1. The following equation shall be used to calculate the (ENB).

2. ENB = 0.2417 - 0.00639 (LOCATION) + 2.1450 (HEMBAL2G) + 0.8341 (Ln (VOL/1000)) - 1.5888 (CABLE) + 0.0973 (EWB/CPIF) + 2.8896 (DFIR2G)

3. The ENB shall be rounded to one decimal place.

4. Where the calculated ENB is less than 1, the ENB shall be 1.

4.3.2 Steps to Calculating Preliminary Estimated Winning Bid (PEWB)

Step 1: Calculate EWB using the equation in section 4.3(2) where NB is given the value of 5.9.

Step 2: Calculate the ENB using the equation in section 4.3.1(2) where EWB is given the value calculated in step 1.

Step 3: Calculate the EWB again using the equation in section 4.3(2) where NB is given the value that was calculated for ENB in step 2.

Step 4: Calculate the ENB again using the equation in section 4.3.1(2) where EWB is given the value that was calculated in step 3.

Step 5: Repeat steps 3 and 4 until the calculated EWB, rounded to the nearest $\$0.01/m^3$ is duplicated.

Step 6: The result calculated in step 5 is the PEWB, except that where the calculated PEWB is less than $\$0.25/m^3$, then the PEWB shall be $\$0.25/m^3$.

4.4 Specified Operations

1. The specified operations in sections 4.4.1 to 4.4.6 may be considered in an appraisal or a reappraisal.

4.4.1 Skyline

1. A skyline adjustment expressed in $/m^3$ may be calculated for those areas within a cutblock that:

   a. are 600 metres or greater measured in a straight line horizontal distance from the centre of the closest possible landing or place where a landing may be located, and

   b. are yarded by skyline.

2. The skyline adjustment may be calculated by adding the volume of timber to which the skyline may apply to the volume of timber to be helicopter yarded as prescribed in section 4.2.

4.4.2 Inland Water Transportation

1. Except as provided in subsections 3 and 4 of this section, an inland water transportation adjustment will be determined where timber must be towed on Great Central, Owikeno or Powell Lake, or any other inland water approved by the person that determines the stumpage rate in order for the timber to be transported to the point of appraisal.

2. The adjustment shall be determined by applying the following equation:

$$\$/m^3 = 3.498 + 0.01865\ (D)$$

   Where:

   D = Inland water tow distance in km.

3. Where the Silverhope Creek point of origin is used in the appraisal or reappraisal of a cutting authority area the inland water tow adjustment is $\$2.25/m^3$.

4. Where timber is towed on Harrison Lake:

   a. The following equation shall be used to calculate an inland water tow adjustment where the point of origin that must be used in the appraisal or reappraisal is mid-Harrison Lake (HALM).

$$\$/m^3 = - 0.09690 + 0.008207 (D1) + 0.04628 (D2)$$

Where:

D1 = tow distance from the appraisal log dump to Pitt River Bridge point of appraisal, and

D2 = truck haul distance from the appraisal log dump to Harrison Bay.

b. Where the point of origin that must be used in the appraisal or reappraisal is head Harrison Lake (HALH) the following equation shall be used to calculate the inland water tow adjustment:

$$\$/m^3 = 4.2223 + 0.008207 (D1) + 0.01045 (D2)$$

Where:

D1 = tow distance from the appraisal log dump to Pitt River point of appraisal.

D2 = tow distance from the appraisal log dump to mid-Harrison Lake point of origin.

4.4.3 Tree Crown Modification

1. Where the district manager approves the protection of trees from wind throw by tree crown modification, a tree crown modification adjustment may be considered in the appraisal or reappraisal.

2. The adjustment is the sum of the costs for all of the trees that are modified divided by the total net cruise volume of the cutting authority area.

3. Where tree crown modification is approved:

   a. the rate for each mature coniferous tree that is modified is $53.50, and

   b. the rate for each second growth coniferous tree that is modified is $36.38.

4.4.4 Clayoquot Sound Operating Costs

1. For the purposes of this section the Clayoquot Sound area is:

   That part of the Hesquiat Peninsula, Esowista Peninsula, and the Islands, sea and all lands and waters draining into the Pacific Ocean from the height of land between Escalante Point and Quisitis Point.

2. An adjustment of $\$13.31/m^3$ will be included in an appraisal or a reappraisal of a cutting authority area that is located entirely within the Clayoquot Sound area.

4.4.5 Helicopter Single Standing Stem Selection

1. In this manual helicopter single standing stem selection means the harvesting of standing single trees that have been marked, limbed, undercut and wedged and then broken from the stump and removed using a helicopter.

2. This adjustment may only be included in the appraisal or reappraisal of a cutting authority area if:

   a. helicopter single standing stem selection is the only harvest method that has been permitted by the district manager to harvest timber in the cutting authority area, and

   b. is the only harvest method used to harvest all of the timber in the cutting authority area.

3. The adjustment for helicopter single standing stem selection includes the cost of marking, climbing, limbing, undercutting, wedging, breaking and removal of the tree by helicopter.

4. The adjustment for helicopter single standing stem selection is $\$37.78/m^3$.

4.4.6 Second Growth Coniferous Timber

1. A second growth coniferous timber adjustment will be included in an appraisal or reappraisal of the cutting authority area as follows:

   a. For an appraisal where the effective date of the stumpage rate determined is:

      i. between February 29, 2004 and December 31, 2006, the adjustment shall be $\$3.67/m^3$;

      ii. between January 1, 2007 and June 30, 2007, the adjustment shall be $\$1.84/m^3$.

   b. No adjustment will be included in an appraisal or a reappraisal of a cutting authority area where the effective date of the stumpage rate determined is after June 30, 2007.

4.5 Final Estimated Winning Bid

1. Subject to subsection 3 of this section the Final Estimated Winning Bid (FEWB) is the difference between the preliminary estimated winning bid and the total of the specified operations adjustments that are applicable to the appraisal or reappraisal of the cutting authority.

2. Expressed as an equation:

$$FEWB = PEWB - SOA$$

Where:

PEWB = The Preliminary Estimated Winning Bid determined under section 4.3.2.

SOA = The sum of specified operations adjustments considered in an appraisal or a reappraisal of a cutting authority area as may be calculated under sections 4.4.1 through 4.4.6 and expressed in $\$/m^3$.

3. Where the FEWB calculated is less than $\$0.25/m^3$, then the FEWB shall be $\$0.25/m^3$.

Tenure Obligation Adjustments 5

5.1 Tenure Obligation Adjustment

1. Except where a cutting authority area is the area authorized for harvest under a timber sale licence entered into under section 20 of the *Act* and subject to subsection 2 of this section, the kinds of costs that may be used in the calulation of a tenure obligation adjustment in the appraisal or reappraisal of a cutting authority area are:

   a. the forest planning and administration costs,

   b. the road development costs,

   c. the road maintenance costs,

   d. the road use charges,

   e. the basic silviculture costs, and

   f. the low volume cost.

2. A kind of cost that may be calculated under this chapter may only be calculated and used in the appraisal or reappraisal of a cutting authority area where:

   a. except for the low volume cost, the licensee will incur a cost of that kind when exercising their authorities or obligations under the cutting authority, or

   b. in the case of a low volume cost, where that cost may be calculated under section 5.2.1 of this manual.

3. The tenure obligation adjustment is calculated under section 5.10.

5.2 Forest Planning and Administration Cost

1. The forest planning and administration cost is based on surveyed expenses at the corporate licensee level including all aspects of executive and administrative expenses at the head office attributable to the harvest of Crown timber. The kinds of expenses that were taken into consideration to calculate this cost were:

   a. head office general and administrative expenses ($3.38/$m^3$).

   b. logging department, log trading and log supply expenses ($3.98/$m^3$).

   c. fees and taxes applicable to stumpage bearing timber ($0.83/$m^3$).

   d. engineering and forestry overhead expenses ($4.77/$m^3$).

2. The total forest planning and administration cost is $12.96/$m^3$.

5.2.1 Low Volume Cost

1. A low volume cost of $7.51/$m^3$ may be included in the tenure obligation adjustment where:

   a. the cutting authority area being appraised or reappraised is the subject of cutting authority issued under either a licence or its parent licence prior to subdivision that provides for an allowable annual cut of not more than 10 000 m^3 of Crown timber, and

   b. the total net cruise volume of the cutting authority area is not more than 10 000 m^3.

5.3 Road Development Cost

1. Except as provided in section 5.3.2, where a road development provides access to Crown timber a road development cost may be estimated for new road construction, and road reconstruction.

2. a. Except as provided in subsections (2)(b) and (2)(c) of this section the total net cruise volume is used to calculate the unit cost for new road construction and road reconstruction in an appraisal or reappraisal of a cutting authority area.

   b. Where a road development project was not taken into consideration in a prior appraisal or reappraisal of the cutting authority area, the remaining volume shall be used to calculate the road development unit cost for that project in the reappraisal of the cutting authority area.

   c. Where the reappraisal is because of sudden and severe damage the road development cost is calculated as follows:

      i) The road construction project costs prior to the sudden and severe damage reappraisal are totalled,

      ii) The sum of those project costs is the total project cost,

      iii) From the total project cost calculated in subsection 2(c)(i) of this section is subtracted the product of the total project cost multiplied by the total volume of timber in the billing history record of the cutting authority area on the effective date of the reappraisal, divided by the total net cruise volume of the cutting authority area,

      iv) The difference calculated in subsection (2)(c)(iii) of this section is then divided by the sum of the remaining volume plus the volume of timber that was suddenly and severely damaged,

      v) The calculation of the road development cost expressed as an algorithm is:

$$\text{Road Development Cost} = \frac{\text{total project cost} - (\text{total project costs x volume in the billing history record}) / \text{total net cruise volume}}{\text{remaining volume} + \text{volume suddenly and severely damaged}}$$

3. Except as further provided for in this manual the road development cost for a road development may only be used in the appraisal or reappraisal of a tributary cutting authority area.

