



Ministry of
Forests
and Range



MANUAL REVISION TRANSMITTAL

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2.2.1.1 Changed Circumstance Reappraisal Procedure

1. The licensee shall submit to the district manager an interior appraisal data submission and map if the cutting authority area must be reappraised because of a changed circumstance under section 2.2.1.
2. Thereafter the changed circumstance reappraisal procedure is the same procedure as that required by section 2.1(2) through 2.1(7).

2.2.1.2 Effective Date of a Changed Circumstance Reappraisal

1. Except as provided in subsections (2) and (3) of this section, a reappraisal because of a changed circumstance is effective on the day after the effective date of the most recent appraisal or reappraisal of the cutting authority area prior to the changed circumstance reappraisal.
2. Where the changed circumstance is because of an amendment to the cutting authority area referred to in subsection 2.2.1(1)(c), the reappraisal is effective on the first day of the month following the date that the district manager approves the amendment.
3. Where the changed circumstance is a result of sudden and severe damage referred to in subsection 2.2.1(1)(d), the effective date of the reappraisal is the first day of the month following the date when the event that caused the sudden and severe damage stopped on the cutting authority area.

2.2.2 Minister's Direction

1. The Minister may direct:
 - a. a **determination, redetermination or variance of a stumpage rate** at any time and that
 - b. the **determined**, redetermined or varied stumpage rate be effective on any future date.

2.2.2.1 Minister's Direction Procedure

1. The licensee shall submit to the district manager an interior appraisal data submission, and map, if requested by the district manager or their designate, within forty-five days of the minister's direction.
2. Thereafter, **the procedure for determining, redetermining or varying a stumpage rate under section 2.2.2** shall be the same procedure as that required by subsections 2.1(3) through 2.1(7) **except as may otherwise be directed by the minister.**

2.2.3 Reappraisals Due to Insect Damage

1. a. A cutting authority with an adjustable stumpage rate may be reappraised on or after April 1, 2006 only once under this section during the term and all extensions of the cutting authority on the basis of a revised appraisal data submission if the licensee submits a revised appraisal data submission to the District Manager.
- b. The revised appraisal data submission is the appraisal data submission that was used in the most recent appraisal or reappraisal of the cutting authority area prior to the revision, hereinafter referred to in this section as the original ADS, with changes permitted only to the cruise data in the original ADS in accordance with the paragraphs (c) and (d) of this subsection.
- c. The licensee may either:
 - i. Update the insect attack code information from the field for each species of timber in the cruise data for codes 1, 2, 3, 5, 6, 7 and 8 as defined in the *Cruising Manual* and recompile the cruise for the cutting authority area by using the cruise data from the cruise in the original ADS for the plots in that part of the cutting authority area where timber has been harvested and combining that with the cruise data with updated insect attack codes for the plots in that part of the cutting authority area where timber has not been harvested, or
 - ii. Recompile the cruise data that was in the cruise in the original ADS.
- d. Notwithstanding any other paragraph of this section, other data must be changed if it is required by the manual in effect at the time of the reappraisal and was not submitted in the original ADS.

2.2.3.1 Insect Damage Reappraisal Procedure

1. The insect damage reappraisal procedure is the procedure required by section 2.1(2) through 2.1(7).

2.2.3.2 Effective Date of an Insect Damage Reappraisal

1. The effective date of an insect damage reappraisal is the first day of the month following the month in which the District Manager receives the revised appraisal data submission.

2.4 Correctable Errors

1. In this section, a correctable error means:
 - a. an error in transcribing or compiling approved cruise field data or in the application of approved loss factor and taper equations,
 - b. an error in a calculation made as part of the appraisal data submission,
 - c. an error in transcribing the data from an appraisal data submission or in performing the calculations specified in the manual, or
 - d. an error in the application of published appraisal parameters.
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 the 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 2.1(6) to 2.1(7), 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.

2.5 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 Forests and Range authorized to redetermine a stumpage rate under section 1.2.1 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.

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3.2 Chip Average Market Values

1. Revenue Branch shall determine and publish an average market value (AMV) for each of whitewood chips and cedar chips for each lumber average market value zone.
2. A chip AMV determined under subsection (1) of this section becomes a part of this manual when it is published.

3.3 Calculation of Species End Product Selling Price

1. The total end product selling price in \$/m³ is determined for each species using lumber recovery factors from the cruise compilation summary, LRF update add-ons, current applicable average market values for the species and zone and species chip yield factors. Lumber and chip prices are each calculated to the nearest cent before being totalled.
2. In the case of burned timber, the burn percent is used to reduce the selling price of the stand by assigning a zero value to the estimated chip recovery of the burned wood. This is to compensate for an increased manufacturing cost, lower lumber and chip recovery and lower lumber and chip average market values associated with processing burned timber.

$$\text{Burn Percent} = \frac{\text{BT m}^3}{\text{Total m}^3} * 100$$

where

BT m³ = volume of light, moderate and heavily fire-damaged timber
Total m³ = total volume *inclusive* of burned wood

3. The only other adjustment to the appraisal is for heavily fire-damaged timber and is covered under section 4.4.4 (Tree to Truck Additive for Damaged Timber).

Table 3-2 Chip Yield Factors

Species	Factor (BDU/fbm)
Balsam	.00072
Cedar	.00067
Fir	.00098
Hemlock	.00089
Larch	.00119
Lodgepole Pine	.00087
Spruce	.00076
White Pine	.00078
Yellow Pine	.00095

c. Percent (%) Stud AMV

The percent stud AMV is determined as follows:

- i. If the stud log percent is 45 or greater and less than or equal to 65:

$$\text{the percent stud AMV} = (5 * \text{stud log \%}) - 225,$$

- ii. If the stud log percent is less than 45, the percent stud AMV = 0.
- iii. If the stud log percent is more than 65, the percent stud AMV = 100.

