

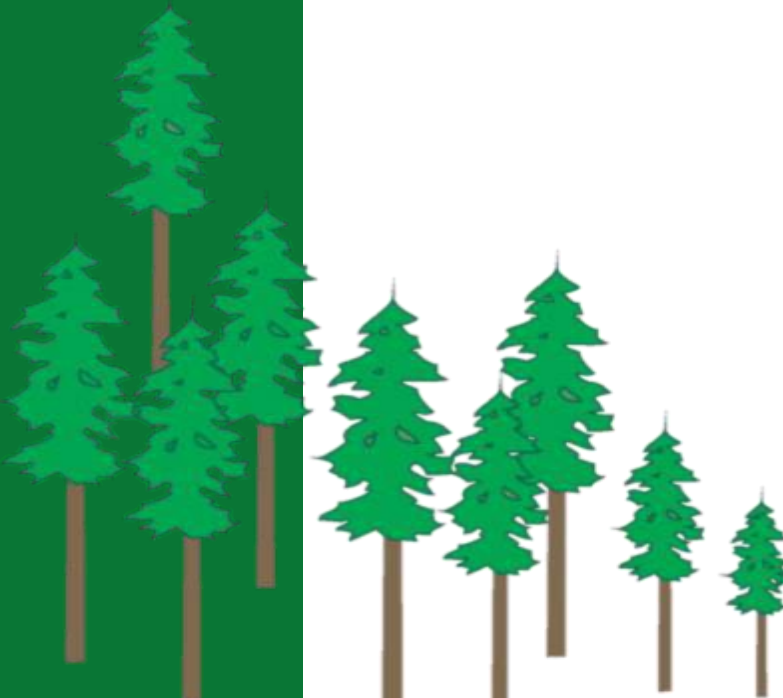


Coast

Appraisal Training

Module 3

Market Pricing System



Coast Area
March
2024

Disclaimer: This document is intended for use during appraisal training activities and as a general guide to appraisals. It is not intended as a basis for legal interpretation of the *Coast Appraisal Manual (CAM)*. If there is any discrepancy between these materials and the *CAM*, the *CAM* in force on the effective date of the cutting authority is correct. The *CAM* is posted on Timber Pricing Branch's website is the official version. If there are any questions about a specific appraisal issue, please contact Coast Area appraisal staff at the Coast Area office.

Table of Contents – Module 3

Contents

| | |
|---|-----------|
| Introduction | 5 |
| Overview of Appraisal Approaches | 5 |
| <i>Residual Value Appraisal Approach</i> | <i>5</i> |
| <i>Transaction Evidence Approach</i> | <i>5</i> |
| Applicable Policy and Procedures | 7 |
| Applicable Appraisal Manual | 8 |
| Applicable NDC Procedure | 12 |
| MPS Equation Explanation | 13 |
| MPS Equation in the Coast Appraisal Manual (CAM)..... | 13 |
| Process for Developing a New MPS Equation | 14 |
| <i>History</i> | <i>14</i> |
| <i>Protocol for MPS Equation Analysis.....</i> | <i>14</i> |
| <i>Regression Analysis.....</i> | <i>15</i> |
| <i>Two Different EWB Equations in the CAM.....</i> | <i>15</i> |
| Description of EWB Equations and EWB Variables Components | 15 |
| <i>EWB Variable Coefficients.....</i> | <i>15</i> |
| <i>EWB Equation Constant.....</i> | <i>15</i> |
| ESTIMATED WINNING BID VARIABLES SOURCE, MEASUREMENT & DATA ENTRY | 17 |
| EWB Variables Measurements | 17 |
| <i>Geographic Centre of a Cutblock Determination</i> | <i>17</i> |
| <i>Straight Line Distance Measurement</i> | <i>19</i> |
| <i>Point of Appraisal (PoA) Distance</i> | <i>19</i> |
| <i>Distance to Major Centre.....</i> | <i>20</i> |
| <i>Fibre Recovery Zone</i> | <i>21</i> |
| <i>Accessible / Isolated.....</i> | <i>22</i> |
| <i>Haul Distance.....</i> | <i>22</i> |
| <i>Crew Transportation Distance.....</i> | <i>23</i> |
| EWB Variables Obtained from Cruise Compilation | 25 |
| <i>Cruise Type.....</i> | <i>25</i> |
| <i>Total Net Cruise Volume</i> | <i>25</i> |
| <i>Net Volume Second Growth Coniferous</i> | <i>25</i> |
| <i>Average Side Slope.....</i> | <i>27</i> |
| <i>NHSVPH</i> | <i>27</i> |
| <i>CP Vol/Log</i> | <i>27</i> |
| <i>Harvest Method Volumes</i> | <i>28</i> |
| <i>Cable Yarding.....</i> | <i>28</i> |
| <i>Ground Systems</i> | <i>29</i> |
| <i>Helicopter Land Drop</i> | <i>29</i> |
| <i>Helicopter Water Drop.....</i> | <i>30</i> |
| <i>Total Helicopter</i> | <i>30</i> |
| <i>Helicopter Single Standing Stem Selection (HSSSS).....</i> | <i>30</i> |
| <i>Helicopter Selection</i> | <i>30</i> |
| Log and Lumber Selling Price | 31 |
| <i>Log Values</i> | <i>31</i> |
| <i>Lumber Values</i> | <i>31</i> |
| <i>Log Grades Source</i> | <i>32</i> |
| <i>Species Percentages.....</i> | <i>32</i> |
| <i>Consumer Price Index.....</i> | <i>33</i> |

| | |
|---|-----------|
| <i>North American and Japanese Housing Starts</i> | 33 |
| <i>Total Harvest</i> | 33 |
| <i>Average Number of Bidders</i> | 33 |
| Specified Operations | 34 |
| Manual Entry in ECAS Required | 35 |
| <i>Barging Transportation</i> | 35 |
| <i>Clayoquot Sound Operating Costs</i> | 36 |
| <i>Ecosystem Based Management</i> | 36 |
| <i>Tree Crown Modification</i> | 38 |
| Auto Calculated by ECAS/GAS | 39 |
| <i>High Development Cost</i> | 39 |
| <i>Long Haul Cost</i> | 39 |

APPENDIX

| | |
|--|-----|
| <i>Appendix 3-1 – Cruise Compilation Rounding</i> | 3-a |
| <i>Appendix 3-2 – Loss Factor Cruise Compilation Examples for EWB Variables</i> | 3-b |
| <i>Appendix 3-3 – Call Grade Net Factoring Cruise Compilation Examples for EWB Variables</i> | 3-d |

Introduction

The market pricing system (MPS) is a transaction evidence method of calculating a stumpage rate. Historically in British Columbia, stumpage charged to forest companies for cutting Crown timber has been via an administrative method while MPS is based upon the results of competitive auctions of previous stands of timber. The previous administrative method of appraising Crown timber was the comparative value pricing model (CVP) and Rothery system which used residual value.

Overview of Appraisal Approaches

Residual Value Appraisal Approach

The residual value approach attempts to estimate the value of standing timber by first determining the value of the end products that can be produced from the timber and then deducting estimates of all the costs of converting the standing timber into these end products. A residual value calculation that would truly represent a competitive market result must include a suitable return on the opportunity cost of the purchaser's time and capital investments. The value of the timber is the residual left after the net down process.

While this approach is theoretically correct and intuitively appealing it is fraught with estimation problems including:

- Cost estimates are typically based on historical surveys of loggers and log processors. The accuracy and timeliness of cost estimates made from secondary cost surveys is always open to question.
- Typically, it has been costly to collect the revenue and cost data required for residual value calculations. The administrative cost increases greatly where a competitive log market does not exist and revenue estimates must be made based on end-product prices, in which case data on processing costs and conversion efficiencies must also be collected.
- The most controversial element of any residual value approach is that an explicit allowance must be made for the timber purchaser's profit and risk. However, determining what an "acceptable" return would be for different sites is a difficult and contentious task.

Transaction Evidence Approach

The transaction evidence appraisal (TEA) approach uses data from recent timber sales (i.e. evidence from recent market transactions) to estimate the value of a stand if it were placed up for sale in a competitive market. Economists generally find this method intuitively appealing as it estimates the value of standing timber directly from market sales of standing timber rather than indirectly from cost and revenue estimates made from secondary data sources, as is the case with the residual value approach.

Transaction evidence appraisal is based on the premise that timber purchasers behave rationally. That is, they reflect on the inherent value of the timber contained in a stand of trees and on the site specific factors which affect harvest costs before arriving at the value they bid for a timber sale. If true, and the fact that firms remain in business over time suggests it is,

then the winning bids for competitive timber sales will have embedded within them accurate estimates of timber values and harvest costs.

If we can identify and measure the physical site specific factors which affect timber values and harvest costs, we can then use statistical methods to estimate the impact that changes in these factors will have on the resulting stumpage value. Note that we can do this directly from the winning bids without the need for separate industry harvest cost surveys or the need to develop logging phase cost estimates. The resulting stumpage values could then be used to appraise standing timber using data collected from a timber cruise plus current log/lumber prices.

A further benefit of the transaction evidence approach is that the addition of recent timber sales to a timber sales database would provide the means for updating the appraisal method without the time delays associated with the traditional residual value data collection methods.

There are two methods of applying a transaction evidence approach;

1. Adjustment-based method

The adjustment-based method uses an "average" timber sale as its starting point, along with average values of several of the characteristics for the timber being appraised such as sales volume, species composition, and end-product values. The price for each new timber sale is then "adjusted" from the average price using differences in the new timber sale's characteristics from those of the "average" timber sale. While this approach is also intuitively appealing its accuracy has been called into question.)

Anyone who has purchased a house would likely have gone through a similar appraisal process with their realtor, when they prepared an offer on the house. However, the adjustment-based approach would become cumbersome if used in mass appraisal. It also requires some external methods to determine how the adjustments for differences in sale characteristics are made.

2. Equation-based method

In the equation-based approach, equations are first estimated which predict the winning bid for competitively tendered timber sales. The equations use such variables as timber volume, some measure of the end-product value, and stand conditions as explanatory variables. The equations are estimated using ordinary least squares regression, or some other regression technique, to provide estimates of the coefficients for each independent variable. In this approach the data from sales is used to directly predict how stand conditions affect stumpage values. In addition, the estimated parameters can be quickly re-estimated, as new sales data becomes available. This helps to ensure that the estimated parameters do not become dated, as would be the case with the cost surveys needed in the residual value approach.

Applicable Policy and Procedures

Forest Act 105(1)(c) specifies that “rates of stumpage must be determined, redetermined and varied in accordance with the policies and procedures approved by the minister”.

The Coast Appraisal Manual (CAM) and Interior Appraisal Manual (IAM) are the primary policies for the appraisal of a cutting authority area of Crown timber. The policy and procedures that must be used in the determination, redetermination or variance of stumpage rate(s) for Crown timber are based upon the effective date of the cutting authorities appraisal or reappraisal.

The primary (but not limited to) procedures are:

- ⇒ Non-tabular Development Cost (NDC) Procedures (coast);
- ⇒ Engineering Construction Estimate (ECE) Procedures (interior);
- ⇒ Cruising Manual;
- ⇒ Cruise Compilation Manual.

NOTE • These policies and procedures come into force on the date of signature by the individual authorized or some future date specified at time of signature.

The appraisal manual (Interior or Coast) that must be used in the determination, redetermination or variance of stumpage rate(s) is the manual which is in force on the effective date *of the appraisal*.