4. A road development cost may be amortized in accordance with section 5.3.2.1.

5.3.1 Road Development Cost Proration

1. The provisions of this section apply to each of the road development categories described in sections 5.3.1.2 and 5.3.1.3.

2. Where a road development cost estimate must be prorated under this section, only the Crown share of the road development cost estimate may be used in the appraisal or reappraisal of the cutting authority area.

3. a. Where road development on Crown land provides access to both Crown timber and timber that is not Crown timber held by the licensee, or a company legally associated with the licensee then the development cost is prorated between Crown timber and timber that is not Crown timber in accordance with subsection (6) of this section.

   b. Where road development on private land provides access to both Crown timber and timber that is not Crown timber, then the development cost is prorated between Crown timber and timber that is not Crown timber in accordance with subsection (6) of this section.

4. Where a proration is required under subsections (5)(a) or (5)(b) of this section:

$$\text{Crown share of total estimated cost} = \text{Total Estimated Cost} \times \frac{\text{Crown Timber Volume}}{\text{Total Timber Volume}}$$

Where:

Crown share of total estimated cost	means the dollar amount to be used to determine a cost estimate for the appraisal or reappraisal of the cutting authority being appraised.
Total Estimated Cost	means the total road development cost estimate expressed in $.
Crown Timber Volume	means the volume of Crown timber that is under the control of the licensee or a company legally associated with the licensee that may be transported over that road.
Total Timber Volume	means the total volume of Crown and privately owned timber that is under the control of the licensee or a company legally associated with the licensee and that may be transported over that road.

5. In all cases, volumes are estimated from the latest approved operational or inventory cruise data and maps of the area within the drainage to the height of land.

6. Appendix III illustrates the proration process.

5.3.1.2 New Road Construction

1. New Road Construction includes only subgrade construction, placement of additional stabilizing material, bridges, the construction and installation of drainage structures, and other necessary types of structures pertaining to the road that the regional manager authorizes to be used in the appraisal or reappraisal of a cutting authority area.

2. New road construction costs may only be used in the appraisal or reappraisal of the first tributary cutting authority.

3. Tabular road cost estimates:

    a. Where the physical dimensions and conditions of the new road construction fall within the tabular limits set out in sections 5.3.3.1 through 5.3.3.3.2, a tabular cost estimate will be made using the applicable tables and formulas in those sections of the manual.

    b. Each road section cost estimate is determined using the appropriate tables in sections 5.3.3.1 through 5.3.3.3.2.

    c. The tabular road unit cost is the sum of the unit cost estimates of all of the road sections.

4. Non-tabular road cost estimates

    a. Non-tabular cost estimates may be calculated in accordance with section 5.3.4 for the following kinds of new road construction:

        i. construction and upgrading of main access roads that meet the criteria and conditions provided in the *Ministry of Forests Main Access Roads Policy*,

        ii. road construction on uphill side slopes that are over 150 percent,

        iii. road construction on terrain with two or more gullies over 10 m deep at centreline in a 300 m section,

        iv. end haul construction requiring removal of excavated material to a spoil area,

        v. overland construction to provide a roadbed by trucking in material for extensive fill sections,

vi. switchbacks with over 10 000 m^3 excavation volume to complete the designed grade percent and horizontal alignment, and

vii. projects approved by the regional manager.

b. The non-tabular road unit cost is the sum of the non-tabular road unit cost estimates.

5. Bridge Cost Estimates

a. Except where a bridge cost estimate cannot be calculated using table 5-3 or 5-4 each bridge cost estimate must be determined using the appropriate table.

b. Where the bridge cost estimate cannot be made using one of the appropriate tables, a non-tabular bridge cost estimate may be calculated under section 5.3.4.

c. Where bridge materials are reused by the original purchaser at a different site, the bridge cost estimate may include the cost of dismantling the materials at the site where they were previously used, and transportation to and installation at the different site, but may not include the initial materials cost and delivery costs.

d. Where used bridge materials are purchased by the licensee from a legally non-associated party, only the lowest possible cost of purchasing and shipping those materials may be included in the bridge cost estimate.

e. The bridge unit cost is the sum of the bridge unit cost estimates for all of the bridges.

6. Culvert Cost Estimates

a. Except where a culvert cost estimate cannot be calculated using table 5-5, each culvert cost estimate must be determined using that table.

b. Where the culvert cost estimate cannot be made using table 5-5 the non-tabular culvert cost estimate may be calculated under section 5.3.4.

c. The culvert unit cost is the sum of the culvert unit cost estimates for all of the culverts.

7. The total of the unit costs for tabular roads, non-tabular roads, bridges and culverts is the total new road construction unit cost.

5.3.1.3 Road Reconstruction

1. road reconstruction is the:

a. Replacement of a bridge,

b. major structural repair of a bridge,

c. redecking of an entire bridge,

d. reconstruction of a road,

e. resurfacing of a road, with a minimum loose depth of 0.1 m over a continuous length of 0.5 km or greater, or

f. replacing a pipe culvert 1.0 m or larger in diameter,

g. required because of extensive wear and tear, the road having been permanently deactivated, or a water or slope failure event.

2. A road reconstruction cost estimate may only be used in an appraisal or reappraisal of a cutting authority area when the district manager authorizes the use of that estimate in that appraisal or reappraisal.

3. A road reconstruction cost estimate must be made in accordance with section 5.3.4.

4. Where road reconstruction projects are associated because of one natural event the reconstruction projects should be grouped into one project cost estimate using a non-tabular cost form.

5. That part of the cost to replace or repair a bridge on a forest service road that is paid for by the Crown, may not be considered in any appraisal or reappraisal.

6. The reconstruction cost estimate of a project may be used in the appraisal or reappraisal of one existing or proposed tributary cutting authority area that is in the licensee's approved forest development plan during the construction of the project. The licensee must identify that cutting authority area when the reconstruction cost estimate is submitted in the appraisal data submission.

7. Where bridge materials are reused by the original purchaser at a different site, the bridge reconstruction cost estimate may include the cost of dismantling the materials at the site where they were previously used, and transportation to and installation at the different site, but may not include the initial materials cost and delivery costs.

8. Where used bridge materials are purchased by the licensee from a legally non-associated party, only the lowest possible cost of purchasing and shipping those materials may be included in the bridge reconstruction cost estimate.

9. The total road reconstruction unit cost is the sum of all of the road reconstruction unit cost estimates for all of the reconstruction projects.

5.3.1.4 Total Road Development Cost

1. The total road development cost is the sum of the total new road construction unit cost plus the total road reconstruction unit cost.

5.3.2 Existing Roads

1. The following roads may not be considered in the appraisal or reappraisal of a cutting authority area:

   a. a constructed road that has been previously included in an appraisal or reappraisal of another cutting authority area,

   b. a road previously constructed to access private timber, and

   c. a road previously constructed in whole or in part for a purpose unrelated to the harvesting of timber on the cutting authority area being appraised or reappraised.

5.3.2.1 Extended Road Amortization

1. Subject to subsection (2) of this section for new appraisals where the total road development cost calculated in an appraisal or reappraisal is greater than $\$14.00/m^3$, the licensee and regional manager may agree that only a portion of an estimated road development cost will be used in the appraisal or reappraisal of the cutting authority area and that the balance of the estimated road development cost will be used in the appraisal or reappraisal of one or more tributary cutting authority areas.

2. Future tributary timber included in the extended road amortization agreement must be within a woodlot licence area, or in an approved cutting permit or cutblocks shown in the licensee's forest development plan or forest stewardship plan in effect on the appraisal effective date.

3. The agreement must provide that:

   a. it may not be changed unless by mutual agreement, and

   b. it is entered into only for the purposes of calculating a stumpage rate and confers no obligation on the Crown to compensate the licensee for any unamortized costs.

5.3.3 Tabular Cost Estimates

1. A tabular cost estimate must be calculated on the basis that the construction project will be completed using commonly used logging road construction practices and that the roads will have single lane width roads, turnouts and landings.

2. Weighted averages for each variable (eg. uphill side slope, rock, etc.) are applied to each road section. Averages are obtained by weighting the cross-section measurements taken at representative points along the road by the applicable road section length. The length of bridges and end haul sections in each section of a road that are appraised under section 5.3.4 may not be used in the calculation of this estimate.

5.3.3.1 Subgrade Construction

1. The estimated cost per kilometre for subgrade construction is provided for each combination of construction category and uphill side-slope for two rock mass classification categories, 'RMC 5 Only' and 'Other RMC's'.

2. Construction category (CC) is determined on the basis of the percent rock in relation to the total volume of all materials.

3. The percent rock is determined as follows:

$$\% \text{ rock} = \frac{h^2}{H^2} * 100\%$$

Where:

h = the vertical cut height of all rock measured from the bottom of the ditch

H = the total vertical cut height of all materials including organic layers, glacial till and hardpan measured from the bottom of the ditch

4. Construction category may show a range of variation ($\pm$ one CC) within any section length, and is recorded to the nearest integer. Hardpan is CC1, whether drilled and blasted or not. Rippable rock and boulders may occur in CC2 to CC6.