6. Shipping Differential

- a. The Shipping Differential for the following points of appraisal are:

Table 3-3 Shipping Differentials

\$0.58/m ³	\$1.01/m ³	\$5.80/m ³	\$1.25/m ³ * †
Bear Lake Fort St. James Mackenzie Quesnel Strathnaver	Adams Lake Clear Lake Louis Creek Merritt Midway Okanagan Falls Princeton Slocan Thrumms Westbank Ymir	Fort Nelson	All of the points of appraisal in Zone 7 as set out in Table 4-1

* In addition to any other shipping differential as set out in this table.

† This shipping differential shall expire July 1, 2008.

b. Manufacturing Cost Differential

Table 3-4 Manufacturing Cost Differential

\$5.95/m ³
Fort Nelson

c. Calculation of Total Species End Product Selling Price

$$\text{Lumber AMV} = (\% \text{ Stud AMV}/100) * (\text{Stud AMV}/1000) \\ + (1.0 - (\% \text{ Stud AMV}/100)) * (\text{Random AMV}/1000),$$

$$\text{Lumber SP} = \text{Lumber AMV} * \text{Appraisal LRF},$$

$$\text{Chip SP} = \text{Chip AMV} * \text{Chip Yield}, \text{ and}$$

$$\text{Total Species SP} = \text{Lumber SP} + \text{Chip SP} - D.$$

- Where: SP = Selling Price in \$/m³
- AMV = Average Market Value (of the appropriate species in the appropriate zone).
- Appraisal LRF = The LRF for all logs from Section 3.3 (4).
- Chip Yield = The Chip Yield for all logs from section 3.3 (5).
- D = The Differentials for the appropriate points of appraisal from section 3.3 (6).

2. The point of appraisal that when used in the calculation of the operating cost estimate produces the least cost total development, harvesting and transportation determination of the operating cost estimate unless:
 - a. five years have passed from the date that a milling facility was permanently rendered incapable of producing lumber and chips, and
 - b. it was the only milling facility associated with that point of appraisal.
3. Where a point of appraisal cannot be selected under subsection (2) of this section because of the conditions of paragraphs (a) and (b) of that subsection, the point of appraisal that produces the next lowest total development, harvesting and transportation estimate must be used in the determination of the operating cost estimate in accordance with the requirements of subsection (2) of this section.
4. The process in subsection (3) of this section is continued until a point of appraisal can be selected without being excluded by the conditions of paragraphs (2)(a) and (b).
5. For the purposes of determining the least cost total harvesting, development and transportation estimate, the locations that were used in measurement of cycle time for each point of appraisal in Table 4-1 as of October 1, 2003 will be used.
6. The manufacturing costs and average market values for the selling price zone in Table 4-1 for the least cost point of appraisal selected under paragraphs 2, 3 or 4 must be used in the appraisal.

Table 4-1 Points of Appraisal

Northern Interior (Zone 5, 15, 25 & 35)			
Bear Lake	Fort St. James	Mackenzie	Smithers
Burns Lake	Fraser Lake	Prince George	Strathnaver
Clear Lake	Houston	Quesnel	Upper Fraser
Engen	Isle Pierre		Vanderhoof
Skeena (Zone 6, 16, 25 & 36)			
Terrace	Carnaby	Hazelton	Kitwanga

Southern Interior (Zone 7, 17, 25 & 37)					
Adams Lake	Galloway	Merritt	Thrums		
Armstrong	Grand Forks	Midway	Valemount		
Canal Flats	Kamloops	Okanagan Falls	Vavenby		
Canoe	Kelowna	Park Siding	Westbank		
Castlegar	Lavington	Princeton	Ymir		
Craigellachie	Louis Creek	Radium			
Creston	Lumby	Revelstoke			
Elko	McBride	Slocan			
South Cariboo (Zone 8, 18, 25 & 38)					
100 Mile House	Chasm	Lytton	Squamish	Williams Lake	Boston Bar
Fort Nelson - Peace (Zone 9, 19 & 25)					
Chetwynd	Fort Nelson	Fort St. John	Taylor		

7. The following Points of Appraisal will expire on the dates indicated: Upper Fraser (June 30, 2008), Taylor (July 31, 2008), Louis Creek (August 1, 2008), Carnaby (February 24, 2010), **Boston Bar (July 1, 2009)**.

4.3.2.4 Drainage Structures

An appraisal may include a cost estimate for large drainage structures only where their requirement is substantiated by field data. Such structures shall be placed so as to maintain the natural drainage pattern of the area crossed by the proposed road. All pipe culverts under 950 mm in diameter and all single log abutment culverts under 3.5 m span length are included in the subgrade cost estimates (see section 4.3.2.1).

See page 37 of the *Forest Road Engineering Guidebook* (June 2002) for a detailed description.

See pages 104 (Pipe Culverts) and 106 (Log Culverts) of the *Forest Road Engineering Guidebook* (June 2002) for detailed description.

An electronic version of the above guidebook can be accessed at:

<http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/Guidetoc.htm>

1. Culverts

The cost estimates for the supply and installation of culverts from 0.3 m to 1.8 m in diameter are determined from Table 4-4 that follows. Culverts smaller than 0.95 m are included in the subgrade cost estimates in section 4.3.2.3.

Costs for culverts smaller than 0.95 m are included in Table 4-4 for use where a detailed engineering cost estimate in section 4.3.3 requires the use of culverts smaller than 0.95m. Detailed engineering cost estimates are required for culverts larger than 1.8m, no interpolation of values is permitted. Total installation cost for culverts includes all costs of transporting the culvert to the jobsite and all costs of installation of the culvert to the final subgrade stage.