The location of the policies and procedures are located in the Timber Pricing Branch website (Figure 3-1) at;

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

Figure 3-1 – Timber Pricing Branch Website Blue Book Section

The screenshot shows a web page titled "Timber Pricing" with a breadcrumb trail: Home > Farming, natural resources and industry > Forestry > Modernizing B.C.'s forest sector >. The left sidebar contains a navigation menu with the following items: Log exports, Tenures, Timber Pricing (expanded), Coast Timber Pricing (highlighted with a red box), Interior Timber Pricing (highlighted with a blue box), Electronic Commerce Appraisal System, General Appraisal System, Timber Scaling, Timber Cruising, and Forest Residue & Waste. The main content area has the heading "Timber Pricing" and two paragraphs of text. The first paragraph states: "Timber Pricing in B.C. involves setting stumpage rates, measuring the timber and billing for stumpage and forecasting forest revenue." The second paragraph states: "The Timber Pricing Branch is responsible for translating broad government direction into specific timber pricing policies and procedures and serves as the interface between government, the forest sector and the public on a broad range of matters relating to timber pricing." The third paragraph states: "Timber pricing involves appraising the value of timber, setting stumpage rates, measuring the timber and billing for stumpage and forecasting forest revenue. Stumpage is the fee paid to the government for timber harvested from Crown land."

The website location of appraisal information specific to the:

1. Coast (quick link on TPB website is outlined in red Figure 3-1) or website address;
<https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/coast-timber-pricing>
2. Interior (quick link on TPB website is outlined in blue Figure 3-1) or website address;
<https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/interior-timber-pricing>

Applicable Appraisal Manual

The applicable appraisal manual to use when developing an appraisal data submission is predicated upon the effective date of the cutting authority appraisal (IADS or PHADS) or reappraisal (sudden & severe damage).

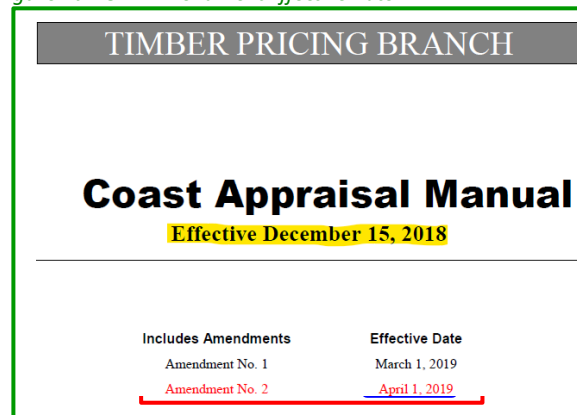
The Minister approves a new appraisal manual when a new market pricing system (MPS) equation is developed. Until a new appraisal manual is approved, the Minister may approve amendments for various reasons. The applicable appraisal manual comes into force on the date that the Minister authorized the appraisal manual to come into force (highlighted in yellow Figure 13 - 2a & 2b) or the date of the amendment (outlined in blue Figure 3-2b) that brought the policy into force.

Figure 2a – New CAM Effective Date



A new appraisal manual, or policy brought into force via an amendment is only applicable to an appraisal or reappraisal of a cutting authority on or after the amendment date.

Figure 2b – CAM Amendment Effective Date



In developing an appraisal data submission, the effective date of the cutting authority appraisal (IADS or PHADS) or reappraisal (sudden & severe damage) provides which policies and procedures are applicable to an appraisal data submission.

- NOTE
- The date an appraisal data submission is submitted (status SUBMIT) in ECAS to the government has no bearing on the policy which is used to appraise a cutting authority.

Example I – New Appraisal Manual

Policy

The Minister brought a new Coast Appraisal Manual into force on December 15, 2020 that included a new specified operation 'Fibre Recovery Zone Fraction'.

Cutting Authority Information

Cutting authority A12345 CP781 TM: LM0781 was submitted (status SUBMIT) in the Electronic Commerce Appraisal System (ECAS) on December 3, 2020. The district staff change the status to RECEIVED in ECAS on December 9, 2020. The cutting authority was issued on December 16, 2020.

For this example, the appraisal manual in force for a cutting authority issued on December 16, 2020 is the December 15, 2020.

The reason for this is that 'effective date' is what directs what appraisal manual to use to appraise timber, not the date of submission by the submitting forest professional!

Example II – Amendment to CAM for a New Policy

Policy

The Minister of Forests (Minister) on April 1, 2019 with Amendment No. 2 to the December 15, 2018 CAM, brought the Barging specified operation into force of;

- ◆ \$13.79 per m³ for volume harvested & barged from GRIS point of origin area (PoO Area), and
- ◆ \$8.13 per m³ for volume harvested & barged from non-GRIS PoO Area.

The Minister brought into force on December 15, 2019 a new CAM with barging specified operation updated to;

- ◆ \$15.88 per m³ for volume harvested & barged from GRIS PoO Area, and
- ◆ \$10.67 per m³ for volume harvested & barged from non-GRIS PoO Area.

The Minister directed that all active non-auctioned timber marks (TM) be recalculated (mass reappraisal) through a on December 15, 2020 and brought into force on December 15, 2020 a new CAM with barging specified operation updated to;

- ◆ \$15.15 per m³ for volume harvested & barged from GRIS PoO Area, and
- ◆ \$10.74 per m³ for volume harvested & barged from non-GRIS PoO Area.

Cutting Authority Information

A12345 CP765 TM: LM0765 effective date (also issuance date) of March 14, 2019. There is a total net cruise volume (TNCV) of 68,000 m³ in the cutting authority area, with all the volume being barged from a non-GRIS PoO Area. Timber harvesting occurred from;

- ⇒ July 1, 2019 to August 31, 2019 with a total volume of 15,000 m³ being invoiced via the Harvest Billing System (HBS).
- ⇒ September 1, 2020 to November 30, 2020 with a total volume being invoiced of 20,000 m³ via the HBS.
- ⇒ August 1, 2021 to November 30, 2021 with a total volume being invoiced of 30,000 m³ via the HBS.

The impact on cutting authority A12345 CP765 TM: LM0765 for the period:

March 14, 2019 to March 31, 2019

- Specified operation not in force.
- Zero volume harvested and invoiced.

April 1, 2019 to December 14, 2019

- 15,000 m³ that was harvested and invoiced between March 14, 2019 (effective date of cutting authority) and December 14, 2019 will not have the barging specified operation in the stumpage calculation.
- The reason for this is that the specified operation only applies to cutting authorities whose effective date is on or after April 1, 2019.

December 15, 2019 to December 14, 2020

- 20,000 m³ that was harvested and invoiced between December 15, 2019 and December 14, 2019 will not have the barging specified operation in the stumpage calculation.
- The reason for this is:
 - Minister directed only an update to the new MPS equation and specified operations on December 15, 2019.
 - TM LM0765 effective date prior to barging specified operation coming into force.
 - As specified operation not part of stumpage calculation used on March 14, 2019 stumpage calculation it can not be updated.

December 15, 2020 to December 14, 2021

- 30,000 m³ that was harvested and invoiced between December 15, 2020 and December 14, 2021 will have the barging specified operation included in the stumpage calculation.
- The reason for this is:
 - Minister directed all active non-auctioned timber TM be recalculated (mass reappraisal) using the new MPS equation and specified operations.
 - This direction means that the barging specified operation applies.

Applicable NDC Procedure

The applicable Non-Tabular Development Cost procedure to use when developing an appraisal data submission is the same as the 'Applicable Appraisal Manual' regarding the effective date of the cutting authority appraisal (IADS or PHADS) or reappraisal (sudden & severe damage).

Example III – New NDC Procedures Manual

Policy

The Director of Timber Pricing Branch signed off on December 15, 2021, a new Non-Tabular Development Cost (NDC) procedures. A new policy that came into force in this NDC procedure is 'Stand-by Time' for equipment.

Cutting Authority Information

Cutting authority A12345 CP801 TM: LM0801 effective date is November 20, 2021.

Stand-by time for equipment is not an acceptable cost for inclusion in a NDC project for this cutting authority at either the IADS (whose effective date of November 20, 2021) or the PHADS whose (effective date is November 21, 2021).

The reason for this is:

- both appraisal effective dates pre-date the new NDC Procedures of December 15, 2021.
- these NDC projects are appraised under the April 1, 2019 NDC Procedures.
- Minister directed only an update to the new MPS equation and specified operations on December 15, 2021.

Cutting authority A12345 CP802 TM: LM0802 effective date is December 18, 2021.

Stand-by time for equipment is an acceptable cost for inclusion in a cutting authorities NDC project(s).

MPS Equation Explanation

MPS Equation in the Coast Appraisal Manual (CAM)

The MPS equation is composed of two components:

1. Final Estimated Winning Bid (FEWB) details provided in Chapter 4 of the CAM with further training information contained within this module, and
2. Tenure Obligation Adjustment (TOA) details provided in Chapter 5 of the CAM with further training information contained within Module 4.

The EWB is the “transaction evidence” part of MPS. Using regression analysis (a common statistical technique) a relationship is built between the winning bids for timber sales and many of their characteristics. Then, after gathering similar information on the characteristics of licensee cutting authority (non-auctioned timber), and using the relationship derived from auction sales, winning bids for licensee timber can be estimated as if it had been auctioned.

There are variables based on the value side of the timber, such as log species, grade and product values such as lumber and veneer prices. And there are variables based on cost side such as helicopter, isolation, etc. There is actually no need to classify the variables into these categories or any other categories. Variables may actually represent a mixture of value and cost. For example, a species variable may represent the higher/lower value of that species and also represent higher/lower costs in harvesting conditions for that species.

After the main EWB equation there are deductions for specified operations. These are different from tenure obligation adjustments (TOAs) because they are activities that the bidders may do but we don't have enough information to build them in to the main body of the EWB equation, while the TOAs are generally things that only non-auctioned timber license agreement holders are responsible for.

Process for Developing a New MPS Equation

History

The MPS equation has been periodically updated on the Coast since implementation on February 29, 2004. Since December 2017 the MPS equation has been updated annually and this pattern of annual updates is expected to continue on the Coast. The MPS equation in the Interior came into force in 2006 and has been annually updated since then.

Coast updates had been “bleed-in” since 2014, but this changed to “cold turkey” in December 2020. Bleed-in means the new policy applies only to new permits while under cold-turkey all active permits are reappraised under the new policy.

Protocol for MPS Equation Analysis

The process for developing the MPS equation is:

1. Data Collection

Data on competitive sales in the last year is collated, examined for errors and outliers, and added to the previous set of sales. Historically MPS had used a 5-year rolling dataset where the oldest year of sales was dropped but more recently the dataset was expanded and allowed to grow to the present 17 years. This expansion of the dataset was done to bring in a complete market cycle and thereby increase the market sensitivity of the equation. The data set may be shortened in the future.

2. Model Identification

Based on theory, common sense and data availability. Variables which are expected to affect bid prices are identified and a functional form which relates the independent variables to bid prices is chosen.

Last year’s model is re-estimated with the new dataset, and this is called the “benchmark”. Improvements to the model are judged, in part, by their performance in explaining bids compared to the benchmark.

3. Empirical Estimation

The bid price equation is estimated using ordinary least-squares linear regression analysis. Variables can be used in a non-linear fashion by transforming the variable prior to use in the linear regression. Common transformations are logarithms, exponents and limits (floors or ceilings).

4. Model Testing

The estimated coefficients are tested for logical consistency with our prior expectations and for statistical significance. They are then compared to estimates from other sources. The model’s goodness of fit is examined, and outliers are examined for potential causes.

Regression Analysis

Regression analysis is an extremely valuable statistical technique that can be used to create a formula to estimate a dependent variable (in our case the winning bid) from a set of independent or explanatory variables. The math behind the scenes in a regression can give us not only the level of influence a variable has on the dependent variable but the level of influence in relation to other variables and the confidence we can have that the variable is important in explaining bids.