5. The following table defines the construction categories.

Table 5-1: Construction Categories

Construction Category (CC)	1	2	3	4	5	6
% rock	0	1-12	13-37	38-62	63-87	88+

6. Rock mass classification (RMC) is based on the physical characteristics of rock encountered in forest road development and is the subject of a report commissioned by the Forest Engineering Research Institute of Canada in 1978 and prepared by Piteau & Associates/Geotechnical Consultants.

7. Rock can be classified into five types referred to as rock mass classification (RMC) values and identified as RMC 1, 2, 3, 4, and 5.

8. The steps taken to determine RMC values and apply these to road development cost estimates are:

    a. examine and record surface hardness, weathering, and block diameter in the field,

    b. determine subsurface hardness from the table in Appendix IV with this title,

    c. determine RMC value from the table Appendix IV with this title, and

    d. apply selected RMC values to applicable tables and formulas for road cost estimates.

9. The text and tables in Appendix IV have been derived from the report prepared by Piteau & Associates. These tables are used to determine the RMC-based factors required for road cost estimates.

10. In all circumstances where a complete interpretation of the rock mass classification system is required, the Piteau & Associates report is to be consulted directly.

11. Subgrade cost estimates are determined as follows:

    a. all section lengths must be 0.3 km or longer, with the exception of short spurs and those sections which do not qualify under Subsection 3.b. Lengths are recorded to the nearest 0.001 km,

    b. In general each section should consist of a length of road wherein:

        i. variations in slope percentage measurement are within $\pm$ 15 percent of the average slope measured in the section. The uphill slope percent is measured at right angles to the road centreline, parallel to the ground of the uphill slope and recorded to the nearest percent (no rounding permitted). Where the road is located on a bench, the slope of the bench is used,

        ii. construction categories vary by no more than $\pm$ 1 construction category about the average construction category in the section,

        iii. one rock mass class predominates,

        iv. all stabilizing material is trucked or no stabilizing material is trucked,

        v. stabilizing material is either all gravel or all rock.

    c. All sections with 60 percent or more (by length) of RMC 5 are designated as ‘hard’.

d. If the total length of all ‘hard’ sections is greater than 90 percent of the total length of sections containing rock (i.e., CC 2-6), then the cost table for RMC 5 Only is applied to all roads in the appraisal.

e. If the roads do not qualify under 'c.' and 'd.' above, then the subgrade construction cost estimate table for other RMC's is applied to all roads in the appraisal.

12. The subgrade construction cost estimate includes the cost of clearing and grubbing, stripping, stump removal, incidental log decking, ditch construction, landing and turnout construction, material costs and installation of pipe culverts (with diameters up to and including 0.9 m) and single log abutment culverts with spans less than 3.5 m.

Table 5-2: Subgrade Construction Cost Estimates Expressed in Thousands of Dollars per Kilometre

a) RMC 5 ONLY

Uphill Side Slope %	Construction Category					
	CC1	CC2	CC3	CC4	CC5	CC6
0-4	27.3	36.2	59.9	85.8	108.1	123.4
5-14	28.3	37.9	63.1	90.3	113.6	129.5
15-24	29.6	40.0	67.0	95.7	120.1	136.8
25-34	30.7	42.0	70.7	100.8	126.3	143.7
35-44	31.7	43.8	74.2	105.7	132.2	150.3
45-54	32.6	45.5	77.5	110.3	137.9	156.3
55-64	33.4	47.2	80.8	114.8	143.3	162.6
65-74	34.2	48.8	83.9	119.1	148.5	168.4
75-84	35.0	50.3	86.8	123.3	153.6	174.1
85-94	35.6	51.8	89.7	127.3	158.4	179.5
95-104	36.3	53.2	92.5	131.1	163.2	184.9
105-114	36.8	54.6	95.2	134.9	167.8	190.0
115-124	37.4	55.9	97.8	138.5	172.2	195.1
125-134	37.9	57.2	100.4	142.1	176.6	200.0
135-144	38.4	58.4	102.8	145.5	180.8	204.8
145-150	38.8	59.6	105.3	148.9	185.0	209.5

b) OTHER RMC's

Uphill Side Slope %	Construction Category					
	CC1	CC2	CC3	CC4	CC5	CC6
0-4	27.3	34.0	51.9	72.0	89.6	101.9
5-14	28.3	35.5	54.5	75.5	93.9	106.6
15-24	29.6	37.3	57.6	79.7	98.9	112.2
25-34	30.7	39.0	60.6	83.7	103.7	117.5
35-44	31.7	40.6	63.4	87.5	108.3	122.6
45-54	32.6	42.1	66.0	91.1	112.7	127.5
55-64	33.4	43.5	68.6	94.6	116.9	132.1
65-74	34.2	44.9	71.0	97.9	120.9	136.7
75-84	35.0	46.2	73.3	101.2	124.8	141.0
85-94	35.6	47.4	75.6	104.2	128.5	145.2
95-104	36.3	48.6	77.8	107.2	132.2	149.3
105-114	36.8	49.7	79.9	110.1	135.7	153.3
115-124	37.4	50.8	81.9	112.9	139.2	157.2
125-134	37.9	51.9	83.9	115.7	142.5	161.0
135-144	38.4	52.9	85.8	118.3	145.8	164.7
145-150	38.8	53.9	87.7	120.9	149.0	168.3

5.3.3.2 Bridges and Culverts

1. A cost estimate for a bridge or a culvert may only be made and used in the appraisal or reappraisal of a cutting authority area where its necessity is substantiated by field data.

2. Crib back-fills and all site preparation and bridge protection features are included, as well as material supply and erection. Except where noted below, no adjustment of table values is permitted.

3. Input data within table boundaries is rounded to fit; no interpolation of values is permitted.

5.3.3.2.1 Log Bridges

1. Cost estimates for log bridges are based on span lengths (distance between the centres of the top sill logs) and average crib height (distance from the bottom of the bottom sill log to the point where the stringer rests on the top sill log as measured along the centre line of the bridge) from Table 5-3. The average crib height is the numerical average of the crib heights on both banks of the water course.

2. Table 5-3 is used for estimating costs of all timber-decked and gravel surfaced log bridges with span lengths from 3.5 to 20.4 m and crib heights from single log to 5.4 m.

Table 5-3: Log Bridge Cost Estimates Expressed in Thousands of Dollars

Span Length (m)	Single Log Sill	Multi-Log Crib Average Crib Height (m)			
	1	2	3	4	5
4	2.0	5.5	10.5	15.5	20.5
5	2.3	7.3	12.4	17.4	22.4
6	4.2	9.2	14.2	19.3	24.3
7	6.1	11.1	16.1	21.1	26.2
8	7.9	13.0	18.0	23.0	28.0
9	9.8	14.8	19.9	24.9	29.9
10	11.7	16.7	21.7	26.7	31.8
11	13.5	18.6	23.6	28.6	33.6
12	15.4	20.4	25.5	30.5	35.5
13	17.3	22.3	27.3	32.4	37.4
14	19.2	24.2	29.2	34.2	39.3
15	21.0	26.1	31.1	36.1	41.1
16	22.9	27.9	32.9	38.0	43.0
17	24.8	29.8	34.8	39.8	44.9
18	26.6	31.7	36.7	41.7	46.7
19	28.5	33.5	38.6	43.6	48.6
20	30.4	35.4	40.4	45.5	50.5

5.3.3.2.2 Permanent or Portable Bridges

1. Cost estimates for permanent or portable bridges, built of any material except logs, are based on total span length and average abutment height (distance from the ground surface interface to the bottom contact point with the girders) from Table 5-4. Each bridge abutment must be measured at the mid-point, from the ground surface interface to the bottom contact point with the girders. Each measured abutment height is then added together and averaged to get a resultant abutment height.

2. Table 5-4 is used for estimating costs of permanent or portable bridges with span lengths from 2 to 30.4 m and abutment heights from 0 to 10.4 m.

3. Table 5-4 includes costs for supervision, design, site preparation, supply and installation, freight and haulage (excluding barging), and rip-rap to flood design. Barging costs are allowed as an add-on to the tabular cost estimate. If the barging of bridge materials is done in conjunction with other equipment/materials, then the cost of barging the bridge material should be prorated by the licensee. This table covers any bridge with L60 to L165 load rating.

4. Table 5-4 does not apply to:

    a. Multi-span bridges: A construction estimate form must be completed.

    b. Pile driving: Where piles may be driven to depths of 13 m or more, a construction estimate form must be completed for the bridge construction.

    c. Portable bridges that are reused (see section 5.3.1).

    d. Cost estimates for bridge sizes outside the table limits and pipe culverts greater than the aforementioned sizes require non-tabular cost estimates completed in accordance with section 5.3.4.

    e. Extra width bridges with one or more additional stringers and/or deck panels installed (i.e., exceeding 4.9 metres in total width between guardrails measured at mid-span).