Table 4-4 Culvert Appraisal Cost Estimates

INSTALLED CULVERT COST ESTIMATE (\$)												
Culvert	Equivalent Round Diameter (m)											
	0.3 m	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.6	1.8 m
Length (m)	X-Section Area (m ²)											
	0.07 m ²	0.13	0.20	0.28	0.38	0.50	0.64	0.79	1.13	1.54	2.01	2.54 m ²
9	408	497	612	753	919	1110	1327	1570	2131	2795	3561	4429
10	421	520	647	804	988	1201	1442	1711	2336	3073	3924	4889
11	433	543	683	855	1057	1292	1557	1853	2540	3351	4288	5349
12	446	565	718	906	1127	1382	1672	1995	2744	3629	4651	5808
13	459	588	754	957	1197	1473	1787	2137	2948	3907	5014	6268
14	472	611	789	1008	1266	1564	1901	2279	3153	4185	5377	6728
15	484	633	825	1059	1336	1655	2017	2421	3357	4463	5740	7187
16	497	656	860	1110	1405	1745	2131	2563	3561	4741	6103	7647
17	510	679	896	1161	1474	1836	2246	2704	3766	5019	6467	8106
18	523	701	931	1212	1544	1927	2361	2846	3970	5298	6830	8566
19	535	724	967	1263	1614	2018	2476	2988	4174	5576	7193	9025
20	548	747	1002	1314	1683	2109	2591	3130	4378	5854	7556	9485
21	561	770	1038	1365	1753	2199	2706	3272	4583	6132	7919	9945
22	574	792	1073	1416	1822	2290	2821	3414	4787	6410	8282	10404
23	587	815	1109	1467	1892	2381	2936	3556	4991	6688	8645	10864
24	599	838	1144	1519	1961	2472	3051	3698	5195	6966	9008	11324
25	612	860	1180	1570	2031	2563	3165	3839	5400	7244	9372	11783
26	625	883	1215	1621	2100	2653	3280	3981	5604	7522	9735	12243
27	638	906	1250	1672	2170	2744	3395	4123	5808	7800	10098	12702
28	650	929	1286	1723	2239	2835	3510	4265	6012	8078	10461	13162
29	663	951	1321	1774	2309	2926	3625	4407	6217	8356	10824	13622
30	676	974	1357	1825	2378	3017	3740	4549	6421	8634	11187	14081

4.3.2.6 Cattle Guards, Remedial Fences and Pipeline Crossings

1. Where the installation of cattle guards, remedial fences, wing fences or pipeline crossings are required, the following cost estimates apply:
 - a. Cattle Guards \$4822 each
 - b. Remedial Fences and Wing Fences \$807 per 100 m
 - c. Pipeline Crossings \$3400
2. The cost estimates include new or recycled materials, transportation and installation.

4.3.3 Detailed Engineering Cost Estimates

1. Where the tabular cost estimating procedures of this manual cannot be used due to their physical limitations, the cost of a project shall be estimated by preparing a detailed engineering cost estimate. The regional manager may approve standardized procedures to generate cost estimates for use in projects as listed below.
2. Where specific development projects involve detailed engineering cost estimates, the district manager shall be advised of project details no later than 60 days before the start of work on the project.
3. For appraisal purposes, the estimated development project costs are made on the basis of the site-specific data using the definitions found in section 4.3.2.2 for common subgrade construction variables, the culvert costs included in Table 4-4, and the equipment and labour rates specified in Appendix I. Due consideration is given to arm's length competitive bids for any specific project. The appraisal estimate is not constrained in any way by a licensee's actual costs.
4. If the ECE is re-estimated once after construction as provided in section 2.3 (using more accurate on site information) the new detailed engineering cost estimate replaces the original (used in the initial appraisal). Apportionment agreement or bid tender cost estimates are not re-estimated only trended. ECE's are not re-estimated due to labour and/or equipment rates being updated periodically in Appendix I.
5. Where road sections estimated as a detailed engineered cost estimate are contiguous with tabular cost estimates, costs for mobilization and demobilization will only be allowed for special equipment not required for the construction of the tabular roads. The following specific situations are considered for detailed engineering cost estimates:
 - a. New construction of long term, primary access road sections, that will have 300 000 cubic metres of harvested crown timber hauled over them annually for at least ten years.

- b. Road construction on uphill side slopes greater than 50 percent.
- c. When rock percent as calculated in section 4.3.2.2(4) is greater than 50 percent, or terrain class 4 and 5.
- d. End haul construction (of roads and landings) requiring removal by truck of excavated material to a separate area to avoid side casting on steep and/or sensitive sites.
- e. Overland construction to provide a roadbed by trucking in material for extensive filling; see page 81 of *Forest Road Engineering Guidebook* for a more detailed description.
- f. For log bridges and non-log bridges (including ice bridges) that are not included in the subgrade cost estimates, eligible costs include site planning and the same phases as listed in section 4.3.2.4(2).
- g. Structural maintenance of bridges, substructure and cribwork.
- h. Reconstruction of roads and pertinent structures. Cost estimates for reconstruction are not to exceed the tabular cost for new construction under similar conditions.
- i. Upgrade of roads and pertinent structures resulting in a change in the standard of the road and structure or where the licensee was not obligated to carry out road maintenance prior to the appraisal. Where road maintenance obligations exist, road upgrade is limited to widening the running surface, vertical and horizontal realignment, and additional culverts.
- j.
 - i. Replacement or addition of stabilizing material to the existing road running surface or where stabilizing material was not previously used, for uninterrupted road lengths of 0.3 km, or greater.
 - ii. The costs for additional stabilizing material must be determined using section 4.3.2.5 unless the material is placed in conjunction with geo fabric, geo grids, corduroy or where the stabilizing material requires processing such as screening or crushing.
 - iii. Road lengths less than 0.3 km are included in the road management cost estimate.
- k. Culverts greater than 1.8 m in diameter. Culverts greater than 30 m in length regardless of diameter also qualify. The cost estimate includes all costs of transporting the culvert to the jobsite and all costs of installation of the culvert to the final subgrade stage.
- l. Placement of additional stabilizing material where geo fabric, corduroy, crushed

Southern Interior Forest Region

Boston Bar	Kamloops	Merritt	Salmon Arm
Clearwater	Kelowna	Pemberton	Vernon
Hope	Lillooet	Penticton	Nakusp
Canal Flats	Creston	Grand Forks	Nelson
Castlegar	Fernie	Greenwood	Revelstoke
Cranbrook	Golden	Invermere	100 Mile House
McBride	Valemount	Princeton	Quesnel
Williams Lake			

For cutting authorities serviced by a camp (see section 4.8.2), the distance to support centre is the one-way road distance from the geographic centre of the cutting authority to the isolated camp (including that covered by the non-road portions of the route). Where more than one alternative is possible, the least cost alternative is used. The distance is measured to the nearest kilometre.