If a known activity is left out of the regression, such as conventional yarding, it is not “missing” but rather its average value is included in the base case. Conversely, if two variables are related to each other, having both in the regression will not result in double counting because the regression is considering all variables at once. For example, Cedar tends to grow on steeper slopes and consequently there will be a negative cost element related to cedar at the same time as a positive value element. The regression will share the impacts around and the estimated winning bids will, on average, equal the actual winning bids, with no double counting.

Two Different EWB Equations in the CAM

Current CAM policy allows for appraisals to be based on either Loss Factor cruise information or Call Grade Net Factor cruise information. Given the discussion above, it is clearly essential that cruise information for BCTS timber sales be consistent (symmetrical) with cruise information in the licensee appraisal. Thanks to the dual cruising that has been happening on the Coast for years we have both types of cruises available for most timber sales. Consequently, we can have two separate datasets and two separate EWB equations for use as the situation allows.

Description of EWB Equations and EWB Variables Components

EWB Variable Coefficients

Each variable in the EWB has a coefficient, which has been determined by the regression to represent the incremental influence that varying levels of the variable have on the predicted bid.

For example, in the MPS2021 CAM, the coefficient on slope is -0.4221 which means for every increase in slope of 1% the estimated bid goes down by 42 cents, reflecting the higher cost of higher slope. As mentioned above variables can interact with each other and the coefficients are only useful in context with the entire equation.

EWB Equation Constant

There is a coefficient with no variable attached, otherwise known as the constant or intercept. A frequently asked question about regressions is “What does the constant represent?”. A common answer is that it represents missing variables. Another is that it represents “the base case”. Both answers have an element of truth.

ESTIMATED WINNING BID VARIABLES SOURCE, MEASUREMENT & DATA ENTRY

There are three types of Estimated Winning Bid (EWB) variables in the Market Pricing System (MPS) equation, which are:

1. based upon measurement,
2. obtained from the cruise compilation, and
3. auto calculated by the General Appraisal System (GAS).

EWB Variables Measurements

Geographic Centre of a Cutblock Determination

The geographic centre of a cutblock is required for several CAM appraisal data elements. On the Coast a cutblock geographic centre can potentially fall outside of a cutblock harvested area (opening) if there is multiple opening (see Cutblock C in Figure 3-4) or an irregularly shaped opening (see Cutblock B in Figure 3-4).

Besides using a GIS program, the manual process to determine the geographic centre of a cutblock is;

1. for each cardinal direction (north, south, east & west)
 - a. draw a straight line on its axis (red line in Figure 3-3a),
 - b. move the line, in the opposing cardinal direction, until it just touches the edge of the cutblock opening (red line in Figure 3-3b),

Figure 3-3a – Geographic Centre Determination

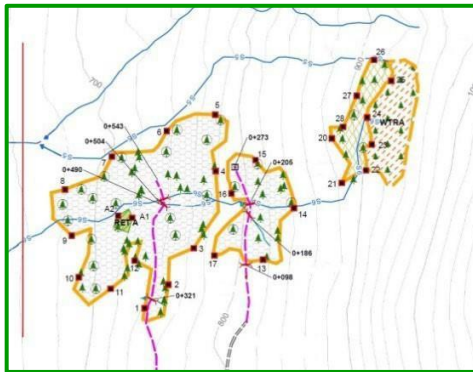
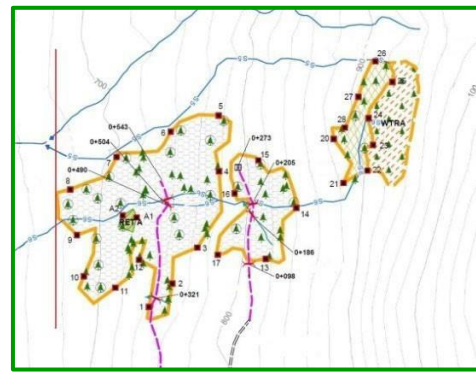


Figure 3-3b – Geographic Centre Determination



- c. important to note that external retention patches are not where the line stops, it is at the opening boundary edge (red line in Figure 3-3c),
- d. once all four cardinal directional lines are in place a square/rectangle is created (red square/rectangle in Figure 3-3d),

Figure 3-3c – Geographic Centre Determination

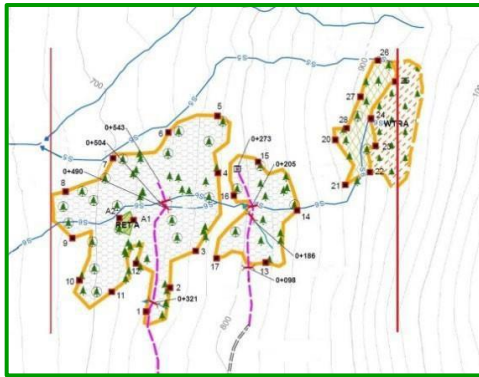
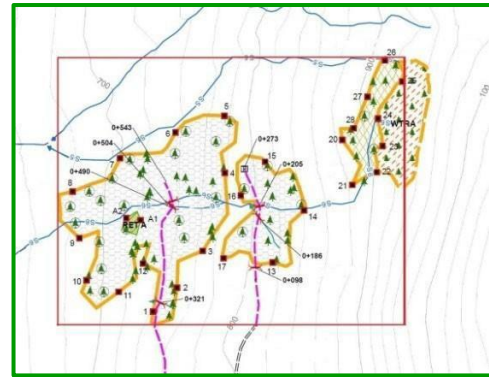


Figure 3-3d – Geographic Centre Determination



e. find mid-point of each axis and draw straight line (blue lines in Figure 3-3e), and

Figure 3-3e – Geographic Centre Determination

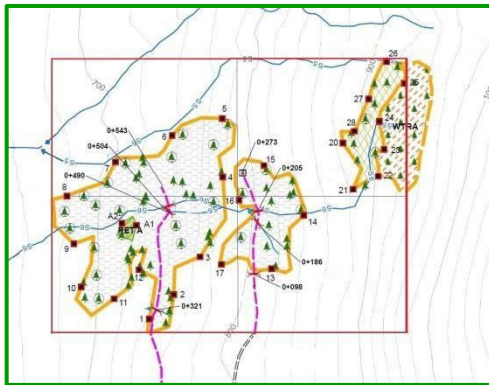
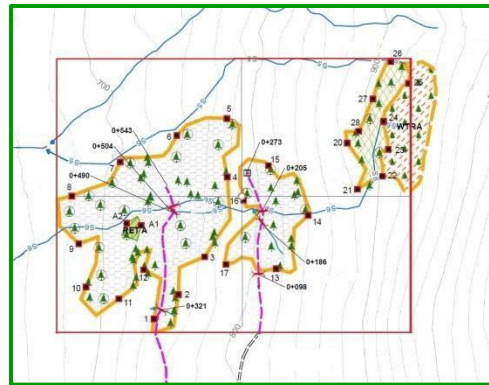
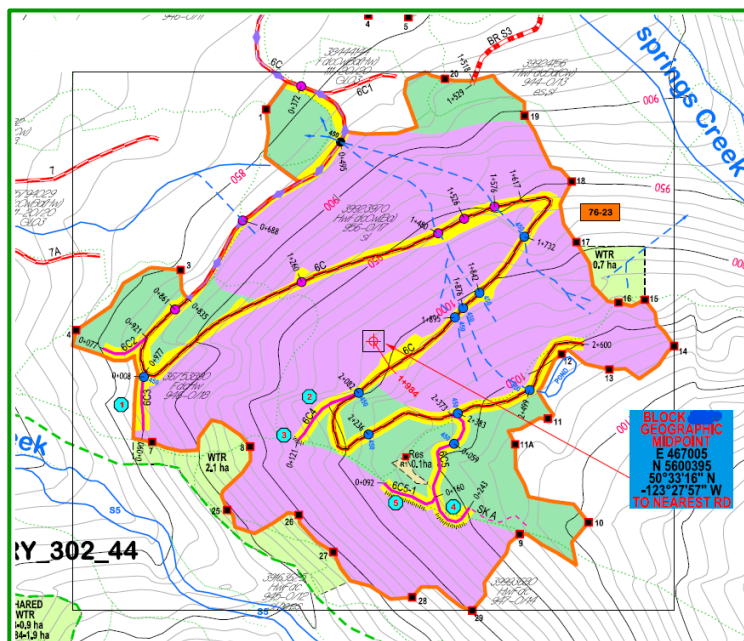


Figure 3-3f – Geographic Centre Determination



2. the point where the two lines meet is the geographic centre (brown circle Figure 3-3f) of a cutblock. Note that the geographic centre may fall outside of a cutblock opening boundary.

Figure 3-3g – Example of Appraisal Map Submission



Straight Line Distance Measurement

Straight line distance measurement can be done external to a GIS program using application that can be obtained on the Internet. Locations of straight line application are;

1. LAT/LONG calculator: <http://www.chemical-ecology.net/java/lat-long.htm>

Notes regarding use of application:

- Kilometres are provided, but rounding is needed

2. BC ALBERS calculator: <https://www.easycalculation.com/analytical/distance.php>

Notes regarding use of application:

- Northing entered in **X**
- Easting entered in **Y**
- Distance is in metres so division by 1,000 will be required for data entry in ECAS

Point of Appraisal (PoA) Distance

The PoA Distance (GAMB DIST is an old EWB variable) appraisal data element is the weighted average straight line distance between the geographic centre of each cutblock in a cutting authority area and Gambier Island.

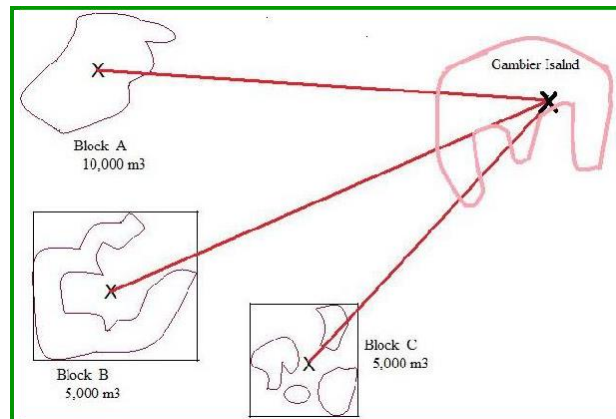
Gambier Island location, there was a switch to BC Albers co-ordinates from Latitude & Longitude with January 15, 2009 CAM, are for:

1. BC Albers co-ordinates (MPS2009)

| | |
|-----------|----------|
| 499,955 | Northing |
| 1,185,166 | Easting |
2. Latitude & Longitude (MPS2008)

| | |
|-----------|-----------|
| 49 29 09 | Latitude |
| 123 26 44 | Longitude |

Figure 3-4 – Point of Appraisal Distance Sample Diagram



To calculate the average PoA Distance.

1. locate the geographic centre of each cutblock in the cutting authority,
2. measure the straight-line distance from the geographic centre of the cutblock to Gambier Island co-ordinates.
3. calculate the weighted distance by multiplying each cutblock distance by the cutblocks' portion of the total net cruise volume.

EXAMPLE (using Figure 3-4 information)

$$10,000 \text{ m}^3 \times 211.4 \text{ km} = 2,111,400$$

$$5,000 \text{ m}^3 \times 217.6 \text{ km} = 1,088,000$$

$$5,000 \text{ m}^3 \times 187.6 \text{ km} = \underline{938,000}$$

$$4,137,400$$

$$4,137,400 / 20,000 = \mathbf{207} \text{ (206.87) km}$$

4. add together the weighted distances for the cutting authority for the POA distance to Gambier Island.
5. divide the resultant from step 4 above by the total net cruise volume to obtain the PoA distance (must be rounded to whole number).