Table 5-4: Permanent/Portable Bridge Cost Estimates Expressed in Thousands of Dollars

Span Length (metres)	Abutment Height (metres)										
	0	1	2	3	4	5	6	7	8	9	10
2	10.9	13.5	16.2	18.8	21.5	24.2	26.8	29.5	32.1	34.8	37.4
3	16.3	19.0	21.6	24.3	26.9	29.6	32.3	34.9	37.6	40.2	42.9
4	21.8	24.4	27.1	29.7	32.4	35.0	37.7	40.3	43.0	45.7	48.3
5	27.2	29.9	32.5	35.2	37.8	40.5	43.1	45.8	48.4	51.1	53.8
6	32.6	35.3	37.9	40.6	43.3	45.9	48.6	51.2	53.9	56.5	59.2
7	38.1	40.7	43.4	46.0	48.7	51.4	54.0	56.7	59.3	62.0	64.6
8	43.5	46.2	48.8	51.5	54.1	56.8	59.4	62.1	64.8	67.4	70.1
9	49.0	51.6	54.3	56.9	59.6	62.2	64.9	67.5	70.2	72.9	75.5
10	54.4	57.0	59.7	62.4	65.0	67.7	70.3	73.0	75.6	78.3	81.0
11	59.8	62.5	65.1	67.8	70.5	73.1	75.8	78.4	81.1	83.7	86.4
12	65.3	67.9	70.6	73.2	75.9	78.5	81.2	83.9	86.5	89.2	91.8
13	70.7	73.4	76.0	78.7	81.3	84.0	86.6	89.3	92.0	94.6	97.3
14	76.1	78.8	81.5	84.1	86.8	89.4	92.1	94.7	97.4	100.1	102.7
15	81.6	84.2	86.9	89.6	92.2	94.9	97.5	100.2	102.8	105.5	108.1
16	87.0	89.7	92.3	95.0	97.6	100.3	103.0	105.6	108.3	110.9	113.6
17	92.5	95.1	97.8	100.4	103.1	105.7	108.4	111.1	113.7	116.4	119.0
18	97.9	100.6	103.2	105.9	108.5	111.2	113.8	116.5	119.2	121.8	124.5
19	103.3	106.0	108.7	111.3	114.0	116.6	119.3	121.9	124.6	127.2	129.9
20	108.8	111.4	114.1	116.7	119.4	122.1	124.7	127.4	130.0	132.7	135.3
21	114.2	116.9	119.5	122.2	124.8	127.5	130.2	132.8	135.5	138.1	140.8
22	119.7	122.3	125.0	127.6	130.3	132.9	135.6	138.3	140.9	143.6	146.2
23	125.1	127.8	130.4	133.1	135.7	138.4	141.0	143.7	146.3	149.0	151.7
24	130.5	133.2	135.8	138.5	141.2	143.8	146.5	149.1	151.8	154.4	157.1
25	136.0	138.6	141.3	143.9	146.6	149.3	151.9	154.6	157.2	159.9	162.5
26	141.4	144.1	146.7	149.4	152.0	154.7	157.4	160.0	162.7	165.3	168.0
27	146.9	149.5	152.2	154.8	157.5	160.1	162.8	165.4	168.1	170.8	173.4
28	152.3	154.9	157.6	160.3	162.9	165.6	168.2	170.9	173.5	176.2	178.9
29	157.7	160.4	163.0	165.7	168.4	171.0	173.7	176.3	179.0	181.6	184.3
30	163.2	165.8	168.5	171.1	173.8	176.5	179.1	181.8	184.4	187.1	189.7

5.3.3.2.3 Culverts

1. All pipe culverts up to and including 0.9 m diameter and all single log abutment culverts up to 3.4 m span length are included in the subgrade cost estimates.

2. Costs for culverts 1.0 m diameter to 1.8 m diameter are estimated using Table 5-5. Culverts less than 1.0 m diameter shown in Table 5-5 are for use in non-tabular estimates only. Culverts greater than 2.0 m diameter require a non-tabular cost estimate completed in accordance with section 5.3.4.

Table 5-5 Culvert Cost Estimate

Diameter (m)	Cost per lineal metre	Diameter (m)	Cost per lineal metre
0.3	$42.00	0.9	$118.00
0.4	$49.00	1.0	$169.00
0.5	$67.00	1.2	$207.00
0.6	$83.00	1.4	$253.00
0.7	$95.00	1.6	$348.00
0.8	$106.00	1.8	$400.00

5.3.3.3 Additional Stabilizing Material

1. Stabilizing material is gravel or broken rock which is placed on the road subgrade to provide stable support and a running surface for logging related equipment. Some stabilizing material may be created on site during subgrade construction. If additional stabilizing material is required it may be obtained from the adjacent cut-bank or trucked in.

5.3.3.3.1 Stabilizing Cost Estimate

1. The total cost estimate per kilometre for the stabilizing material is:

   Cost Estimate ($/km) = V multiplied by U

   Where:

   a. V is the loose volume of additional stabilizing material expressed in cubic metres of material per kilometre of road, and

b. U is the cost estimate of the additional stabilizing material expressed in dollars per loose cubic metre of material.

2. The volume of rock or gravel expressed in cubic metres required to stabilize one kilometre of road which includes the length of turnouts and landings is calculated as follows:

   a. Where rock is used, VR = 1000D (W + 1.0D),

   b. Where gravel is used, VG = 1000D (W + 1.5D),

Where:

   i. W is the stabilized road width and has the value of 6.2 metres,

   ii. D is the loose depth of stabilizing material measured in metres determined from the table 5-6,

   iii. VR is the volume of rock, and

   iv. VG is the volume of gravel.

Table 5-6: Additional Loose Stabilizing Material Depths expressed in metres

Side Slope	Construction Category					
	1	2	3	4	5	6
0-4	0.8	0.8	0.7	0.6	0.6	0.5
5-14	0.7	0.7	0.7	0.6	0.5	0.4
15-24	0.7	0.6	0.6	0.5	0.4	0.4
25-34	0.6	0.6	0.5	0.4	0.3	0.3
35-44	0.5	0.5	0.4	0.3	0.3	0.2
45-54	0.4	0.4	0.3	0.3	0.2	0.1
55-64	0.3	0.3	0.3	0.2	0.1	0.0
65-74	0.2	0.2	0.2	0.1	0.0	0.0
75-84	0.2	0.1	0.1	0.0	0.0	0.0
85-94	0.1	0.1	0.0	0.0	0.0	0.0
95-104	0.0	0.0	0.0	0.0	0.0	0.0
105-114	0.0	0.0	0.0	0.0	0.0	0.0
115+	0.0	0.0	0.0	0.0	0.0	0.0

3. The factors of 1.0 and 1.5 relate to the slope of the fill material. More gravel than rock is required to stabilize a given kilometre of road (i.e., 1.5:1 fill slopes for gravel and 1:1 fill slopes for rock).

4. The quantities per kilometre and the depths by construction categories are only used in conjunction with tabular cost estimates.

5. a. A cost estimate may be calculated for the cost of additional stabilizing material and associated labour including:

   i. borrow pit preparation,

   ii. rock drilling, explosives, loading of explosives and blasting (e.g., compacted or cemented gravel, oversize material, etc.),

   iii. loading gravel trucks when truck haul required, or placement of materials when trucking is not required,

   iv. truck hauling, when required, and

   v. spreading and compacting material.

   b. The cost estimates assume borrow pits are located adjacent to a road right-of-way. If an access road must be constructed to a borrow pit to build a road to a cutting authority area (the cutting authority area road), then a road cost estimate may be calculated for that access road and included as part of the road development adjustment in the appraisal of the first cutting authority area accessed by the cutting authority area road.

   c. Where the material to be used to stabilize the subgrade will be moved less than 0.1 km, the cost estimate for each material is:

i.	Gravel	$\$5.65/m^3$
ii.	Soft and Medium Rock	$\$9.03/m^3$
iii.	Hard Rock	$\$11.86/m^3$

   Where: m^3 = cubic metre of stabilizing material

   d. Where the material to be used to stabilize the subgrade must be moved a distance of 0.1 km or further, the cost estimate for each material is:

i.	Gravel	$\$(7.74 + 0.616\ d)/m^3$

ii. Soft and Medium Rock $\$(11.11 + 0.616\ d)/m^3$

iii. Hard Rock $\$(13.94 + 0.616\ d)/m^3$

Where:

'd' is the distance that the material must be moved from the source of the material to the mid-point of the road section to be stabilized.

e. In this section:

i. 'Soft-medium-Rock' is rock where less than 60 percent of the rock from the excavation is RMC 5.

ii. 'Hard Rock' is rock where 60 percent or more of the rock from the excavation is RMC 5.

5.3.3.3.2 Capping

1. Where the available material consists of large round or broken rock or 'dirty' or fine gravel which is unsuitable for normal traffic conditions, the appraisal may include a cost estimate for 'capping' of 0.2 m (loose depth) of suitable rock or gravel surfacing on road sections where required and providing the application is substantiated. This material is trucked in from a different borrow pit than the source of the stabilizing material unless the material has been sorted in the pit.

2. For further information, refer to the surfacing section in the regional manager's standardized methodology (i.e., *Detailed Engineering Estimates for Coast Stumpage Appraisal, Coast Forest Region*).

5.3.4 Non-tabular Cost Estimates

1. The cost for any of the non-tabular projects identified in section 5.3.1.2(4)(a) will be estimated by preparing a non-tabular cost estimate. The regional manager may approve a standardized methodology to estimate the cost for the following projects:

a. End Hauling.

b. Road Reconstruction and Replacement.

c. Permanent Bridge Construction.

d. Bridge Structural Repair.

e. Regional manager approved tributary development projects (construction estimate forms).