The following distance variables are included:

- NEWDIST200 = 0 IF DS ≤ 100 km
 = (DS-100) if DS > 100 km and ≤ 200 km
 = 100 if DS > 200 km
- DIST200S150 = 0 if DS ≤ 150 km
 = (DS-150) if DS > 150 km and ≤ 200 km
 = 50 if DS > 200 km

7. Volume per Tree (VOLTREE)

The average net cruise volume per tree (m³), rounded to two decimals. For partial cutting, it is based on the trees to be harvested.

8. a. Gross Volume per Tree (GVOL)

Gross volume per tree (m³) is computed as: $VOLTREE / (1 - \text{defect \%}/100)$.

Where:

Defect is the estimate of decay, waste and breakage (DWB) percent of the coniferous gross volume from the cruise summary for the trees to be harvested. Where the licence requires harvesting in deciduous stands, defect percent is

taken from the stand volume of the cruise summary. Defect percent is recorded to the nearest whole percentage point for appraisal calculation purposes.

b. $GVOLSQR = (GVOL)^2$

8. Small Tree Volume (SMALL TREEVOL)

SMALLTREEVOL = Average net merchantable volume (m³) per tree if <0.34 m³/tree. If ≥ 0.34 m³/tree SMALLTREEVOL = 0.

9. Small Tree Dummy Variable (SMALLTREED)

SMALLTREED = 1 if average net merchantable volume per tree <0.34 m³/tree, otherwise = 0.

10. Heli Yarding Distance (HELIYARD)

The average loaded horizontal yarding distance (in kilometres) flown by helicopter measured to the nearest 0.1 km.

11. Skyline Yarding Distance (SKYYARD)

Average skyline slope distance (m).

12. Species Percent

Coniferous species volumes indicated in the harvest method summary of the cruise compilation are entered in species information section of the appraisal data submission. Where the licence requires harvesting in deciduous stands, the deciduous volume (all deciduous species) indicated in the harvest method summary of the cruise compilation is entered as a lump sum (all deciduous species) in the cruise information section of the appraisal data submission.

The species percent data (coniferous and deciduous) used in the tree-to-truck and hauling equations is automatically calculated as:

$$\text{Species volume (m}^3\text{)} / (\text{Total Net Cruise Volume (m}^3\text{)} + \text{Deciduous Volume (m}^3\text{)})$$

HE - Hemlock

SP - Spruce

FI - Fir

LO - Lodgepole Pine

LA - Larch

BA - Balsam

CE - Cedar

iii. if the conditions under 4.5.1 (1)(c) are met, then

the place that would have been the point of appraisal if the timber had been harvested in the area from which the current cutting rights are transferred from.

e. add this to the average weighted cycle time from paragraph 'c' above.

The cycle consists of loading, hauling, weighing, unloading, return time, and unavoidable delays. The cycle time will normally be determined by taking into consideration all the factors that may affect it: distance, expected rate of speed, necessary delays, expected standard of roads and their maintenance, traffic density, and seasonal weather conditions.

In many cases standard cycle time schedules from specific road junctions to the point of appraisal have been developed and should be used (Sector times) .

Unavoidable delays are periods when the truck is on the job but not operating due to unpredictable delays such as; tightening binder chains, minor repairs made by driver, checking and adjusting brakes, minor delays prior to loading and unloading, refuelling, etc. Unavoidable delay time does not include any breakdown which requires shop repair, the services of a skilled mechanic, or a spilled load of logs. The time for load, unload and unavoidable delay is set at 75 minutes for cable yarding systems (see section 4.4.3 (4)) and 60 minutes for all other systems (see section 4.4.3 (1), (2), & (3))

3. Haul Method

Cost estimates do not recognize different types of logging trucks. The estimate is based upon the possible haul method, either highway or off-highway and not specifically on the licensee's particular method.

Highway hauling is assumed when loaded logging trucks must travel in part over roads administered under the *Highway Act*, without truck-to-truck transfer, to the point of appraisal, or on roads administered under the *Industrial Road Act* and Forest Service Roads as defined in *Forest Act* where prolonged known road restrictions prevent the use of oversize loads, or in all instances where the volume per tree is less than 0.20 m³.

Off-highway hauling is assumed when loaded logging trucks can travel over roads administered under the *Industrial Road Act* and Forest Service Roads as defined in *Forest Act* to the point of appraisal, or to a recognized reload. Where prolonged known restrictions (e.g., bridge load limit, narrow road, through rock cut, WCB Regulations, etc.) prevent the use of oversize loads, highway haul is assumed.

4.5.2 Truck Haul Cost Estimates

4.5.2.1 Primary Haul

The primary truck haul cost estimate is determined from the following equation.