Submission Requirements

PoA Distance appraisal data element submission requirements are;

1. the appraisal data element is entered in ECAS30 – Reference Information screen. (outlined in orange Figure 3-5).

Figure 3-5 – ECAS30 – Reference Information screen #1

| | | | |
|---------------------------------|--|---------------------------|------------------------------------|
| Geographic Forest District: | DCR - Campbell River Natural Resource District | File Type: | |
| Administrative Forest District: | DCR - Campbell River Natural Resource District | NRFL Bonus Bid: | <input type="text" value="\$m3"/> |
| TSA: | | TSB: | <input type="text" value="v"/> |
| PoA Distance: | <input type="text" value="207 km"/> | Distance to Major Centre: | <input type="text" value="66 km"/> |

2. on the appraisal map;
 - a. geographic centre of each cutblock mapped, and
 - b. written co-ordinates be provided somewhere on map.

Distance to Major Centre

Distance to Major Centre (LOCATION EWB variable) appraisal data element, is the weighted average straight-line distance between the geographic centre of each cutblock in a cutting authority area and the closest Major Centre listed in Table 4-1 in the CAM.

To obtain Distance to Major Centre for each cutblock:

1. determine where the geographic centre of the cutblock (see geographic center of cutblock instructions in the PoA Distance section) must be located,
2. locate the closest Major Centre, listed in CAM, to the geographic centre of each cutblock,

- NOTES
- remember that there are Major Centres that are outside the Coast Area (West and South Coast Natural Resource Region) geographic boundaries.
 - Examples of this can be found within the Fraser (Chilliwack district) TSA and for BCTS within the Great Bear Rainforest North or Pacific TSAs.

- measure the straight-line distance from the geographic centre of the cutblock to the closest Major Centre. The coordinates of Major Centre are listed in Table 4-1 in the CAM.

NOTE • The same application listed in Point of Appraisal Distance section can be used to measure Distance to Major Centre.

- record distance (see Submission Requirement sub-section) for each cutblock.

Submission Requirements

Distance to Major Centre (LOCATION EWB variable) appraisal data element is entered for each cutblock in the ECAS41 – Cutting Authority Detail screen (outlined in fuchsia Figure 3-6).

Figure 3-6 – ECAS41 – Cutting Authority Detail screen

| Point of Appraisal: GAMB - Gambier | | | | | | | Crew Transportation | | Access/ Isolated | Road Mgmt. (Y/N) | Major Centre | |
|------------------------------------|----------------|--------------------------|----------------------|--------------------|----------------|-----------------------|---------------------|----------------|------------------|------------------|--------------|---------------|
| Cutblock # | Harvest Method | Volume (m ³) | Point of Origin Area | Appraisal Log Dump | Other Log Dump | Truck Haul Dist. (km) | Distance (km) | Marshall Point | | | Major Centre | Distance (km) |
| 5-320 | CY | 3786 | THUR | CAHS | | 15.2 | 33.7 | Jackson Bay | I | Y | CARV | 81 |
| 5-320 | GS | 1314 | THUR | CAHS | | 15.2 | 33.7 | Jackson Bay | I | Y | CARV | 81 |
| 5-354 | CY | 1702 | THUR | JSPH | | 13.8 | 23.3 | Jackson Bay | I | Y | CARV | 80 |
| 5-354 | GS | 8766 | THUR | JSPH | | 13.8 | 23.3 | Jackson Bay | I | Y | CARV | 80 |
| 5-357 | GS | 1956 | THUR | JSPH | | 14 | 23.5 | Jackson Bay | I | Y | CARV | 80 |
| 5-358 | CY | 3942 | THUR | JSPH | | 14.7 | 24.3 | Jackson Bay | I | Y | CARV | 80 |
| 5-358 | GS | 5555 | THUR | JSPH | | 14.7 | 24.3 | Jackson Bay | I | Y | CARV | 80 |
| 6-111 | GS | 14674 | THUR | SCJB | | 9.6 | 9.6 | BEAVER INLET | I | Y | CARV | 64 |
| 6-111 | CY | 5971 | THUR | SCJB | | 9.6 | 9.6 | BEAVER INLET | I | Y | CARV | 64 |

- NOTE
- if there are two or more types of harvest method for the same cutblock, the same distance must be recorded.
 - ECAS will automatically calculate weighted major centre distance appraisal data elements entered by cutblock in the ECAS41 – Cutting Authority Detail screen and then it will populate the Distance to Major Centre into the ECAS41 – Reference Information screen (outlined in fuchsia Figure 3-6).

Fibre Recovery Zone

The Fibre Recovery Zone (FRZ) fraction estimated winning bid variable, is the fraction of those cutblocks that who had a Waste Rate of “FRZ Adjustment Factor of 3” versus those which had had a Waste Rate of “FRZ Adjustment Factor of 1”. See details in Module 10 on populating the FRZ Fraction Calculator worksheet.

Submission Requirements

The FRZ Fraction (FRZ Fraction EWB variable) appraisal data element is entered in ECAS30 – Reference Information screen (highlighted in yellow Figure 3-7). based upon the information from the FRZ Fraction Calculator spreadsheet.

Figure 3-7 – ECAS30 – Cutting Authority Detail screen #2

| | | | |
|---|-------------------------|---|--|
| Appraisal Effective Date: | 2021-12-18 | Appraisal Expiry Date: | 2024-09-16 |
| Cruise Type: | CF - Cruise Loss Factor | Single Tree Selection Cruise Grades: | <input type="checkbox"/> |
| Total Net Cruise Volume: | 19780 m ³ | Is Second Growth Coniferous Volume = 80.00% of Total Coniferous Volume: | <input type="checkbox"/> 77.95% |
| Single Tree Selection Volume: | 0 m ³ | Total Coniferous Volume: | 19194 m ³ |
| Net Volume Second Growth Coniferous: | 14961 m ³ | Fibre Recovery Zone: | 0.68 |
| Sampling Error % (at 2 stand.dev.): | 19.1 % | Rate Calculation Method: | <input type="radio"/> CVP <input checked="" type="radio"/> MPS |
| <input type="button" value="Save"/> <input type="button" value="Delete Appraisal"/> | | | |

Accessible / Isolated

The accessible or isolated (ISOLATED EWB variable) appraisal data element is when the cutblock is:

1. Accessible (A) if it is connected by a road suitable for crew buses/trucks to the centre of the nearest community.
2. Isolated (I) if it is not connected by to a community.

Submission Requirements

Accessible/Isolated appraisal data element is entered in ECAS41 – Cutting Authority Detail screen (outlined in red Figure 3-6) for each cutblock.

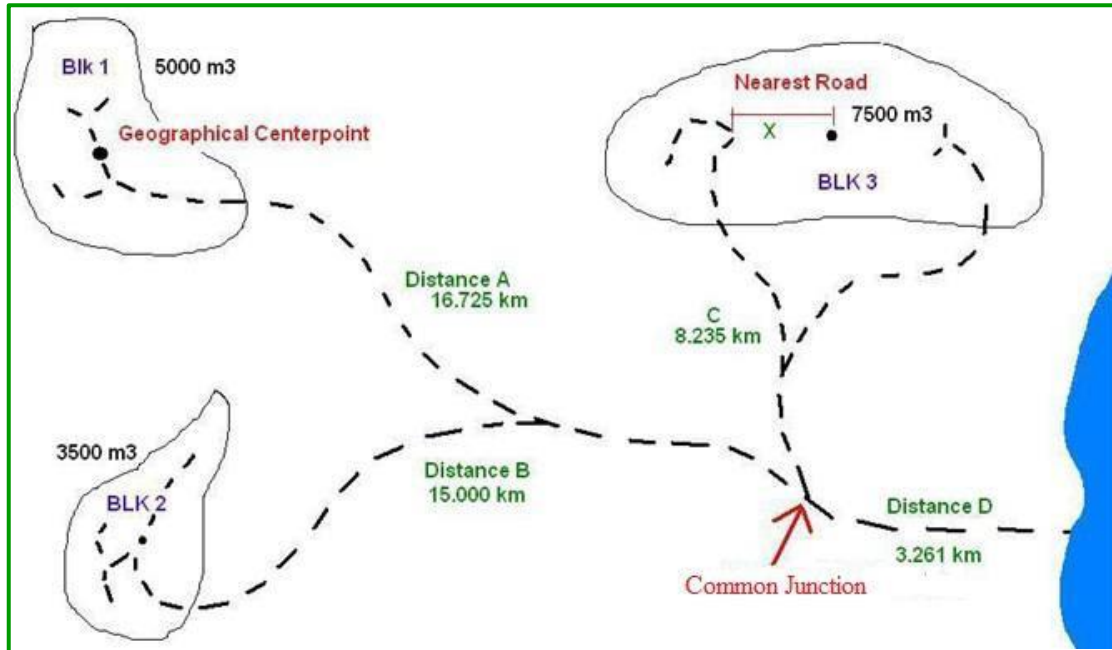
- NOTE
- The ISOLATED EWB variable is automatically calculated by ECAS/GAS using the information inputted into the ECAS41 – Cutting Authority Detail screen.

Haul Distance

Haul distance appraisal data element is the distance that timber is hauled on a logging truck from the cutblock to the closest appraisal log dump in the initial ADS. Haul distance is measured in kilometres rounded to single significant digit.

- NOTES
- haul distance must be the same for both harvest types in a cutblock.
 - i.e. Blk 3 harvest method is 6,000 m³ of ground & 1,500 m³ of cable haul distance for both harvest methods is 11.5 km (distance C 8.235 km plus distance D 3.261 km)
 - if haul distance (see Figure 3-8) is measured from a cutblock to a common junction, then the distance from the common junction to the log dump must be added.
 - i.e. Blk 1 haul distance is 20.0 km (distance A 16.725 km plus distance D 3.261 km)
 - ECAS will automatically performs the weighted Haul Distance calculation and puts the 'Average Haul Distance' in the ECAS33 – TTT/Log/Admin screen

Figure 3-8 – Geographic Centre diagram



In the post-harvest ADS, the haul distance may be measured to an alternative log dump where changes to water level (flow or depth) persist for at least six months of the calendar. Supporting documentation and rationale explaining the situation must be provided regarding water level.

Submission Requirements

Haul distance appraisal data element is entered in ECAS41 – Cutting Authority Detail screen (outlined in blue Figure 3-6) for each cutblock.

- NOTE
- In post-harvest ADS, documentation regarding flow rates to support the alternative log dump must be provided.

Crew Transportation Distance

Crew transportation distance is measured in kilometres rounded to single significant digit. To measure the distance the timber harvesting crew travels to the cutblock:

1. Marshalling Point for:
 - a. accessible cutblocks is the;
 - i. licensees' contractually binding designated marshalling point, or
 - ii. in the absence of a contractually binding marshalling point, the nearest of the;
 - ⇒ contractually binding designated marshalling area of another licensee,
 - ⇒ the camp,
 - ⇒ the crew vehicle storage area, or
 - ⇒ centre of the nearest community.

- b. isolated cutblocks is the;
 - i. licensees' contractually binding designated marshalling point, or
 - ii. in the absence of a contractually binding marshalling point, the nearest of;
 - ⇒ contractually binding designated marshalling area of another licensee,
 - ⇒ the camp, or
 - ⇒ the vehicle storage area.
2. Distance is measured from the crew marshalling point to the geographic center of the cutblock.

NOTES

 - helicopter harvesting areas do not have crew transportation distance recorded. The reason for this is that the helicopter cost in the MPS formula takes crew transportation distance into account.
 - Even if a distance is entered into ECAS this number will not be used to auto-calculate the crew distance in the TTT/LOG/ADMIN (ECAS33) screen.