2. Where the cost estimate of road development project requires a non-tabular cost estimate, the district manager shall be advised by the licensee of project details prior to the commencement of construction. This notice is required to facilitate a current cost review of the project for later consideration in an appraisal.

3. The road development project cost estimate will be based on the data that is required by the regional manager and the equipment and labour rates as specified in Appendix I. Where a piece of equipment required to complete the project is not included in Appendix I then the equipment rate may be obtained from the *2001 - 2002 Equipment Rental Rate Guide 'The Blue Book'*. All equipment rates are assumed to be for a 3 year old machine using the July 1, 2001 cost base.

4. Where the cost of a project is the subject of a contract entered into after arms-length competitive bids have been made for the contract, the cost of completing that project may be used as the development project cost estimate where that is authorized by the regional manager.

5.3.4.1 Data Requirements

1. A project requiring a non-tabular cost estimate must be designed so as to require only the amount of materials and labour that are necessary to build a safe and functional structure.

2. The data that may be required by the district manager for non-tabular "excavation and fill" cost estimates are:

   a. plans, profiles, cross-sections showing the ground and design grade lines,

   b. volume summary sheets giving quantities by various soil types,

   c. time and materials, equipment and labour, repairs, drainage structures and surfacing where required, and

   d. a cost estimate for the project.

3. The data that may be required by the district manager for non-tabular reconstruction cost estimates are:

   a. a map showing details of the project including stations, drainages, and other information important to the project,

   b. time and materials, equipment and labour, estimate for excavation, repairs, drainage structures, reditching, and resurfacing where required, and

c. a cost estimate for the project.

4. The data that may be required by the district manager for non-tabular bridge and culvert construction cost estimates are:

   a. for permanent structures of 30.4 m span or greater: plans, specifications and design for the proposed structure, detailed materials cost estimate, equipment and labour, amount of timber accessed by the structure, and usage in years for harvesting all the timber,

   b. for permanent structures of 20.4 m span or less: an economic comparison between a log structure and the permanent structure, and

   c. for pipe culverts greater than 1.8 m in diameter: the same information as required for permanent structures of 30.4 span or greater.

5.4 Road Maintenance Cost

1. A road maintenance cost may be used in the calculation of a tenure obligation adjustment to take into account the licensee's performance of the following activities:

   a. grading,

   b. brush control,

   c. minor surfacing repairs,

   d. sanding,

   e. snowplowing,

   f. ditch maintenance and repair,

   g. replacement of culverts ≤ 0.9 m on active roads,

   h. slough removal,

   i. deactivation,

   j. minor repairs to roads due to slides, erosion and flood damage,

   k. road use charges except those described in section 5.5.

2. A road maintenance cost may only be included in the calculation of a tenure obligation adjustment for those parts of a cutting authority area where the logs will be transported over a road by truck.

3. Where the cutting authority area is located in the Sunshine Coast, Squamish, Campbell River, Chilliwack or South Island Forest District, the road maintenance cost is $\$1.58/m^3$.

4. Where the cutting authority area is located in the Queen Charlotte, North Coast or North Island - Central Coast Forest District, the road maintenance cost is $\$2.02/m^3$.

5.5 Road Use Charges

1. A road use charge may be used in the calculation of a tenure obligation adjustment, if:

    a. the road to which the road use charge applies is required to transport logs from the cutting authority area to the appraisal log dump,

    b. the road use charge is not referred to in subsection 2, or 3a or 3b of this section,

    c. the licensee submits to the district manager with the appraisal data submission:

        i. a completed Request for Approval of a Road Use Charge Form,

        ii. a map showing the location of the road and a copy of the written road use agreement, and

        iii. written confirmation by the regional manager that the road use charge specified in the application, or an amount specified by the regional manager is approved, and

    d. the term of the road use agreement is completely within the period for which the appraisal shall apply, and

    e. the licensee promises in writing to submit a copy of every auditable monetary transaction evidencing payment by the licensee for road use when that is requested by the regional manager.

2. Charges as a Share of Road Maintenance

    a. These charges may not be included in an appraisal or reappraisal.

3. Miscellaneous Road Charges

    a. Forest Service Roads

        No road use charges with respect to a road that is declared, determined, built, maintained or modified by the ministry, may be included in an appraisal or reappraisal;

    b. Permitted Road

        No road use charges for roads built on Crown land, authorized by road permit or any other cutting authority document may be included in an appraisal or reappraisal;

c. Other Roads

No road use charge for a road on an Indian reserve or on private land owned by a third party at arm's length and not subject to a lease held by the licensee, its affiliate or agent of either the licensee or the third party, may be included in an appraisal or reappraisal unless there is no route capable of being built at a lower cost through Crown land and the charges are reasonable, do not exceed compensation that might be determined under the forest legislation, and are proven through the presentation of auditable documents.

4. Land Use Charges

No land use charges may be considered in an appraisal or a reappraisal.

5.6 Basic Silviculture Cost

1. Except where basic silviculture performed or to be performed on a cutting authority area is or will be funded by the Crown or an agent of the Crown a basic silviculture cost may be used in the calculation of a tenure obligation adjustment where the licensee is required to perform basic silviculture on the cutting authority area being appraised or reappraised.

2. The basic silviculture cost depends on the geographic location of the cutting authority area being appraised or reappraised as described in table 5-7.

Table 5-7: Basic Silviculture Cost

Where the cutting authority area is located in:	The basic silviculture cost expressed in $/m^3 is:
Queen Charlotte Island Forest District	3.09
Chilliwack Forest District	4.42
Squamish Forest District	2.69
Sunshine Coast Forest District	3.38
South Island Forest District	2.73
Campbell River Forest District	2.16
North Island - Central Coast Forest District	2.49
North Coast Forest District	3.42

5.7 'Y' Grade Number

1. The forest district 'Y' grade fractions by timber species as shown in Table 5-8 shall be used to calculate the tenure obligation adjustment to account for the 'Y' grade timber that is not subject to the appraised stumpage rate.

2. The 'Y' grade fraction for each timber species to be used in the appraisal or reappraisal of the cutting authority area shall be the fraction under the timber species which is opposite the forest district in which the cutting authority area is located.

3. The 'Y' grade number to be used in the calculation of the tenure obligation adjustment for a cutting authority area being appraised or reappraised is the sum of the products of the net cruise volume of each timber species in the cutting authority area multiplied by the 'Y' grade fraction for that species, divided by the total net cruise volume in the cutting authority area.

Table 5-8: Forest District 'Y' Grade Fractions by Timber Species

District in which the cutting authority area is located	Balsam	Hemlock	Cedar	Cypress	Fir	Spruce	Pine	Deciduous
Campbell River	0.0571	0.0457	0.0153	0.0361	0.0120	0.0189	0.0299	0.0400
Chilliwack	0.0781	0.0720	0.0139	0.0618	0.0220	0.0134	0.1138	0.1143
North Coast	0.0490	0.0869	0.0206	0.0442	0.0213	0.0516	0.0663	0.0383
North Island-Central Coast	0.0439	0.0483	0.0132	0.0505	0.0221	0.0462	0.0894	0.0194
Queen Charlotte Islands	0.0671	0.0808	0.0253	0.0853	0.0213	0.0690	0.0309	0.0383
South Island	0.0368	0.0523	0.0119	0.0375	0.0166	0.0380	0.1106	0.0358
Squamish	0.2598	0.1684	0.0129	0.0599	0.0488	0.4133	0.2730	0.1115
Sunshine Coast	0.0695	0.0519	0.0242	0.0793	0.0227	0.0370	0.1041	0.0266

5.8 Market Logger Road Cost

1. The market logger road cost expressed in $/m3 to be used to calculate the tenure obligation adjustment in an appraisal or reappraisal of a cutting authority area is calculated as follows:

   a. Where the entire cutting authority area is harvested by helicopter to a water drop, the market logger road cost = 0.

   b. For all other cutting authority areas the market logger road cost = $\frac{8.14}{1 - YG}$

Where: YG = Y grade number calculated under section 5.7

5.9 Return to Forest Management

The return to forest management factor is 1.093.

5.10 Tenure Obligation Adjustment

1. The tenure obligation adjustment is used to calculate the stumpage rate for a cutting authority other than a timber sale licence entered into under section 20 of the *Act*.

2. The tenure obligation adjustment (TOA) is calculated as follows:

$$TOA = \left[\frac{FPA + LVC + RD + RM + RU + BS}{1 - YG} * RFM \right] - MLRC$$

Where:

FPA	=	forest planning and administration cost
LVC	=	low volume cost
RD	=	total road development cost
RM	=	road maintenance cost
RU	=	road use charges cost
BS	=	basic silviculture cost
YG	=	Y grade number
RFM	=	return to forest management
MLRC	=	market logger road cost

Stumpage Rate Determination 6

6.1 Stumpage Rate Calculation for a Cutting Authority Entered into Under Section 20 of the Act

Sections 6.1.1 through 6.1.5 are the policies and procedures for determining a stumpage rate for a cutting authority that is entered into under section 20 of the *Act*.

6.1.1 Indicated Upset Stumpage Rate (IUSR)

1. The IUSR for a timber sale licence shall be determined by the timber sales manager and shall be the greater of:

   a. The variable cost to prepare the timber for sale, or

   b. Seventy percent of the final estimated winning bid (FEWB) for that timber sale licence calculated according to section 4.5.