1. Highway Haul

For all highway haul equations if the CT is greater than 0 then the minimum is \$1.26/m³. If CT = 0 then \$/m³ = 0.

$$\$/\text{m}^3 = \text{CONSTANT} + (1.90 * \text{CT}) + (0.41 * \text{BA}\%/100) + (2.32 * \text{DE}\%/100) + (0.87 * \text{FI}\%/100) + (3.21 * \text{HE}\%/100) + (0.47 * \text{LO}\%/100)$$

Where:

REGION	:	Cariboo	FNP	Nelson	Prince Rupert	Other
CONSTANT	=	0.05	0.95	0.22	-0.64	-0.26

2. Off-Highway Haul

For all off-highway haul equations if CT is greater than 0 then the minimum is \$1.38/m³. If CT = 0 then \$/m³ = 0.

$$\$/\text{m}^3 = \text{CONSTANT} + (1.36 * \text{CT}) + (0.76 * \text{BA}\%/100) + (1.38 * \text{HE}\%/100) - (0.38 * \text{SP}\%/100)$$

Where:

REGION	:	Kamloops	Nelson	FNP	Other
CONSTANT	=	1.47	0.72	1.81	0.40

For highway, off-highway and secondary transportation:

CT = Cycle time to the nearest 0.1 hours

BA = Balsam HE = Hemlock

DE = Deciduous Species (all) LO = Lodgepole Pine

FI = Fir SP = Spruce

- d. have full time camp staff, and
 - e. be outside of a support centre listed in section 4.4.2(6).
3. Where a cutting authority area, serviced by a camp, may be accessed only by rail, the camp cost estimate for that cutting authority area is \$2.66/m³, otherwise the cost estimate is \$2.41/m³.

4.8.3 Low Volume Cost Estimate

All fully appraised cutting authorities are eligible for a specific low volume cost estimate in addition to all other phase cost estimates.

1. Where the licence to which the cutting authority belongs has an allowable annual cut of Crown timber greater than 0 m³ and less than 3 000 m³:

$$$/m^3 = 8.35$$

2. Where the licence to which cutting authority belongs has an AAC of 3 000 m³ or greater and the net cruise volume for the cutting authority is less than 3 000 m³;

The cost estimate is: (prorated by volume)	Ground Skidding	\$0.91/m ³
	Highlead & Grapple	\$1.03/m ³
	All Other	\$0.00/m ³

4.9 Basic Silviculture Cost Estimate

1. Basic silviculture treatment cost estimates include all treatment costs that are required to achieve free-growing obligations. Basic silviculture may not be required on some cutting authorities where:
 - a. this intent has been specified in the licence, cutting authority, or by applicants agreement, or
 - b. the basic silviculture work is funded by any Crown agency.

When either of the above circumstances exist, the basic silviculture cost estimate is not included in the appraisal, except as noted in section 5.6.4 of this manual.

2. The area to be appraised for silviculture is the net merchantable area (NMA) from the cruise. The area must be the same as the area directly attributed to the appraised Net Merchantable Volume (NMV) of the cutting authority. Where deciduous harvest volume is included in an appraisal the area for the deciduous must also be included as part of the net merchantable area.
3. Table 4-9 lists the associated cost estimates (\$/ha) for Biogeoclimatic Ecosystem Classification (BEC) zone, subzone, and variant combinations across the interior. Where the subzone/variant combination is not listed in the table, the BEC undifferentiated subzone “un” cost estimate is used.
4. Where a cutting authority area includes more than one BEC/zone/subzone/variant combination, a prorated BEC zone/subzone/variant cost estimate will be determined by prorating the cost estimates from Table 4-9 for the primary and secondary BEC combination identified in the appraisal data submission based on their respective percent by net merchantable area identified in the appraisal data submission.
5. The cutting authority silviculture cost estimate is calculated as follows:

$$\$/m^3 = \frac{[NMA(\text{ha}) * [\text{Prorated BEC zone/subzone/variant cost}(\$/\text{ha}) * (\text{CAPCUT } \%/100) * 1.25]]}{NMV(m^3)}$$

5.6 Calculation of Stumpage Rate

5.6.1 Calculation of Indicated Stumpage Rate

The indicated stumpage rate for a cutting authority is defined as:

$$\text{ISR} = \text{IBR} + (\text{VI} - \text{IMVI})$$

Where:

ISR = Indicated Stumpage Rate

IBR = Interior Base Rate as defined in Section 5.5

VI = Value Index for the cutting authority as defined in Section 5.2

IMVI = Interior Mean Value Index, as defined in Section 5.3

5.6.2 Prescribed Minimum Stumpage Rate

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

5.6.3 Reserve Stumpage Rate

For each cutting authority area, except those containing timber licence volume, the reserve stumpage rate is determined by selecting the greater of:

- the indicated stumpage rate, or
- the prescribed minimum stumpage rate.

5.6.4 Levies

1. A silviculture levy may be added to:
 - a. the reserve stumpage rate determined under section 5.6.3,
 - b. the stumpage rate determined under sections 6.2(1) or 6.4(5),
 - c. the reserve rate indicated in Table 6-4 for all species grades 4 and 6,
2. The levy is equal to the district manager's cost estimate of silviculture costs to be incurred by the Crown.

3. Development/Administration Levy:
 - a. A development levy may be added to the reserve stumpage rate. The development levy is equal to the appraisal cost estimate of road construction provided by the Crown as approved by the regional manager.
 - b. 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.
4. The amount of any levy may be re-determined at reappraisal only.

5.6.5 Upset Stumpage Rate

The upset stumpage rate is the total of the reserve stumpage rate plus any development, silviculture and administration levies which may be charged as defined in section [5.6.4](#).

5.6.6 Total Stumpage Rate

The total stumpage rate is the upset stumpage rate plus any bonus bid.

Miscellaneous Timber Pricing Policies

6

6.1 Average Stumpage Rates by Forest Zone and Species

1. Each of the following forest zones referred to in Tables 6-1, 6-2 and 6-3 is made up of the corresponding forest district areas:
 - a. North Central Zone - Fort St. James, Mackenzie, Nadina, Prince George, Quesnel and Vanderhoof Forest Districts.
 - b. North West Zone - Kalum and Skeena Stikine Forest Districts.
 - c. North East Zone - Fort Nelson and Peace Forest Districts.
 - d. South East Zone - Arrow Boundary, Columbia, Headwaters, Kamloops, Kootenay Lake, Okanagan Shuswap and Rocky Mountain Forest Districts.
 - e. South West Zone - 100 Mile House, Cascades, Central Cariboo and Chilcotin Forest Districts.

Where a species of timber is not listed in Table 6-1, the rate that shall be used for that species of timber is the rate listed in the column headed as OTHER.