Submission Requirements

Crew transportation distance appraisal data element is entered in ECAS41 – Cutting Authority Detail screen (outlined in light green in Figure 3-6) for each cutblock.

- NOTE
- In post-harvest ADS, documentation regarding flow rates to support the alternative log dump must be provided.

EWB Variables Obtained from Cruise Compilation

Cruise Type

The cruise type appraisal data element (outlined in red in Figure 3-9a & 3-9b) selection is critical! This appraisal data element drives which EWB equation the General Appraisal System (GAS) will use in calculation of the rate of stumpage.

Figure 3-9a – ECAS30 – Reference Information screen #1

Appraisal Type: Initial ADS Post-Harvest ADS

Appraisal Effective Date: 2020-01-07

Cruise Type: CF - Cruise Loss Factor
CGNF - Call Grade Net Factor

Total Net Cruise Volume: 41083 m³

The cruise type appraisal data element selection is made using a drop-down menu, (outlined in red in Figure 3-9a). For a non-auctioned timber cutting authority that will have:

1. scale based billing, the ‘CF – Cruise Loss Factor:’ is selected, and the required source of appraisal data elements is obtained from the loss factor Appraisal Summary Report (see Appendix 3-2 for three different cruise compilations).
2. cruise based billing, then “CGNF - Call Grade Net Factoring” is selected and the required source of appraisal data elements is obtained from the call grade net factor Appraisal Summary Report (see Appendix 3-3 for three different cruise compilations).

For auctioned timber (BCTS) cutting authorities only the loss factor cruise is selected, and the required source of appraisal data elements are obtained from the loss factor Appraisal Summary Report (see Appendix 3-2 for three different cruise compilations).

Figure 3-9b – ECAS30 – Reference Information screen #2

Appraisal Type: Initial ADS Post-Harvest ADS Reappraisal

Appraisal Effective Date: 2020-01-07

Appraisal Expiry Date: 2024-01-06

Cruise Type: CF - Cruise Loss Factor

Total Net Cruise Volume: 41083 m³

Total Net Cruise Volume

The Total Net Cruise Volume (VOL EWB variable) appraisal data element in the ECAS30 – Reference Information screen, is auto-calculated (outlined in blue Figure 3-9b). The auto-calculation of Total Net Cruise Volume is the summary of all Volume by Species appraisal data elements (Figure 3-9c).

Net Volume Second Growth Coniferous

The Net Volume Cruise Second Growth appraisal data element in the ECAS30 – Reference Information screen, is manually entered and it is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

Average Side Slope

Average Side Slope (SLOPE EWB variable) appraisal data element, it is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3). The average side slope is only for conventional (cable yarding & ground systems) harvesting.

Submission Requirements

Average Side Slope (SLOPE EWB variable) appraisal data element, is entered in the ECAS33– Tree to Truck Cost Estimates/Log Transportation/Administration screen (outlined in red Figure 3-10).

- NOTES
- Ensure that the slope percent is obtained from the reduced compilation if there is partial harvest in the cutting authority.
 - Helicopter harvesting operations do not contribute to the cutting authority average side slope.
 - If the cutting authority is 100% helicopter harvest, then “zero” must be entered.

Figure 3-10 – ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen

| Tree To Truck Cost Estimates | |
|---|---|
| Conventional Logging | Helicopter Logging |
| Average Side Slope: <input type="text" value="64 %"/> | Land Drop: <input type="text" value="16393 m<sup>3</sup>"/> |
| Cable Yarding: <input type="text" value="51308 m<sup>3</sup>"/> | Water Drop: <input type="text" value="4852 m<sup>3</sup>"/> |
| Ground Systems: <input type="text" value="6153 m<sup>3</sup>"/> | Total Helicopter: <input type="text" value="21245 m<sup>3</sup>"/> |
| Skyline >600m: <input type="text" value="452 m<sup>3</sup>"/> | Heli Single Standing Stem Selection: <input type="text" value="0 m<sup>3</sup>"/> |
| NHSVPH: <input type="text" value="752.85 m<sup>3</sup>/ha"/> | Heli Selection (excludes HSSSS): <input type="text" value="4650 m<sup>3</sup>"/> |
| | CP Vol / Log: <input type="text" value="1.06 m<sup>3</sup>/log"/> |

NHSVPH

The non-helicopter selection volume per hectare (NHSVPH) appraisal data element (NHSVPH EWB variable), is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

- NOTE
- Helicopter selection volume must not be included in the NHSVPH.

Submission Requirements

The NHSVPH appraisal data element is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (outlined in blue Figure 3-10).

CP Vol/Log

The CP Vol/log (VPL EWB variable) appraisal data element, it is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3). This is the conifer only piece size.

Submission Requirements

The CP Vol/Log is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (outlined in fuchsia Figure 3-10).

Harvest Method Volumes

The harvest method volumes appraisal data elements are manually entered into the ECAS33 - Tree to Truck Cost Estimates/Log Transportation/Administration screen and are obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

- NOTES
- The total volume of Cable Yarding, Ground Systems, Skyline, Helicopter Land Drop and Helicopter Water Drop must equal the total net cruise volume in the ECAS30 - Reference Information screen.
 - Helicopter Single Standing Stem Selection (highlighted in purple in Figure 3-10) is no longer an appraisable harvest method and must not be populated.

The cruise compilation program has more harvest code capacity than ECAS has currently (these missing harvest codes have been requested as a future enhancement for ECAS). The following are the cruise compilation codes associated with the ECAS codes that need to be recorded in ECAS.

| <u>CRUISE COMPILATION</u> | | <u>ECAS</u> | |
|---------------------------|---|-------------|-------------------------|
| CC | - Cable Clear Cut | CY | - Cable Yarding |
| CS | - Cable Selective Cut | CY | - Cable Yarding |
| SC | - Ground Systems Clear Cut | GS | - Ground Systems |
| SS | - Ground Systems Selective Cut | GS | - Ground Systems |
| HL | - Helicopter Clearcut Land Drop | HL | - Helicopter Land Drop |
| SL | - Helicopter Selection Land Drop | HL | - Helicopter Land Drop |
| HW | - Helicopter Water Drop | HW | - Helicopter Water Drop |
| SW | - Helicopter Selection Water Drop | HW | - Helicopter Water Drop |
| LC | - Skyline Clear Cut | SL | - Skyline |
| LS | - Skyline Selective Cut | SL | - Skyline |
| FW | - Helicopter Single Standing Stem Selection | HS | - HSSSS |

- NOTES
- the code 'HS' in the cruise compilation is not acceptable on the Coast as there are five helicopter cruise compilation codes which are specific to the different helicopter harvest methods.
 - use SL & LS code only when skyline is beyond 600 m, if less than 600 m enter as cable.

Cable Yarding

The total net cruise volume that will be harvested by cable yarding in the cutting authority area appraisal data element is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

Submission Requirements

The Cable Yarding volume is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (highlighted in yellow Figure 3-10).

Ground Systems

The total net cruise volume that will be harvested using ground system in the cutting authority area appraisal data element, is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

Submission Requirements

The ground system volume is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (highlighted in fuchsia Figure 3-10).

Skyline >600 metre

The total net cruise volume that will be harvested by skyline system that is greater than 600 metre measured in a straight-line distance from the centre of the closest landing or a place where a landing can be created in the cutting authority area appraisal data element. This appraisal data element is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3) based upon map measurements data entry into the cruise compilation.

- NOTES
- The Skyline > 600 metre volume will be added together with the helicopter selection and Total Helicopter volume in GAS.
 - Ensure that double costing does not occur by entered information into the ECAS34 - Specified Operations screen.

Submission Requirements

The harvested by skyline system that is greater than 600 metre volume appraisal data element is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (highlighted in green Figure 3-10).

Helicopter Land Drop

The total net cruise volume that will be harvested by helicopter and dropped onto land (HELILAND EWB variable) appraisal data element, it is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

Submission Requirements

The appraisal data element is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (highlighted in red Figure 3-10).

Helicopter Water Drop

The total net cruise volume that will be harvested by helicopter and dropped into water drop (HELIWATER EWB variable) is an appraisal data element and is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

Submission Requirements

The appraisal data element is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (highlighted in light blue Figure 3-10).

Total Helicopter

The total net cruise volume Total Helicopter appraisal data element (dashed yellow outline in Figure 3-10) is an auto summation by ECAS of the Helicopter Land drop and Helicopter Water drop volume.

- NOTE
- The Total Helicopter volume is added together with the Skyline > 600 metre volume in GAS.

Helicopter Single Standing Stem Selection (HSSSS)

Helicopter Single Standing Stem Selection (highlighted in dark purple Figure 3-10) appraisal data element is an old EWB variable that is no longer appropriate to be entered into ECAS. Please ensure that it is '0'.

Helicopter Selection

The total net cruise volume that will be selectively harvested by helicopter (HS EWB variable) appraisal data element which is obtained from the cruise compilation Appraisal Summary Report (see Appendix 3-2 & 3-3).

- NOTES
- The helicopter selection volume can be either Heli Water drop (highlighted in light blue Figure 3-10) or Heli Land Drop (highlighted in red Figure 3-10).
 - Do not remove helicopter selection volume from the Heli Water drop and Heli Land Drop.
 - The helicopter selection volume is not being double counted as it is the Total Helicopter volume and Skyline > 600 metre volume that are being added together in GAS.

Submission Requirements

The CP Vol/Log appraisal data element is entered in the ECAS33 – Tree to Truck Cost Estimates/Log Transportation/Administration screen (outlined in purple Figure 3-10).

Log and Lumber Selling Price

Log Values

The Timber Pricing Branch still compiles average domestic and average export-adjusted log market values by species and log grade from log sales reported from log storage areas on the lower coast of BC (also known as the Vancouver Log Market). The information is of interest to the forest industry and the Timber, Range and Economics Branch.

TPB used to compile this log market information for the month and then summarize it into three-month schedules for use in the stand selling price. This ended on December 15, 2020, when the CAM switched to lumber selling prices to establish the stand value.

Lumber Values

Lumber prices average market value (AMV) is published monthly by the Timber Pricing Branch in the Stumpage Appraisal Parameters for use in the EWB calculation for new appraisals in that month or for monthly adjustments. The source of the lumber values is the publication "Random Lengths International", located in Eugene, Oregon and information from Statistics Canada.

The following is from the Random Lengths publication regarding source of lumber and panel product information.

Random Lengths produces independent, fair and representative price assessments and indices of lumber and panel products on a weekly basis.

During the price discovery process, the price reporter's goal is to discover at what representative level market participants have concluded business, made offers or received bids over a certain defined trading period. A price reported by Random Lengths is a benchmark, or indicator, of the trading level of an item at the time of publication. Prices reported are judgments of market prices just prior to publication of the weekly report. Each price shown falls within the range of prices reported by those sources contacted. A reported price is not an average of the prices reported to the Random Lengths staff. It is not the price for the item for the week following publication (that is, it is not a projected price for future transactions). It is not the only price at which transactions took place during the week of publication.

Data collection criteria Random Lengths' reporters aim to talk to a broad sample of market participants specifically involved in the buying and selling of the lumber or panel product of interest, with a good representation of both sides of the market, including producers, wholesalers, distributors, secondary manufacturers, buying groups, treaters, and some large retailers. Editors on the staff contact sources who are directly involved in selling or buying the products.

The number of sources contacted varies, depending on the product. Most sources are contacted each week, some are contacted every two or three weeks, and some are contacted on an irregular basis.