   For timber sale licences containing greater than 20 % mature coniferous timber, the IUSR is the lesser of a. and b., above.

2. The variable cost per cubic metre of preparing the timber for sale shall be calculated by the timber sales manager.

6.1.2 Prescribed Minimum Stumpage Rate

The minimum stumpage rate is prescribed by the minimum stumpage rate regulation (BC Regulation 354/87). The current minimum stumpage rate is $0.25 per cubic metre.

6.1.3 Upset Stumpage Rate

The upset stumpage rate for a timber sale licence is the greater of:

1. The indicated upset stumpage rate, or

2. the prescribed minimum stumpage rate.

6.1.4 Stumpage Rate

The stumpage rate is the total of the upset stumpage rate plus the bonus bid, if any, that must be paid by the licensee.

6.1.5 Market Price

The stumpage rate is the market price.

6.2 Stumpage Rate Calculation for a Cutting Authority Other than a Cutting Authority Entered into Under Section 20 of the *Act* or a Cutting Authority for which a Stumpage Rate is Determined Under Chapter 7

Sections 6.2.1 through 6.2.5 are the policies and procedures for determining a stumpage rate for a cutting authority other than timber sale licence entered into under section 20 of the *Act* or a cutting authority for which a stumpage rate is determined under chapter 7.

6.2.1 Indicated Rate (IR)

1. The IR is the difference between the final estimated winning bid (FEWB) determined for the cutting authority under section 4.5 and the tenure obligation adjustment (TOA) determined under section 5.10.

2. Expressed as an equation:

$$IR = FEWB - TOA$$

6.2.2 Prescribed Minimum Stumpage Rate

The minimum stumpage rate is prescribed by the Minimum Stumpage Rate Regulation (BC Regulation 354/87). The current minimum stumpage rate is $0.25 per cubic metre.

6.2.3 Reserve Stumpage Rate

The reserve stumpage rate for a cutting authority is determined by selecting the greater of:

1. the indicated rate, or

2. the prescribed minimum stumpage rate.

6.2.4 Upset Stumpage Rate

The upset stumpage rate is the total of the reserve stumpage rate plus any administration levies which may be charged under section 7.5.1.

6.2.5 Total Stumpage Rate

The total stumpage rate is the upset stumpage rate plus the bonus bid, if any, that must be paid by the licensee.

6.2.6 Market Price

The stumpage rate is the market price.

Miscellaneous Timber Pricing Policies 7

7.1 Average Stumpage Rates by District and Species

1. Revenue Branch shall produce a schedule of average sawlog stumpage rates for each species of timber in each forest district of the coast forest region. Those rates are effective on the date they are approved by the Director.

7.2 Community Forest Agreements

1. For community forest agreements issued under sections 43.2, 43.4 or 43.51 of the *Act* and associated road permits, the coniferous sawlog stumpage rate for each species of timber will be:

Balsam	6.97
Hemlock	6.14
Cedar	8.51
Cypress	8.00
Fir	4.37
Spruce	4.07
All Pine	6.47

This provision expires on December 31, 2006.

Section 7.3, 7.4, 7.4.1, 7.5 and 7.6 do not apply to community forest agreements and associated road permits.

7.3 Road Permits

1. Except as provided in subsection (2) of this section, the stumpage rate for a road permit will be determined using Ministry stumpage billing records.

2. The stumpage rate for a road permit issued in conjunction with a timber sale licence entered into under sections 20, 21 and 23 of the *Act* or a licence to cut entered into under Section 47.6 of the *Act* will be the stumpage rate applicable to the cutting authority that authorizes harvesting in the cutting authority area to which the road permit provides access.

3. For the purposes of this section, a stumpage billing history record of timber harvested under a timber licence, where the timber licence area is within a tree farm licence area will be included with and be considered the stumpage billing history record of timber harvested under the tree farm licence.

4. a. Where the Ministry has a stumpage billing history record of timber harvested under a licence, the stumpage rate for a road permit is the weighted average sawlog stumpage rate of cutting authorities, other than a road permit, for cutting authority areas that are located in the same forest district as the area to which the road permit applies, and that are issued under the licence that entitles the licensee to apply for the road permit.

   b. The weighted average stumpage rate is the sum of the stumpage billed for all coniferous sawlogs during the billing period referred to in paragraph (c) of this subsection, divided by the sum of the volume of those species and grades.

   c. The billing period referred to in paragraph (b) of this subsection for a road permit appraisal or reappraisal, with an effective date between November 1, 2004 and January 31, 2005 is the twelve month billing period ending August 31, 2004. Thereafter, the billing period will be updated annually effective February 1st and will be the twelve month period ending November 30th.

5. Where there are no stumpage billing history records from which the stumpage rate may be determined under subsection 4, and the licence that the cutting authority is issued under does not provide for an allowable annual cut or has an allowable annual cut of Crown timber equal to or greater than 5 000 m^3, the stumpage rate for a road permit is the weighted average sawlog stumpage rate of:

   a. all cutting authorities, other than road permits, that are issued under the licence that entitles the licensee to apply for the road permit, or

   b. where there is no volume in the stumpage billing history record, all the cutting authorities that do not provide for an allowable annual cut or have an allowable annual cut of Crown timber equal to or greater than 5 000 m^3 other than road

permits, that are for areas located in the same forest district as the area to which the road permit applies.

6. Where there are no stumpage billing history records from which the stumpage rate may be determined under 4, and the licence that the cutting authority is issued under has an allowable annual cut of Crown timber less than 5 000 m^3 per year the stumpage rate for a road permit is the weighted average sawlog stumpage rate of all the cutting authorities, other than road permits, that are for licences that have an allowable annual cut of less than 5 000 m^3 in the same forest district as the area to which the road permit applies.

7. The cost of a road constructed under a road permit may be eligible for inclusion as a tenure obligation adjustment under chapter 5 in the appraisal of the first tributary cutting authority.

8. All road permits will be reappraised in accordance with section 3.3.2.

7.4 Salvage Logging Stumpage Rates

1. The source of salvaged timber is:

    a. Post Harvest Material:

        i. wooden culverts and bridges, and

        ii. post logging residue, and

    b. Damaged Timber:

        i. blowdown green and aged timber, and

        ii. fire, disease, insect or physically damaged timber.

2. The qualifying criteria and methodology for calculating salvage logging stumpage rates for round logs is specified below:

    a. post harvest material must not be combined in the same cutting authority area with timber damaged through natural events.

    b. except where damage to adjacent or contiguous timber occurs after harvesting is completed on the adjacent primary logging cutting permit area and the harvesting equipment has been demobilized from the area, damaged timber salvage cutting authority areas must be scattered, and not adjacent or contiguous to an existing cutting authority area.

    c. the total cutting authority area for damaged salvage harvesting may vary in size but individual clearcut openings within the cutting authority area shall not exceed two hectares.

    d. only damaged trees and hazard trees as approved by the Ministry may be removed on a damaged timber salvage cutting permit.

    e. post harvest salvage may only occur after primary logging has been satisfactorily completed and residue and waste assessments have been submitted to and accepted by the Ministry.

    f. salvage can not occur on a road right-of-way which has an active timber mark associated with it.

    g. the stumpage rate will be fixed for a period not exceeding one year.

3. Where the source of the salvaged timber is damaged timber, the stumpage rate for each species of the salvaged timber in a forest district will be determined using

schedule of average sawlog stumpage rates for damaged timber approved by the Director.

4. Where the source of the salvaged timber is post harvest material, the stumpage rate for each species of timber in a forest district will be determined using the schedule of average sawlog stumpage rates for post-harvest material approved by the Director.

7.4.1 Levies for Salvage Forestry Licences to Cut Cutting Authorities

1. An administration levy may be added to the reserve stumpage rate. The administration levy is equal to the district manager's cost estimate of administration provided by the Crown for preparing a Forestry Licence to Cut for salvage timber. An administration cost estimate is made for every cutting authority where the district office has to prepare all details of a Forestry Licence to Cut for salvage. No levy is applicable to professional applications.

2. A basic silviculture levy may be added to the reserve stumpage rate. The levy is equal to the district manager's cost estimate of silviculture liability to be incurred by the Crown.

7.5 Cutting Authority Area With Less than 2 500 m^3 of Timber Volume

1. Where a cutting authority area has less than 2 500 m^3 of timber the stumpage rate may be determined:

   a. by estimating the volume of each species of the timber in the cutting authority area appraised,

   b. by using the stumpage rates that the Revenue Branch determines under section 7.1 for each of those species in the forest district in which the cutting area is located, and

   c. by calculating the weighted average stumpage rate for all of the species of timber in the cutting authority area.

2. Where an estimate of the species volume has not been made, the species stumpage rate determined under section 7.1 must be used for the cutting authority area.

3. The stumpage rate calculated under this section is not adjusted quarterly.

7.6 Decked Timber

In the case of decked timber, or timber which has been felled and bucked, such as on rights-of-way, and the volume exceeds 300 m^3, an appraisal is completed on an "as is, where is" basis by using the procedures in section 7.5 to calculate the stumpage rate and adding to it the person who determines the stumpage rate's estimate of the costs of felling, bucking, yarding and decking.

7.7 Miscellaneous Stumpage Rates

7.7.1 Miscellaneous Stumpage Rates

Unless otherwise specified in a cutting authority, the stumpage rates for deciduous species, low grade logs and timber in specified areas listed in Table 7-1, are listed in Table 7-1.