Table 6-1 Average Sawlog Stumpage Rates by Forest Zone and Species

FOREST ZONE	BALSAM	CEDAR	FIR	HEMLOCK	LARCH	L. PINE	Y. PINE	SPRUCE	OTHER
North Central	23.29	18.29	23.21	18.74	-	21.01	-	23.87	21.77
North West	4.92	4.82	-	5.26	-	8.37	-	6.07	5.43
South East	16.00	10.71	13.45	7.10	11.13	17.20	13.23	16.44	15.58
South West	17.59	12.67	14.74	8.80	20.39	16.24	19.39	17.50	16.34
North East	7.19	-	-	-	10.58	10.93	-	12.94	11.89

2.
 - a. The sawlog stumpage rate for each species of coniferous timber harvested under a community forest agreement entered into under the *Forest Act* or an associated road permit, will be 15 percent of the sawlog stumpage rate for that species in Table 6-1.
 - b. The stumpage rate determined under paragraph (a) of this subsection shall be redetermined on August 1 of each year in accordance with this subsection.
3. Sections 6.2 through 6.7 do not apply to community forest agreements and associated road permits.

4. Notwithstanding any other subsections of this section, the stumpage rate must not be lower than the prescribed minimum stumpage rate.

6.1.1 Incidental Conifer in Deciduous Leading Stands

1. Except as provided in section 7.5.1(5), this section applies to coniferous timber in a cutting authority area where the total volume of all deciduous species to be harvested is greater than 70 percent of the total net cruise volume to be harvested.
2. The stumpage rate for each species of coniferous timber must be determined by using the stumpage rate prescribed in Table 6-1 for the forest zone in which the cutting authority area is located.
3. A stumpage rate determined under subsection 2 shall be redetermined on August 1, of each year in accordance with this section.

6.2 Cutting Authorities With 5 000 m³ or Less Volume

1. Where the total coniferous volume to be harvested in a cutting authority area is 2 000 m³ or less, and where the licence under which the cutting authority authorizing harvesting on the cutting authority area has been issued has a coniferous allowable annual cut of not more than 3 000 cubic metres, or no coniferous annual allowable cut:
 - a. The stumpage rate for each species of timber in the cutting authority area must be determined using the stumpage rate in Table 6-1 for the forest zone in which the cutting authority area is located, except that,
 - b. Where the licensee is not required to establish a free growing crop of trees on the cutting authority area, the stumpage rate for each species of timber shall be the sum of the rate determined under paragraph (a) of this subsection and the basic silviculture cost for the species in the forest region or, where the Crown has the responsibility for silviculture, the silviculture levy determined under section 5.6.4(1).
 - c. Except as provided in section 2.2.1(1)(d) or 2.2.2 where the stumpage rate is determined under this subsection, the stumpage rate is fixed for term of the cutting authority and all extensions.
2. Where the total coniferous volume to be harvested on a cutting authority area is 5 000 m³ or less, and the cutting authority authorizing harvesting on the cutting authority area is a forestry licence to cut awarded at auction to the highest bidder:
 - a. Subject to section 5.6.2, the upset stumpage rate for each species of timber in the cutting authority area will be 70 % of the stumpage rate for that species in Table 6-1 for the forest zone in which the cutting authority area is located, except that,
 - b. Where the Crown is responsible for basic silviculture on the cutting authority area, the upset stumpage rate for each species of timber in the cutting authority area will be the sum of the stumpage rate determined under paragraph (a) of this subsection and the basic silviculture levy determined under section 5.6.4(1).
 - c. Except as provided in section 2.2.1(1)(d) or 2.2.2, where the upset stumpage rate is determined under this subsection, the total stumpage rate is fixed for the term of the cutting authority and all extensions.
3.
 - a. Notwithstanding subsections (1) and (2) of this section, where the total coniferous volume to be harvested on a cutting authority area is 5 000 m³ or less, the stumpage rate, or upset stumpage rate may be determined by an appraisal in accordance with chapters 2, 3, 4, 5 or for BCTS, chapter 7.
 - b. Where a stumpage rate is determined in accordance with this subsection:

located in the larger of the area of the same forest district or the area of the same timber supply area in which the road permit cutting authority area is located.

3. If there are no records from which the weighted average sawlog stumpage rate may be determined under paragraphs a, b or c of subsection 2 of this section, then the stumpage rate, subject to section 6.2(1)(b), is the rate in Table 6-1 for the forest zone in which the road permit cutting authority area is located.
4. a. In paragraph (a) of subsection (2) of this section, the weighted average sawlog stumpage rate that is in effect for the period between June 1 of one year in this subsection hereinafter referred to as the first year, and May 31 of the following year is determined as follows:

$$\$/m^3 = \frac{(\text{sum of Grade 1 value billed}) + (\text{sum of Grade 2 value billed})}{(\text{sum of Grade 1 volume billed}) + (\text{sum of Grade 2 volume billed})}$$

- b. Volumes and values in the formula above are taken from the billing records of Revenue Branch for coniferous sawlogs during the 12-month billing period ending on March 31 in the first year, if the volume of those coniferous sawlogs is greater than 500 cubic metres.
5. a. In paragraphs (b) and (c) of subsection (2) of this section, the weighted average sawlog stumpage rate that is in effect for the period between June 1 of one year in this subsection hereinafter referred to as the first year, and May 31 of the following year is determined as follows:

$$\$/m^3 = \frac{(\text{sum of Grade 1 value billed}) + (\text{sum of Grade 2 value billed})}{(\text{sum of Grade 1 volume billed}) + (\text{sum of Grade 2 volume billed})}$$

- b. Volumes and values in the formula above are taken from the billing records of Revenue Branch for coniferous sawlogs during the 12-month billing period ending on March 31 in the first year, **if the volume of those coniferous sawlogs is greater than 500 cubic metres.**
6. The stumpage rate for a road permit granted to the holder of a timber sale licence entered into under section 20 of the *Forest Act* will be the same as the stumpage rate for the timber sale licence which entitled the licensee to apply for the road permit.
7. Except as provided in Appendix VI, the stumpage rate for a road permit shall be redetermined on June 1 of each year in accordance with the procedure in this section.
8. The costs of roads constructed under road permits are eligible for inclusion as development cost estimates under section 4.3 in the appraisal of the licensees' first fully appraised tributary cutting authority. These roads will not be considered as existing roads under section 4.3.1.1.3(2).