Random Lengths “Lumber Methodology Guide” regarding data collection is located at:

<https://www.randomlengths.com/Methodology/>

Log Grades Source

The source of the log grades for the cutting authority being appraised for cutting authorities whose effective date is:

1. On or after December 15, 2019

For both auctioned timber or non-auctioned scale-based billing cutting authorities, the Loss Factor cruise compilation information is used as the source of grades.

For non-auctioned timber cruise-based billing cutting authorities, the Call Grade Net Factor cruise compilation information is used as the source of log grades.

2. Prior to December 15, 2019

For auctioned timber (BCTS timber sale licences) or non-auctioned timber scale-based second growth cutting authorities, the Loss Factor cruise compilation information is used as the source of grades. For non-auctioned timber cruise-based billing second growth cutting authorities, the Call Grade Net Factor cruise information is used as the source of log grades.

For scale-based or cruise-based old growth cutting authorities, historic grades must be used as the source of log grades.

Prior to December 15, 2019, for an old growth cutting authority, historic grades were compiled by the TPB quarterly and used by CAP appraisal staff, using two-year averages and up to five-year regional averages, with the objective to have historic grades that most closely reflect the cutting authority log grade characteristics. A hierarchy of historic grades was followed to determine at what level the minimum log grade history volume thresholds could be met, starting first at a local District and Licensee level. If insufficient log grade history were available, the hierarchy expands geographically and by adding Licensees until adequate grade history was available.

Species Percentages

There are various EWB variables in both MPS equations that use a fraction of a species cruise compilation volume and groupings of high grades and medium grades percentages. Currently the following species are used in the EWB equations: western red cedar (cedar), Douglas fir (fir), hemlock (hemlock), balsam(balsam), yellow cedar (cypress) and western red cedar and yellow cedar combined (cedar cypress).

Consumer Price Index

The monthly BC Consumer Price Index is obtained from Statistics Canada.

The monthly BC Consumer Price Index is published in the approved stumpage appraisal parameters and used in new appraisals or quarterly adjusted appraised cutting authorities.

North American and Japanese Housing Starts

The number of North American and Japanese Housing starts is the 12-month rolling average of the sum of Japan, Canadian and US housing starts. Canadian starts are from Statistics Canada and US starts are from the US Federal Reserve Economic Database.

Total Harvest

The total harvest is a 12-month rolling average of total Coast harvest volume, as published in the approved stumpage appraisal parameters.

Average Number of Bidders

The average number of bidders (DISTAVGNBID) is the average number of bidders for the forest district within which the cutting authority is located. This is published in each CAM version.

Specified Operations

For situations (operations/works) that are unique to a cutting authority area, and which occur relatively frequently on the coast may have a specified operation. These operations/works occurrences are insufficient in the auction data set to be included as an estimate winning bid variable. A specified operation also may apply to specific geographic locations that require a higher level of forest management.

The specified operation(s) will be used to adjust the estimate winning bid (EWB) equation at the time the final estimated winning bid (FEWB) equation is calculated. The explicit assumption is that if a bidder was faced with a similar situation, the bidder would lower the bid by the extra cost incurred because of the identified situation.

The situations that may be eligible for specified operations will be determined according to the following principles:

- Expectation that a bid would be influenced by the operations/works,
- Representation (number of data points, if any, in the auction data base,
- Materiality of estimated cost differential (supported by verifiable financial data), and
- Statistical analysis (including the premise that other represented situations and variables in the MPS database and equation may serve as a proxy for the situation in question).

The ministry, after consideration of the above and any other relevant technical information, may or may not designate the situation as an identified situation eligible for a specified operation. The ultimate objective is to have a representative auction data set and thus few specified operations.

It is critical to pay careful attention to the effective date of the cutting authority as some specified operations may have defined terms (dates of expiry) or qualification, formulas or cost may change with a new CAM. The specified operations are either manually entered in the ECAS34 – Specified Operations screen or automatically calculated by GAS.

The ECAS34 – Specified Operations screen was updated on December 2021 to;

- 1) fractions from per cubic metre amount (outlined in blue Figure 3-11),
- 2) number of trees for Tree Crown Modification (outlined in orange Figure 3-11), and
- 3) per cubic meter (outlined in red Figure 3-11) for 'workarounds or new policy that systems has not kept up with.

Figure 3-11 – ECAS34 – Specified Operation screen #1

Manual Entry in ECAS Required

Specified operations which require additional information such as calculations, supporting documentation, rationales and maps must be attached in the ECAS43 – Attachments screen.

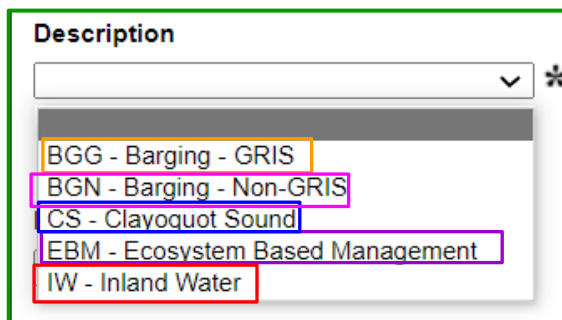
Coast Specified Operations Worksheets are located at

<https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/coast-timber-pricing/specified-operations-worksheets>

Ensure the appropriate worksheet is selected based upon the cutting authority effective date. The appropriate worksheet will be the one that is dated on or before the effective date of the cutting authority.

- NOTE
- CAP appraisal staff will use the specified operation worksheet information provided by the submitting forest professionals for Minster Directed mass reappraisals.
 - Thus no need to provide multiple worksheets for a specified operations unless there is specific guidance to do so.

Figure 3-12 – ECAS34 – Specified Operation screen #2



Barging Transportation

Barging specified operation is a transportation adjustment that applies to that portion of the cutting authority where timber is barged. Where not all the timber volume in a cutting authority is barged, a prorated calculation is done to calculate the adjustment. The CAM provides one transportation adjustment for Point of Origin Area (PoO Area) location Graham Island (GRIS) and another for the remainder of the BC coast.

- NOTE
- There should be no instance where there is a combination of GRIS PoO Area and Non-GRIS PoO in same cutting authority!

Submission Requirements

The Barging specified operation appraisal data elements are entered in the ECAS34 – Specified Operation screen at the top (outlined in blue Figure 3-11) for the:

1. **Description** by selecting from the drop-down menu the appropriate:
 - a. “Barging - GRIS” (outlined in orange Figure 3-12), or
 - b. “Barging – Non-GRIS” (outlined in fuchsia Figure 3-12).

2. **Fraction (0.01 to 1.0)** is the fraction (highlighted in yellow Figure 3-11) from the appropriate Barging worksheet.
3. Attach supporting information in ECAS43 - Attachments screen.

NOTE • At a post-harvest ADS update to the barging specified operation of the actual volumes barged from a cutting authority area must be provided.

Clayoquot Sound Operating Costs

Clayoquot Sound Operating Cost specified operation is for cutting authority areas that are located entirely or partially within the Clayoquot Sound area as outlined in the CAM. The licensee(s) must have an approved forest stewardship plan which conforms with the Land Use Objectives for Clayoquot Sound. For cutting authorities not entirely within the area, a proration of the timber volume is calculated.

Submission Requirements

The Clayoquot Sound Operating Costs specified operation appraisal data elements are entered in the ECAS34 – Specified Operation screen at the top (outlined in blue Figure 3-11) for the:

1. **Description** by selecting from the drop-down menu “Clayoquot Sound” (outlined in blue Figure 3-12).
2. **Fraction (0.01 to 1.0)** is the fraction (highlighted in yellow Figure 3-11) from the appropriate Clayoquot Sound worksheet.
3. Attach supporting information in ECAS43 - Attachments screen.

Ecosystem Based Management

Ecosystem Based Management specified operation is for cutting authority areas that are located within those areas approved in the Ministerial Order for Environmental Based Management. Presently this includes the Great Bear Rainforest Order (TSA 47 and TSA 44 area located within the outer boundaries of TSA 46) and the Haida Gwaii Land Use Objectives Order (TSA 25).

For cutting authorities partially within the areas, a proration of timber volume and cost adjustment is calculated.

NOTES • Woodlot licenses within these geographical areas are excluded from this specified operation.
• Community forests, and certain non-replaceable forest licenses referred to in section 1(3) of the Great Bear Rainforest Order are also excluded from this specified operation.

Submission Requirements

The Ecosystem Based Management specified operation appraisal data elements are entered in the ECAS34 – Specified Operation screen at the top (outlined in blue Figure 3-10) for the:

1. **Description** by selecting from the drop-down menu “Ecosystem Based Management” (outlined in purple Figure 3-12).
2. **Fraction (0.01 to 1.0)** is the fraction (highlighted in yellow Figure 3-11) from the appropriate Ecosystem Based Management worksheet.
3. Attach supporting information in ECAS43 - Attachments screen.

Inland Water Transportation

Inland Water Transportation specified operation is for towing of timber on land locked lakes that requires the timber to be extracted from the lake and then transported by truck. The CAM specifies which lakes and provides the statutory decision maker (SDM) with the authority to authorize non-listed lakes for this specified operation.

- NOTES
- Lakes that are tidal do not qualify for inland water transportation.
 - Approval of lakes not listed in CAM should occur prior to inclusion in an ADS.

Submission Requirements

The Inland Water Transportation specified operation appraisal data elements are entered in the ECAS34 – Specified Operation screen at the top (outlined in blue Figure 3-10) for the:

1. **Description** by selecting from the drop-down menu “Inland Water” (outlined in red Figure 3-12).
2. **Fraction (0.01 to 1.0)** is the fraction (highlighted in yellow Figure 3-11) from the appropriate Inland Water Transportation worksheet.
3. Attach supporting information in ECAS43 - Attachments screen.

Miscellaneous Per Cubic Metre Appraisal Data Element

In the middle of the ECAS34 – Specified Operations screen there is an appraisal data entry location to populate “per cubic metre” amount (outlined in red Figure 3-11). This appraisal data element is for any future policy change that the systems has not been updated for that will require workaround the system limitation.

The use of this appraisal data element will be directed by CAP appraisal section staff.

Tree Crown Modification

Tree Crown Modification (TCM) specified operation is when a forest professional prescribes treatment to the tree crown to reduce the hazard of windthrow along a falling edge.

- NOTES
- The Tree Crown Modification specified operations form appropriate to the cutting authority effective date must be completed and attached in the ECAS43 - Attachment screen.
 - The TCM form is located on the Timber Pricing Branch website <http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/coast-timber-pricing>
 - Tree crown modification rationales and prescriptions must specify that only live stems will be treated and removal of 25% to 50% of the tree crown modified or removed.

Submission Requirements

The Tree Crown Modification specified operation appraisal data elements are entered at the bottom of the ECAS34 - Specified Operations screen (outlined in orange Figure 3-11) for the:

1. **Old Growth Trees** by populating the number of old growth trees that will be modified (highlighted in red Figure 3-11).
2. **Second Growth Trees** by populating the number of second growth trees that will be modified (highlighted in green Figure 3-11) in the cutting authority.
3. Attach supporting information in ECAS43 - Attachments screen.

NOTE

- In PHADS invoices showing the number of trees treated will be required.

Auto Calculated by ECAS/GAS

The following specified operations are auto-calculated by ECAS/GAS. This means that no specified operation amounts for the following must be entered into ECAS34 - Specified Operation screen.

High Development Cost

High Development cost is a specified operation that is applicable only to BCTS cutting authorities where higher than normal development costs are associated with the cutting authority. The development costs are for the roads and drainage structures that the successful applicant will have to construct.