7.7.2 Special Forest Products

Unless otherwise specified in a cutting authority, Table 7-2 shall be used for determining stumpage rates for the specified products from all sources of Crown timber. The table in effect on the date of scale shall be used to determine the stumpage rate.

7.7.3 Marine Log Salvage

7.7.3.1 Beachcomb

A beachcomb rate may apply to logs salvaged in the Vancouver log salvage district under Part 9 of the *Act*, and stray logs salvaged elsewhere in coastal waters.

The stumpage rate for beachcomb is listed in table 7-1.

7.7.3.2 Root Buck

A root buck rate may apply to any species where the roots are attached at the time stray logs are salvaged in coastal waters. Excludes logs salvaged from coastal waters within the boundaries of the North Coast and Kalum Forest Districts.

The rate for root buck is listed in table 7-1.

7.7.3.3 Wahleach Island Catchment Basin

The stumpage rate for logs salvaged at Wahleach Island catchment basin operated by B.C. Debris Control Board is listed in table 7-1.

7.7.3.4 Deadhead Logs

A deadhead rate may apply to deadhead logs as defined in the log salvage regulation, salvaged in coastal waters and subject to scaling requirements under part 6 of the *Act*.

The stumpage rate for deadhead logs is listed in table 7-1.

Table 7-1: Miscellaneous Stumpage Rates

Species	Region Product Code	Product	Stumpage Rate ($/m^3)
Deciduous	N/A	All (except grades 'Y', 'Z')	$1.00
Yew	N/A	All	$0.25
All Species	N/A	Grade 'Y'	$0.25
All Species	**BC**	Beachcomb	$0.70
All Species	**RB**	Root buck	$7.80
All Species	**DH**	Wahleach Island catchment basin	$0.25
All Species	**DH**	Deadhead logs	$0.25

Table 7-2: Special Forest Products Stumpage Rates

Species	Region Product Code	Product	Stumpage Rate
All Species	**CA**	Cants (produced from dead and down post-logging residue)	$9.60/m^3
All Species	**FW**	Firewood (round or split) - maximum length 1.2 m	$1.00/m^3
Cedar	**MT**	Mining Timbers - maximum length 2.4 m	$3.00/m^3
All Species (except Cedar)	**PR**	Posts and Rails (split and round)	$1.20/m^3
Cedar	**PR**	Posts and Rails (split and round)	$3.00/m^3
All Species	**SB**	Shake and Shingle Bolts, Blocks and Blanks	$5.30/m^3
All Species	**SK**	Shakes	$6.00/m^3
All Species	**SS**	Stakes and Sticks (Car Stakes, Grape Stakes, Hop Poles, Lagging (split, Orchard Props, Pickets and Palings, Stakes and Stocks (sticks))	$1.20/m^3
All Species	**XM**	Christmas Trees Less than 3 m - 3 m to 5 m - greater than 5 m -	$0.20 each $1.00 each $1.50 each

Cants are produced from dead and down post-logging material that would not make a sawlog as determined by the regional manager.

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Appendices

Appendix I Equipment and Labour Rates

(Cost Base July 1, 2001)

MACHINE DESCRIPTION	TYPICAL MODEL	$/HOUR
Crawler Tractor	Cat D9R, Komatsu D275/355	249.10
Crawler Tractor	Cat D9N (years: 1993 thru 1997)	236.20
Crawler Tractor	Cat D8N, Komatsu D155AX-3	186.25
Crawler Tractor	Cat D7R, Liebherr PR742, Fiat Allis FD255	151.65
Crawler Tractor	Cat D6M, Fiat Allis FD175, Komatsu D58E	129.10
Crawler Tractor	Cat D5C, JD 650G	98.35
Rock Drill (includes labour)	Compressor: 750 cfm on tank chassis	206.01
Grader	Cat 14H, Komatsu GD750	112.90
Front End Loader (Gravel)	Cat 970F, Komatsu WA450-3, Case 921	140.65
Front End Loader (Logs)	Cat 972G, Kawasaki 90Z, Volvo L180C/D	163.15
Hydraulic Excavator incl. Brush Guard & Thumb	Hitachi EX400-3, Komatsu PC400LC	238.70
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 330BL, Case 9050B, Link Belt 4300Q	196.41
Hydraulic Excavator incl. Brush Guard & Thumb	Hitachi EX300LC, Kobelco SK300LC	173.14
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 325BL, Hitachi EX270LC, JD 270LC	158.62
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 322BL, Komatsu PC220LC-6, JD 230LC	146.58
Hydraulic Excavator incl. Brush Guard & Thumb	Cat 320BL, Hitachi EX200LC-5, JD 200LC	136.90
Gradall	Gradall G1000, XL5200	158.50
Logging Truck (Highway)	All Triaxle	90.60
Logging Truck (Off Highway)	All	138.21
Self Loading Log Truck	Highway log truck + 4.5 t deck crane	103.80
Gravel Truck	10.7 m^3	78.93
Gravel Truck Articulated (labour included)	25 - 29 tonne: Cat D30C/D, Terex 2766/3066	123.65
Lowbed	5 axle unit: tandem tractor and lowbed	81.50
Lowbed	150 tonne (same as Off-Hwy Truck)	138.21
Concrete Mix Truck	6.1 m^3	87.60
Concrete Vibrator (labour not included)	5 m^3	4.18
Concrete Mixer (labour not included)	0.17 m^3	6.66
Crane - Truck Mounted	18 tonne	93.70
Soft Track Skidder	KMC 2100/2400	137.75
Rubber Tired Skidder	Cat 515, Clark H-66-G, JD 548-G	94.60
Vibrator Compactor	Cat 515 plus 2.7 t to 3.6 t roller	107.15
Tractor and Grid Roller	Cat 515 plus grid roller	108.05
Labourer	Includes 40% payroll loading	30.16
Roadman	Includes 40% payroll loading	30.41
Crib/Culvert Maker, Powderman	Includes 40% payroll loading	31.93
Landingman	Includes 40% payroll loading	32.35
Rockdriller & Powderman (for load & blast only)	Includes 40% payroll loading	69.53
Bridgeman	Includes 40% payroll loading	38.35
Powersaw (labour not included)	All	4.70
Faller, including powersaw cost	Includes 40% payroll loading	58.59

Sources:

Cost surveys, B.C. Road Builders & Heavy Construction Association, Equipment Rental Rate Guide (rates based on a 3 year old machine), and IWA agreement rates including payroll loading.

Notes:

All equipment rates include labour for operators and swampers unless otherwise noted,

Labour components include all payroll loading, and

Lowbedding cost estimates for tracked equipment only may be recognized for detailed engineering cost estimates (section 5.1.5).

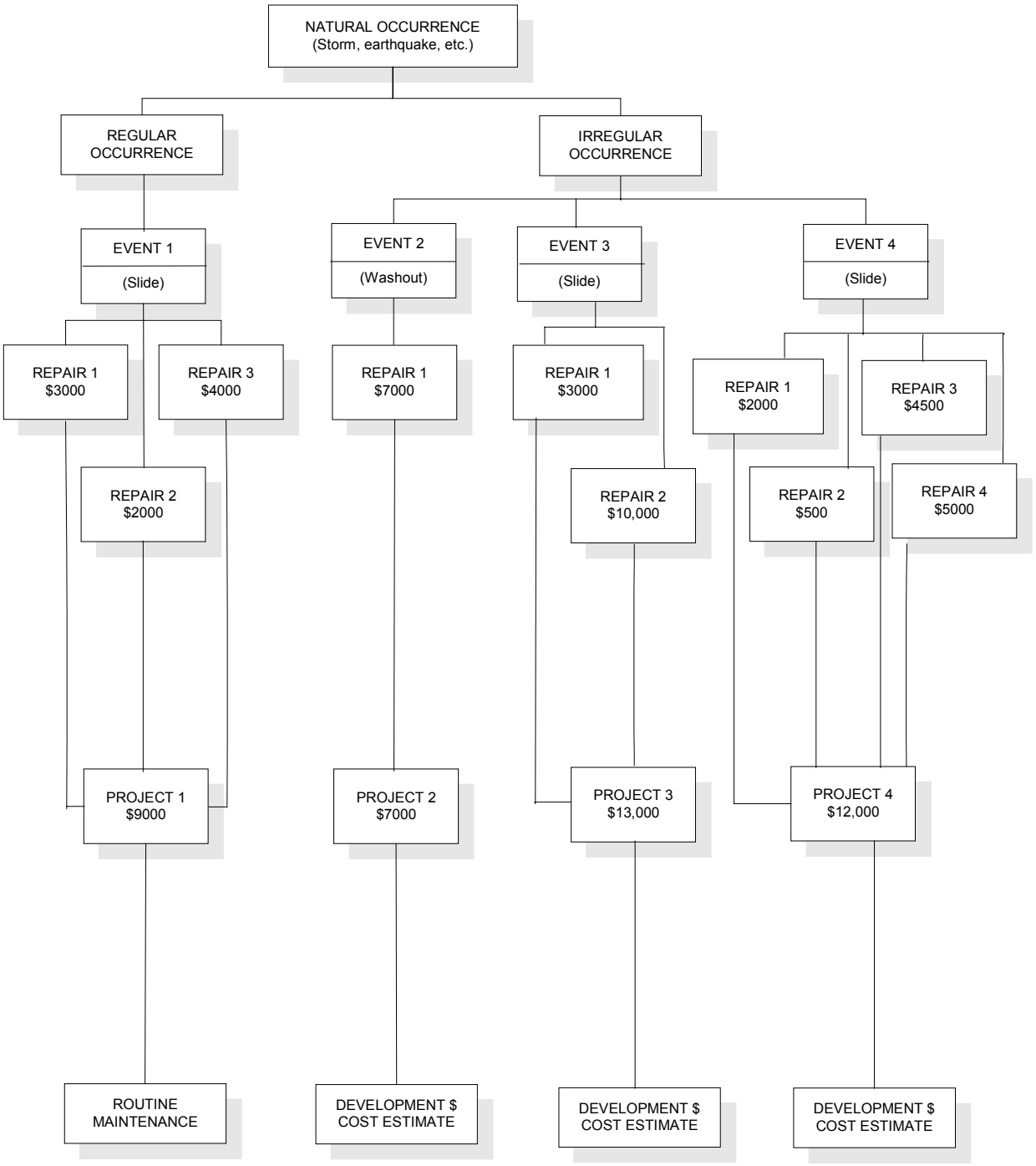
The degree of recognition of lowbedding costs varies by the estimated number of hours of each machine usage as follows:

1. 1 - 40 hours: to and from the site (mobilization and demobilization),

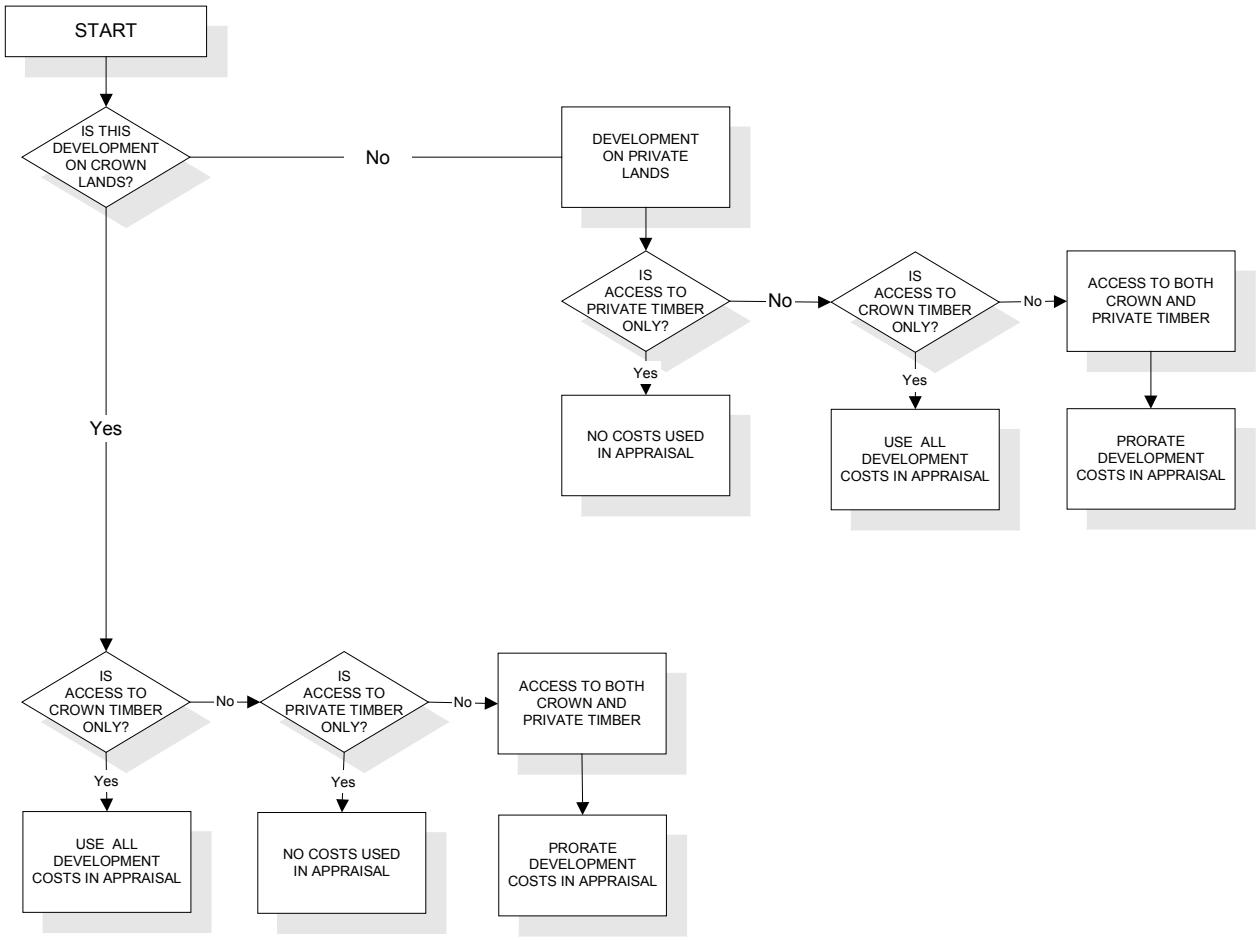
2. 41 - 80 hours: to the site (mobilization) only, and

3. 81 plus hours: nil.

Appendix II Reconstruction and Replacement



Appendix III Development Cost Allocation



Appendix IV Rock Mass Classification

Surface Hardness	Weathering on Surface				
	W1	W2	W3	W4	W5
H2	R2	R2	R2, R3	R3, R4	R4, R5
H3	R3	R3	R3, R4	R4, R5	
H4	R4	R4	R4, R5		
H5	R5	R5			

Hardness Factors:

H2 Can be scraped and peeled by a pocket knife with difficulty. Shallow indentations (i.e., 1/16 inch to 1/8 inch) made by firm blow of geological pick.

H3 Cannot be scraped or peeled with a pocket knife. Hand-held specimen can be fractured with single firm blow of hammer end of geological pick.

H4 Hand-held specimen requires more than one blow with hammer end of geological pick to fracture it.

H5 Hand-held specimen is very hard and requires many blows of hammer end of geological pick to fracture it.

Weathering Factors:

W1 The rock shows no loss of strength or any other effect of weathering other than slight staining on a few discontinuities*.

W2 The intact rock is slightly discoloured but not noticeably lower in strength than the fresh rock. The discontinuities are discoloured and some discolouration extends into the rock.

W3 The intact rock is discoloured and noticeably weakened. Discontinuities are stained and/or contain filling comprising altered material.

W4 Discolouration and weakening extends throughout rock mass and rock mass tends to crumble somewhat. Rock can be excavated with geological pick.

W5 The rock is totally discoloured and decomposed and is entirely changed to a soil but the original structure of the rock is mostly preserved.

* The term discontinuities refers to natural breaks, shears or faults in the bedrock.

Surface Hardness	**Average Block Diameter**				
	0 to 3"	3" to 6"	6" to 1'	1' to 4'	4'+
R2	RMC1	RMC2	RMC2	RMC2	RMC2
R3	RMC2	RMC2	RMC3	RMC3	RMC3
R4	RMC2	RMC3	RMC4	RMC4	RMC4
R5	RMC3	RMC4	RMC5	RMC5	RMC5

Description of RMC Values:

RMC1 Rock crumbles under firm blows with the point of a geological pick and can be peeled by a pocket knife (R1). The average block diameter is not important. The rock may be harder (R2) but must have an average block diameter of less than 3 inches. This rock can be excavated by free digging or ripping.

RMC2 Rock can be scraped and peeled by a pocket knife with difficulty and shallow indentations (i.e., 1/16 inch to 1/8 inch) can be made by a firm blow of a geological pick (R2) and has an average block diameter greater than 3 inches. The rock may be somewhat harder (R3) but must have an average block diameter less than 6 inches or hard (R4) and have an average block diameter less than 3 inches. The rock is usually rippable.

RMC3 Rock cannot be scraped or peeled with a pocket knife. Hand-held specimen can be fractured with a single firm blow of the hammer end of a geological pick (R3) and has an average block diameter greater than 6 inches. Rock may be harder (R4) but must have an average block diameter of 3 to 6 inches or very hard (R5) and have an average block diameter of less than 3 inches. The rock is usually not rippable.

RMC4 Hand-held specimen requires more than one blow with hammer end of geological pick to fracture (R4) and has an average block diameter greater than 6 inches. Rock may be very hard (R5) but must have an average block diameter of 3 to 6 inches. The rock must be blasted.

RMC5 Hand-held specimen is very hard and requires many blows of the hammer end of a geological pick to fracture it (R5) and has an average block diameter greater than 6 inches. The rock must be blasted.

Appendix V Appraisal Map Content

1. The appraisal map(s) submitted with the appraisal data submission must be at a scale of 1:5000 or 1:10000. Additional maps at other scales may also be included as required.

2. At a minimum, the maps shall provide the following information:

    a. Cutting permit and block boundaries.

    b. Delineation of timber to be harvested and timber to be retained within the cutting authority area.

    c. Delineation of areas by harvest method.

    d. Delineation of areas where tree crown modification is planned.

    e. The geographic centre and common junction of the permit for truck haul distance calculations.

    f. Existing roads.

    g. Roads to be constructed.

    h. Location of roads/structures that are the subject of non-tabular estimates.

    i. Location, size and types of culverts and bridges.

3. For appraisal data submission where an extension is requested reference may be made to the original map submitted.

4. The appraisal map may be attached to the initial appraisal data submission in electronic format prior to the cutting permit being approved.

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