6.3.1 Blanket Salvage Cutting Permits

1. In this section the area of a forest district or the area of a timber supply area does not include the area of a park located within that district or timber supply area.
2. Except as provided in subsection 3 of this section the stumpage rate for a blanket salvage cutting permit shall be the weighted average sawlog stumpage rate for:
 - a. all the cutting authorities other than blanket salvage cutting permits, that authorize the harvesting of timber in the same forest district as is the land in which the blanket salvage permit cutting authority area is located, and that have been issued under the same licence, or
 - b. if the licence permitting the granting of the blanket salvage permit has an allowable annual cut of 3 000 m³ or more per year, and there are no records from which the weighted average sawlog stumpage rate may be determined under:
 - i. paragraph (a), then all the cutting authorities, other than blanket salvage permits, that authorize the harvesting of timber on land located in the smaller of the area of the same forest district or the area of the same timber supply area in which the blanket salvage permit cutting authority area is located, or
 - ii. paragraphs (a) or (b)(i), then all the cutting authorities, other than blanket salvage permits, that authorize the harvesting of timber on land located in the larger of the area of the same forest district or the area of the same timber supply area in which the blanket salvage permit cutting authority area is located, or
 - c. if the licence permitting the granting of the blanket salvage permit has an allowable annual cut of less than 3 000 m³ per year, and there are no records from which the weighted average sawlog stumpage rate may be determined under:
 - i. paragraph (a), then all of the cutting authorities, other than blanket salvage permits, that are for licences that have an allowable annual cut of less than 3 000 m³ in the smaller of the area of the same forest district or the area of the same timber supply area in which the blanket salvage permit cutting authority area is located, or
 - ii. paragraphs (a) or (c)(i), then all of the cutting authorities, other than blanket salvage permits, that are for licences that have an allowable annual cut of less than 3 000 m³ in the larger of the area of the same forest district or the area of the same timber supply area in which the blanket salvage permit cutting authority area is located, or
 - iii. paragraphs (a), (c)(i) or (c)(ii) then all the cutting authorities, other than blanket salvage permits, that authorize the harvesting of timber on land located in the smaller of the area of the same forest district or the area of the same timber supply area in which the blanket salvage permit cutting

authority area is located, or

- iv. paragraphs (a), (c)(i), (c)(ii), or (c)(iii) then all of the cutting authorities, other than blanket salvage permits, that authorize the harvesting of timber on land located in the larger of the area of the same forest district or the area of the same timber supply area in which the blanket salvage permit cutting authority area is located.
3. If there are no records from which the weighted average sawlog stumpage rate may be determined under paragraphs a, b or c of subsection 2, then the stumpage rate must be determined, subject to section 6.2(1)(b), using Table 6-1 for the forest zone in which the blanket salvage cutting authority area is located.
4. a. In paragraph (a) of subsection (2) of this section, the weighted average sawlog stumpage rate that is in effect for the period between **August 1** of one year in this subsection hereinafter referred to as the first year, and **July 31** of the following year is determined as follows:

$$$/m^3 = \frac{(\text{sum of Grade 1 value billed}) + (\text{sum of Grade 2 value billed})}{(\text{sum of Grade 1 volume billed}) + (\text{sum of Grade 2 volume billed})}$$

- b. Volumes and values in the formula above are taken from the billing records of Revenue Branch for coniferous sawlogs during the 12-month billing period ending on March 31 in the first year, if the volume of those coniferous sawlogs is greater than 500 cubic metres.
5. a. In paragraphs (b) and (c) of subsection (2) of this section, the weighted average sawlog stumpage rate that is in effect for the period between **August 1** of one year in this subsection hereinafter referred to as the first year, and **July 31** of the following year is determined as follows:

$$$/m^3 = \frac{(\text{sum of Grade 1 value billed}) + (\text{sum of Grade 2 value billed})}{(\text{sum of Grade 1 volume billed}) + (\text{sum of Grade 2 volume billed})}$$

- b. Volumes and values in the formula above are taken from the billing records of Revenue Branch for coniferous sawlogs during the 12-month billing period ending on March 31 in the first year, **if the volume of those coniferous sawlogs is greater than 500 cubic metres.**
6. Except as provided in Appendix VI, the stumpage rate for a blanket salvage cutting permit shall be redetermined on August 1 each year in accordance with the procedure in this section.

6.4 Salvage Timber Stumpage Rates

1. This section applies to cutting authorities issued under licences which do not have an allowable annual cut. Salvaged timber is either post harvest material or damaged timber:
2. Post Harvest Material is either:
 - a. wooden culverts and bridges, or
 - b. post logging residue.
3. Damaged Timber is timber that:
 - a. Has been blown down,
 - b. Has been damaged by fire, disease, snow press, or
 - c. Will die within one year, as determined by the district manager, as a result of the affects of the mountain pine beetle, or other forest pests.
4. The criteria and methodology for the calculation of salvaged timber stumpage rates are:
 - a. Post harvest material may not be combined in the same cutting authority area with damaged timber.
 - 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 be adjacent to or contiguous with an existing cutting authority area.
 - c. Except as provided in subsection (4)(d) of this section the total area of a clearcut salvage harvesting area shall not exceed 1 hectare.
 - d. Where salvage of only damaged stems through partial cutting will leave a stand that meets minimum stocking standards, the area harvested may be larger than 1 hectare.
 - e. Salvage logging stumpage rates may only be determined for a cutting authority where more than one-third of the volume of coniferous timber to be harvested in the cutting authority area is damaged timber.
 - f. 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.