The specified operation equation essentially backs out the average development costs when the minimum threshold is exceeded. The “higher” portion of the development cost is the specified operation cost per cubic metre used in the Final Estimated Winning Bid equation. It reduces the indicated upset stumpage rate by that amount.

Long Haul Cost

Long truck haul specified operation is for log truck haul that is greater than 100 km. Only the distance beyond 100 km is used in calculation of this specified operation. This specified operation is automatically calculated by GAS based upon the weighted average haul distance.

- NOTE
- GAS draws the average truck haul distance from the ECAS33 - TTT/Log/Admin screen.
 - Do not manually update the 'Average Haul Distance' appraisal data element in the ECAS33 - TTT/Log/Admin screen!

APPENDIX 3-1



Ministry of
Forests

Revenue Branch

MEMORANDUM

File: 6450-20/ECAS
20630-01

April 28, 2005

To: Murray Stech
Revenue Manager
Coast Forest Region

Re: Cruise Compilation Rounding and Appraisals

It has come to our attention that guidelines are required for data entry from cruise compilations into coast appraisal data submissions to be used when Species and Harvest Method subtotal volumes do not sum up to the cruise Total Net Cruise Volume. This issue arises from the fact that the cruise compilation displays rounded subtotals but uses unrounded figures in summing up, ultimately to the cutting permit level. ECAS and GAS both require that any subtotals add up to exactly to the total.

Discussion between Revenue Branch and Coast Forest Region staff has resulted in the following recommended procedure to be used in transcribing cruise data into an appraisal data submission.

1. If the rounded Species volumes from the cruise do not add up to the Total Net Cruise Volume then change the Timber Mark Cruise Volume(s) to equal the sum of the rounded species volumes.
2. If the rounded Harvest Method volumes do not add up to the Timber Mark Cruise Volume from Step 1, then change the largest harvest method volume so that the sum of the harvest method volumes equals the Timber Mark Cruise Volume resulting from Step 1.



Mike Falkiner
Manager
Timber Pricing

Grant Loeb
Manager
Scaling and Cruising

APPENDIX 3-2

Claymore - Loss Factor Cruise Compilation

CLAYMORE IFP- -3365 [v2016.00] ← **Cruise Compilation Version** on

REPORT DATE 25-JAN-2017 (09:57:00)

FOREST LICENCE A19238
CUTTING PERMIT 760

Initial Merchantable Area

APPRaisal SUMMARY

MINIMUM DBH 17.5 CM GRADES - MOF COMPUTERIZED
STUMP HEIGHT 30.0 CM NET FACTORS - DWB
TOP DIAMETER 15.0 CM (M) C, H
LOG LENGTH 10.0 M OTHERS - MOF LOCAL NF

MERCHANTABLE TIMBER 109.80 Ha.
SAM. ERROR (95% CI) 9.6
PLOTS/HECTARE 1.2
TREES/PLOT 4.3
MEA/CNT PLOT RATIO 1.0:1
AVG CONVENTIONAL SLOPE 49
CONIFER PIECE SIZE 0.80 ← **CP Vol/Log**
OLDEST CRUISE PLOT DATE SEP/2016

Volume by Species

| SPECIES | B | C | D | E | F | G | H | I | J | K | L | M | U | X | Y | NET M3 | NET TREE | NET M3 /HA. | LIVE NET M3 | LIVE M3/HA. | DEAD NET M3 | DEAD M3/HA. |
|--------------------|---|---|---|---|---|----|----|----|----|---|---|----|---|---|---|--------|----------|-------------|-------------|-------------|-------------|-------------|
| BALSAM | | | 8 | | 3 | | 29 | 4 | 40 | | | | | | | 20,449 | 1.38 | 186.240 | 20,041 | 182.519 | 409 | 3.721 |
| CEDAR | | | | | | 24 | 15 | 24 | 1 | 1 | 8 | 20 | 3 | 4 | | 23,009 | 1.64 | 209.556 | 17,543 | 159.770 | 5,467 | 49.786 |
| Y CEDAR | | | 9 | | 6 | | 21 | 2 | 26 | | | | | | | 20,076 | 1.54 | 182.844 | 12,633 | 115.052 | 7,443 | 67.791 |
| HEMLOCK | | | 6 | | 1 | | 20 | 12 | 33 | | | | | | | 27,183 | 1.21 | 247.565 | 26,126 | 237.946 | 1,056 | 9.620 |
| N PINE | | | | | | | 59 | | 14 | | | | | | | 27 | 3.10 | 6.787 | | | 745 | 6.787 |
| TOTAL - ALL | | | | | | | | | | | | | | | | 91,462 | 1.42 | 832.992 | 76,342 | 695.287 | 15,120 | 137.705 |
| TOTAL - CONIFER | | | | | | | | | | | | | | | | 91,462 | 1.42 | 832.992 | 76,342 | 695.287 | 15,120 | 137.705 |
| 2nd GROWTH CONIFER | | | | | | | | | | | | | | | | | | | | | | |
| NHS - CONIFER | | | | | | | | | | | | | | | | | | 832.99 | | | | |

Net Volume Second Growth Coniferous →

NHSVPH

TREE-TO-TRUCK INFORMATION

| | CABLE CLEARCUT | GROUND CLEARCUT | ----- TOTAL ----- |
|---------------------|----------------|-----------------|-------------------|
| NET MERCH M3 | 38,986 | 52,477 | 38,986 52,477 |
| NET M3/HA | 840.206 | 827.713 | |
| HEMLOCK/BALSAM % | 46 | 56 | |
| PARTIAL CUT % | | | |
| AVERAGE SLOPE % | 57 | 43 | |
| BLOWDOWN DAMAGE % | 7 | 5 | |
| HEAVY FIRE DAMAGE % | | | |

Harvest Type & Volume

BLOCK MATURITY INFORMATION

| BLOCK NAME | SCT280 | SCT281 | SCT285 | SCT351 | SH0144A |
|--------------------|--------|--------|--------|--------|---------|
| ALL IMMATURE % | | | | | |
| CONIFER IMMATURE % | | | | | |

*** FOR APPRAISAL PURPOSES ***

Average Line Method Grades: MOF Computerized
Computerized Decay
Licence Number: PSYD: Nootka
Project: Computerized Waste
Location: Plumper/Kendrick/Nootka Is No Of Blocks: 5

Appraisal Summary Report
01-Jun-2017 02:08:04PM
Filename:
Compiled by:
Cruised by:
Version: 2016.00 IFS build 6004

Utilization Levels: Minimum DBH Top Diameter Stump Height
Mature Blocks: (cm) 17.5 15.0 30
Immature Blocks: (cm) 12.0 10.0 30
Standard Log Length: (m) 10.00

Initial Merchantable Area

Net Area: [All Treatment Units : 57.4

Volume by Species

| Species | C | D | E | F | G | H | I | J | K | L | M | U | X | Y | Net Volume (m3) | Net Volume / ha |
|-------------|----|---|----|----|----|----|---|---|----|---|---|---|---|---|-----------------|-----------------|
| BA Balsam | 7 | 9 | 28 | 5 | 36 | | | | | | | | | | 6937 | 6885 |
| CE Cedar | 2 | | 30 | 14 | 13 | 3 | 2 | 7 | 22 | 1 | 6 | | | | 14739 | 13191 |
| CY Y. Cedar | 9 | | 5 | | 71 | | | | | | | | | | 190 | 190 |
| FI Doug-Fir | 15 | 2 | 25 | 22 | 9 | 2 | | | | | | | | | 4569 | 4065 |
| HE Hemlock | 5 | 6 | 21 | 13 | 37 | | | | | | | | | | 17464 | 16299 |
| SP Spruce | 2 | 1 | 9 | 17 | 30 | 31 | | | | | | | | | 574 | 484 |
| AL Alder | | | | | | | | | | | | | | | 254 | 254 |
| Total | | | | | | | | | | | | | | | 44726 | 41365 |

Harvesting Method Summaries

| Harvest Method | Net Volume | Net Vol /10m Log | Net Vol /Hectare | Hem+ Bal% | Partial Cut% | Slope% | Down Tree% | Heavy Fire% |
|----------------------|------------|------------------|------------------|-----------|--------------|--------|------------|-------------|
| CC | 32150 | 0.98 | 850.520 | 60 | | 61 | 4 | 0 |
| SC | 12577 | 0.73 | 641.658 | 40 | | 42 | 4 | 1 |
| Conventional Methods | 44726 | 0.89 | 779.202 | 55 | | 55 | 4 | 0 |
| All Methods | 44726 | 0.89 | 779.202 | 55 | | 55 | 4 | 0 |

Cutting Authority

95% Confidence Interval 11.0 ← **Sampling Error %**
Plots/Ha 1.2
Cruised Trees/Plot 4.7
Net 2nd Growth-Conifer % 1.0
Net 2nd Growth-Conifer (m3) 459 ← **Net Volume Second Growth Coniferous**
Net Immature by Block % 08B: 0% 17A: 0% 20A: 0% 21S: 19% 220: 0%
Non Heli Select Conifer (m3/ha) 774.78 ← **NHSVPH**
Heli Select Total (decimal) 0.00
Heli-Skyline Total (decimal) 0.00
Piece Size - Conifer (m3/10m log) 0.91 ← **CP Vol/Log**
Cruise Date (yy-mm): 16-05

Average Side Slope

NOTE IFS harvest type and volume not available in Appraisal Summary Report

CompMate - Loss Factor Cruise Compilation

FOR APPRAISAL PURPOSE
 Timber Pricing Branch: 2018.00 ← **Cruise Compilation Version**
 Appraisal Summary (Average Line Method)
 Section Page: 1 Main Page: 3
 CompMatePC 1.4.17.0
 License Number: TA0462 PSYU: 78 - Soo - 156 Region: 1 - South Coast Licence: BCTS Useless Volume Excluded
 TA0462-2018-22.cpm
 12/28/2018 4:26:06 PM
 Cutting Permit: FIZ: C District: 2 - Squamish Cruised By: Infinity-Pacific Stewardship Group Compiled By: RFT
 Grades: Computerized
 Utilization: Standard (Mature) DBH Limit: 17.5 Stump Height: 30 Top Diam.: 15.0 Log Length: 10.0
 Standard (Immature) DBH Limit: 12.0 Stump Height: 30 Top Diam.: 10.0 Log Length: 10.0
 Treatment Unit: All -46.5 ← **Initial Merchantable Area** **Volume by Species**

| All Method Summary | | Grades | | | | | | Net Volume (m3) | | | Net Volume / ha | | |
|--------------------|--------------|--------|----|-----|----|----|----|-----------------|-------|------|-----------------|---------|--------|
| Code | Description | H | I | J | U | X | Y | All | Live | DP | All | Live | DP |
| B | Balsam | 24 | 8 | 47 | 13 | 6 | 2 | 9576 | 9022 | 554 | 205.928 | 194.012 | 11.916 |
| F | Fir | | | 100 | | | | 93 | 93 | 0 | 1.991 | 1.991 | 0 |
| H | Hemlock | 19 | 2 | 52 | 21 | 4 | 2 | 13350 | 13246 | 104 | 287.102 | 284.868 | 2.234 |
| PW | White Pine | | 59 | | 41 | | | 146 | 0 | 146 | 3.144 | 0 | 3.144 |
| Y | Yellow Cedar | 7 | | 53 | 8 | 12 | 20 | 7105 | 6556 | 549 | 152.799 | 140.999 | 11.800 |
| Total | | | | | | | | 30270 | 28917 | 1353 | 650.965 | 621.870 | 29.095 |