Table 7-2 District Average Number of Bidders (DANB)

Forest District	DANB	Forest District	DANB
100 Mile House	5.1	Kootenay Lake	4.0
Arrow Boundary	3.7	Mackenzie	2.3
Cascades	5.2	Nadina	4.9
Central Cariboo	4.6	Okanagan Shuswap	4.8
Chilcotin	2.0	Peace	3.6
Columbia	3.7	Prince George	3.5
Fort Nelson	2.8	Quesnel	5.0
Fort St. James	2.6	Rocky Mountain	4.4
Headwaters	5.6	Skeena Stikine	2.8
Kalum	3.0	Vanderhoof	2.9
Kamloops	5.9		

7.4.2 Market Price Equation

Using the variables defined in section 7.4.1, the selling price calculated in section 7.3.2 and the equation below, calculate the market price (MP).

$$\begin{aligned}
 \text{MP} = & [41.22 + 0.214 * \text{RSP} + 5.92 * (\text{VPH}/1000) - 2.91 * \text{PC} + 7.98 * \text{FIR} + 2.67 \\
 & * \ln((\text{VOL} - \text{DECK_VOL})/1000) - 9.51 * \text{CY} - 40.90 * \text{HP} - 10.11 * \\
 & \text{HORSE} - 17.78 * \text{FIRE} - 2.11 * \text{CYCLE} - 15.83 * \text{HB} + 28.35 * \text{CEDAR} - \\
 & 3.41 * \text{SAL} - 1.41 * (1/\text{VPT} * (1 - \text{HB})) - 12.83 * \text{DECID} - 0.0241 * \text{SLOPE} + \\
 & 0.768 * \text{DANB} - 36.21 * \text{DECAY} - 3.31 * \text{Z9} - 4.07 * \text{AUC2006} + 6.05 * \\
 & \ln(\text{VPT}) + 159.64 * \text{DECK} - 17.48 * \text{ER}] * \text{CPIF}
 \end{aligned}$$

If MP less than \$0.25 then MP = \$0.25

7.4.3 Specified Operations

The following only are identified as specified operations. Cost estimates from the current *Interior Appraisal Manual* are used for 1, 2 and 3 below.

1. Rail Haul

Rail haul including truck to rail transfer and rail transport.

2. Barge/Ferry

Barge/ferry used for truck haul (private).

Barge/ferry not used for truck haul (private).

3. Dump, Boom, Tow, Dewater, Reload

Dump, boom

Tow

Dewater and reload.

4. Camp Costs

Cost estimate is \$2.43/m³.

5. Skyline Yarding

Cost estimate is \$8.07/m³ for the volume appraised as skyline.

6. High Development Cost

Where the development cost (DC) borne by the Licensee is greater than \$4.02/m³ the high development cost specified operations (HDC) estimate is calculated as follows:

$$\text{HDC } \$/\text{m}^3 = \text{DC} - 1.42$$

$$\text{If } \text{DC} \leq 4.02 \text{ HDC} = 0$$

7.5 MPS Stumpage Rate

7.5.1 MPS Upset Stumpage Rate

1. Except as provided in subsections (2), (3), (4), (5), (6) and (7), the MPS upset stumpage rates for timber sale licences advertised on or after December 2, 2005, shall be equal to the upset stumpage rate determined under section 7.5.2 by the person who determines the stumpage rate.
2. Where applications for a timber sale licence with an MPS upset stumpage rate determined under section 7.5.1(1) have been invited but no applications have been received, the MPS upset stumpage rate shall be equal to the variable cost per cubic metre of preparing the timber for sale when that is requested by the Timber Sales Manager.
3. Where the director of BC Timber Sales does not anticipate that applications for a timber sale licence with an MPS upset stumpage rate determined under section 7.5.1(1) will be received because of market conditions, the MPS upset stumpage rate shall be equal to the variable cost per cubic metre of preparing the timber for sale when that is requested by the Timber Sales Manager.
4. The MPS upset stumpage rate for timber that has been decked for over three years and is administered by the Timber Sales Manager, shall be the prescribed minimum stumpage rate when that is requested by the Timber Sales Manager.
5. The MPS upset stumpage rate for timber sale licences with a minimum deciduous content of seventy percent of the net cruise volume, will be the greater of:
 - a. The variable cost per cubic metre of preparing the timber for sale, or
 - b. $\$/\text{m}^3 = \frac{0.70 [(\text{NCV deciduous (m}^3) \times 0.50 (\$/\text{m}^3)) + (\text{NCV coniferous (m}^3) \times 18.77 (\$/\text{m}^3))]}{\text{TNCV (m}^3)}$

where: NCV = net cruise volume (cubic metres)

TNCV = Net cruise volume deciduous + net cruise volume coniferous
6. The variable cost per cubic metre of preparing the timber for sale shall be calculated by the Timber Sales Manager.
7. Notwithstanding anything else in this section the MPS upset stumpage rate must not be lower than the prescribed minimum stumpage rate.

7.5.2 Upset Stumpage Rate Calculation

The upset stumpage rate (USR) is calculated as follows:

$$\text{USR} = (\text{MP} - \text{SO}) \times (1 - \text{DF})$$

Where:

USR	=	Upset stumpage rate
MP	=	Market Price as defined in section 7.4.2
SO	=	Specified operations as defined in section 7.4.3.
DF	=	0.00 if the cutting authority being appraised was entered into under section 47.6(3) of the <i>Forest Act</i> , otherwise DF = 0.30

7.5.3 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.

7.5.4 Total MPS Stumpage Rate

1. The total MPS stumpage rate is the sum of the MPS upset stumpage rate and the bonus bid.
2. Where the MPS upset stumpage rate is determined under subsections (1), (2), (3), and (4) of section 7.5.1, or section 7.5.2, the total MPS stumpage rate applies to Grade Code 1 and 2 coniferous sawlogs.
3. Where the MPS upset stumpage rate is determined under section 7.5.1(5), the total MPS stumpage rate applies to Grade Code 1 and 2 coniferous and deciduous sawlogs.

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