← **Harvest Type & Volume**

| Harvesting Method Summaries | | Net Volume | Net Vol 10m Log | Net Vol/Ha | Hem & Bal % | Partial Cut % | Average Slope % | Down Tree % | Heavy Fire % |
|-----------------------------|--------------|------------|-----------------|------------|-------------|---------------|-----------------|-------------|--------------|
| All Species | SC | 30270 | 0.60 | 650.965 | 76 | | 34 | 2 | |
| | Conventional | 30270 | 0.60 | 650.965 | 76 | | 34 | 2 | |
| | All Methods | 30270 | 0.60 | 650.965 | 76 | | 34 | 2 | |

← **CP Vol/Log** ← **Average Side Slope**

| All Method Parameter Table | |
|---------------------------------|---|
| 95% Confidence Interval | 14.1 ← Sampling Error % |
| Plots/Ha | 0.9 |
| Trees/Plot | 5.2 |
| Net 2nd Growth % (Conifer) | 3.1 |
| Net 2nd Growth m3 (Conifer) | 936 ← Net Volume Second Growth Coniferous |
| Net Immature Block % | 114 0% 115 1% |
| Non-Heli Select m3/ha (Conifer) | 650.97 ← NHSVPH |
| Cruise Date: 2018-10 | Total # Plots: 44 # <= 5yrs: 44 # > 5yrs: 0 # > 10yrs: 0 # No Date: 0 |

FLAGS: Compile All Trees

APPENDIX 3-3

Claymore - Call Grade Net Factoring Cruise Compilation

| | | | |
|---|-----------------------------------|---|------------------------------------|
| CLAYMORE [V2019.00] ← Cruise Compilation Version | REPORT DATE 8-OCT-2019 (07:37:05) | FOREST LICENCE CUTTING PERMIT | Initial Merchantable Area |
| APPRAISAL SUMMARY MINIMUM DBH 17.5 CM GRADES - MOF ESTIMATED STUMP HEIGHT 30.0 CM DECAY CRUISER ESTIMATED TOP DIAMETER 15.0 CM WASTE Z-GRADE ESTIMATED LOG LENGTH VARIABLE | | MERCHANTABLE TIMBER 79.00 Ha. | 79.00 Ha. |
| FIS A ESYU KINGCOOKE FOREST REGION W.COAST FOREST DISTRICT N.ISL-C.COAST | | SAM. ERROR (95% CI) 10.5 | ← Sampling Error % |
| | | TREES/PLOT 4.3 | ← Average Side |
| | | MEA/CNT PLOT RATIO 3.8 | ← CP Vol/Log |
| | | AVG CONVENTIONAL SLOPE 34 | |
| | | CONIFER PIECE SIZE 0.79 | |
| SPECIES LOG GRADE PERCENTAGES B C D E F G H I J K L M U X Y | | NET M3 /TREE | NET M3 /HA. |
| ALDER 68 MAPLE 47 BALSAM 16 28 9 37 CEDAR 4 3 24 12 48 1 Y CEDAR 2 21 18 11 16 FIR 48 1 3 18 16 HEMLOCK 2 35 7 46 SPRUCE 67 9 17 | | 516 1.10 6.533 199 2.514 318 4.019 | |
| | | 3,386 1.95 42.857 3,166 40.072 220 2.785 | |
| | | 5,980 1.21 75.702 5,462 69.139 518 6.563 | |
| | | 6,654 1.36 84.227 6,339 80.241 315 3.987 | |
| | | 5,673 3.07 71.811 5,594 70.811 79 1.000 | |
| | | 43,898 1.93 555.669 42,754 541.189 1,144 14.480 | |
| | | 3,317 5.02 41.989 3,317 41.989 | |
| TOTAL - ALL 69,561 1.94 880.528 66,968 847.693 2,594 32.835 TOTAL - CONIFER 68,908 1.87 872.256 66,632 843.440 2,276 28.815 2nd GROWTH CONIFER 53,558 (78%) NHS - CONIFER 872.26 ← NHSVPH | | | |
| TREE-TO-TRUCK INFORMATION GROUND CLEARCUT ----- TOTAL ----- NET MERCH M3 69,562 CBL+SKY GROUND NET M3/HA 880.528 HEMLOCK/BALSAM % 68 PARTIAL CUT % AVERAGE SLOPE % 34 BLOWDOWN DAMAGE % 1 HEAVY FIRE DAMAGE % | | | ← Harvest Type & Volume |
| BLOCK MATURITY INFORMATION BLOCK NAME FRD004 FRD004B FRD004C RAV001 RAV002 RAV020 ALL IMMATURE % 99 93 94 CONIFER IMMATURE % 100 94 94 | | | |

| | | | | | | |
|--|---|-----------------------------------|------------------------|------------------------|--|-------------------------------------|
| *** FOR MPS PURPOSES *** | | Appraisal Summary Report | | 23-Sep-2019 02:09:50PM | | APPSM 1, p4 |
| Average Line Method | Grades: Cruiser Called Alpha | TFL: B | | Filename: | | |
| License Number: | Cruiser Est Decay | Region: 2 - West Coast | | Compiled by: | | |
| Project: | CSMP Breakage Table | District: 06 - N. Island/C. Coast | | Cruised by: | | |
| Location : Bonanza Lake | No Of Blocks : 3 | | | Version: 2019.00 IFS | | |
| Utilization Levels: | Minimum DBH Top Diameter Stump Height | | | | | ← Cruise Compilation Version |
| Mature Blocks: (cm) | 17.5 15.0 30 | | | | | |
| Immature Blocks: (cm) | 12.0 10.0 30 | | | | | |
| Standard Log Length: (m) | 13.00 | | | | | |
| Net Area: [All Treatment Units : 87.2] ← Initial Merchantable Area | | | | | | |
| All Method Summary | | Volume by Species | | | | |
| Cruiser Call Variable Length Grades % | | Net Volume (m3) | | Net Volume / ha | | |
| Species C F H I J U X Y | | All Live DP | All Live DP | | | |
| BA Balsam 8 23 8 40 15 3 3 | | 18609 18133 476 | 213.407 207.948 5.459 | | | |
| CE Cedar 3 19 8 43 25 1 1 | | 5476 4836 640 | 62.793 55.457 7.336 | | | |
| CY Y. Cedar 39 7 22 5 7 20 | | 5611 5611 0 | 64.348 64.348 0.000 | | | |
| FI Doug-Fir 32 19 42 7 | | 1237 1237 0 | 14.191 14.191 0.000 | | | |
| HE Hemlock 4 8 7 56 18 2 5 | | 41850 40311 1539 | 479.929 462.282 17.646 | | | |
| SP Spruce 52 11 29 8 | | 1002 1002 0 | 11.494 11.494 0.000 | | | |
| Total | | 73785 71131 2654 | 846.161 815.719 30.441 | | | |
| Harvesting Method Summaries | | | | | | |
| Harvest Method | Net Volume Net Vol /10m Log Net Vol /Hectare Hem+ Bal% Partial Cut% Slope% Down Tree% Heavy Fire% | | | | | |
| CC | 10569 0.55 812.975 84 46 2 0 | | | | | |
| SC | 63217 0.56 851.975 82 36 2 0 | | | | | |
| Conventional Methods | 73785 0.56 846.161 82 38 2 0 | | | | | |
| All Methods | 73785 0.56 846.161 82 2 0 | | | | | |
| Cutting Authority | | | | | | |
| 95% Confidence Interval | 9.5 ← Sampling Error % | | | | | |
| Plots/Ha | 1.1 | | | | | |
| Cruised Trees/Plot | 4.7 | | | | | |
| Net 2nd Growth-Conifer % | 50.4 ← Net Volume Second Growth Coniferous | | | | | |
| Net 2nd Growth-Conifer (m3) | 37189 | | | | | |
| Net Immature by Block % | 181: 92% 254: 0% BCS:100% | | | | | |
| Non Heli Select Conifer (m3/ha) | 846.16 ← NHSVPH | | | | | |
| Heli Select Total (decimal) | 0.00 | | | | | |
| Heli+Skyline Total (decimal) | 0.00 | | | | | |
| Piece Size - Conifer (m3/10m log) | 0.56 ← CP Vol/Log | | | | | |
| Cruise Date (yy-mm): | 19-04 | | | | | |
| # Plots: 93 # <= 5yrs: 93 # > 5yrs: 0 # > 10yrs: 0 # no date: 0 | | | | | | |

CompMate - Call Grade Net Factoring Cruise Compilation

FOR MPS PURPOSE: 2018.00 ← **Cruise Compilation Version**

PERCENT REDUCTION APPLIED: Appraisal Summary (Average Line Method)

Section Page: 1 Main Page: 4
 CompMatePC 1.4.17.0
 Useless Volume Excluded
 12/28/2018 4:33:11 PM

License Number: PSYU: 78 - Soo - 156 Region: 1 - South Coast Licence: C
 Cutting Permit: FIZ: C District: 2 - Squamish Cruised By:

Grades: Cruiser Called
 Utilization: Standard (Mature) DBH Limit: 17.5 Stump Height: 30 Top Diam.: 15.0 Log Length: 13
 Standard (Immature) DBH Limit: 12.0 Stump Height: 30 Top Diam.: 10.0 Log Length: 13

Treatment Unit: All - 46.5 ← **Initial Merchantable Area** **Volume by Species**

| All Method Summary | | Grades | | | | | | Net Volume (m3) | | | Net Volume / ha | | |
|--------------------|--------------|--------|----|----|----|----|----|-----------------|-------|-----|-----------------|---------|--------|
| Code | Description | F | H | I | J | U | Y | All | Live | DP | All | Live | DP |
| B | Balsam | 37 | 6 | 30 | 19 | 8 | | 9413 | 9159 | 254 | 202.432 | 196.960 | 5.472 |
| F | Fir | | | | 93 | | 7 | 91 | 91 | 0 | 1.966 | 1.966 | 0 |
| H | Hemlock | | 28 | 7 | 40 | 12 | 13 | 12225 | 12130 | 95 | 262.897 | 260.862 | 2.035 |
| PW | White Pine | | | | | 73 | 27 | 105 | 0 | 105 | 2.266 | 0 | 2.266 |
| Y | Yellow Cedar | 1 | 21 | 5 | 46 | 18 | 9 | 7694 | 7503 | 191 | 165.467 | 161.358 | 4.109 |
| Total | | | | | | | | 29529 | 28883 | 646 | 635.028 | 621.145 | 13.883 |

← **Harvest Type & Volume**

| Harvest Method | Net Volume | Net Vol 10m Log | Net Vol/Ha | Hem & Bal % | Partial Cut % | Average Slope % | Down Tree % | Heavy Fire % |
|----------------|------------|-----------------|------------|-------------|---------------|-----------------|-------------|--------------|
| All Species | 29529 | 0.73 | 635.028 | 73 | 100 | 34 | 1 | |
| Conventional | 29529 | 0.73 | 635.028 | 73 | 100 | 34 | 1 | |
| All Methods | 29529 | 0.73 | 635.028 | 73 | 100 | 34 | 1 | |

← **CP Vol/Log** ← **Average Side Slope**

| All Method Parameter Table | |
|---------------------------------|---|
| 95% Confidence Interval | N/A with reduction ← Sampling Error % |
| Plots/Ha | 0.9 |
| Trees/Plot | 5.2 |
| Net 2nd Growth % (Conifer) | 0.6 |
| Net 2nd Growth m3 (Conifer) | 165 ← Net Volume Second Growth Coniferous |
| Net Immature Block % | 114 0% 115 1% ← NHSVPH |
| Non-Heil Select m3/ha (Conifer) | 635.03 |
| Cruise Date: 2018-10 | Total # Plots: 44 # <= 5yrs: 44 # > 5yrs: 0 # > 10yrs: 0 # No Date: 0 |

FLAGS: Compile All Trees