



Government of Canada
Gouvernement du Canada

Canadian Forestry Service

Service canadien des forêts

Predicting logging residues in British Columbia

A. Tunner and J.T. Standish

Information Report BC-X-284
Pacific Forestry Centre



Energy
ENFOR
from the Forest

Predicting logging residues in British Columbia

A. Tunner*

and

J.T. Standish**

* B.C. Research
3650 Westbrook Mall
Vancouver, B.C.
V6S 2L2

** Talisman Land Resource Consultants
300-842 Thurlow Street
Vancouver, B.C.
V6E 1W2

Present address:
Norecol Environmental Consultants Ltd.
Suite 100, 1281 West Georgia Street
Vancouver, B.C.
V6E 3J7

Canadian Forestry Service
Pacific Forestry Centre

BC-X-284

1986

Canadian Forestry Service
Pacific Forestry Centre
506 West Burnside Road
Victoria, B.C.
V8Z 1M5

© Minister of Supply & Services Canada, 1986
ISSN 0830-0453
ISBN 0-662-14787-1
Cat. No. Fo46-17/284E

Foreword

Enfor is the acronym for the Canadian Government's ENergy from the FORest (ENergie de la FORet) program of research and development aimed at securing the knowledge and technical competence to facilitate in the medium- to long term a greatly increased contribution from forest biomass to our nation's primary energy production. This program is part of a much larger federal government initiative to promote the development and use of renewable energy as a means of reducing dependence on petroleum and other nonrenewable energy sources.

The Canadian Forestry Service (CFS) administers the ENFOR Biomass Production program component which deals with such forest-oriented subjects as inventory, harvest technology, silviculture and environmental impacts. (The other component, Biomass Conversion, deals with the technology of converting biomass to energy or fuels, and is administered by the Renewable

Energy Branch of the Department of Energy, Mines and Resources). Most Biomass Production projects, although developed by CFS scientists in the light of ENFOR program objectives, are carried out under contract by forestry consultants and research specialists. Contractors are selected in accordance with science procurement tendering procedures of the Department of Supply and Services. For further information on the ENFOR Biomass Production program, contact:

ENFOR Secretariat
Canadian Forestry Service
Department of the Environment
Ottawa, Ontario
K1A 1G5

This report is based on ENFOR project P-142, which was carried out under contract (DSS File No. 07SB.KL017-9-0655) by Talisman Land Resource Consultants, Vancouver, B.C.

Abstract

A computer simulation model is presented which allows the calculation of residual biomass following conventional harvesting. The model is applicable to British Columbia, and requires the user to specify the level of tree utilization and to provide forest stand data (Compartment Area Statement) available from the British Columbia Ministry of Forests. However, it can be used to give estimates for any forest stand that a user may specify. Outputs are in total tonnes by tree component (stem wood, stem bark, three size classes of branches and foliage).

Résumé

Un modèle de simulation par ordinateur permettant le calcul de la biomasse résiduelle après une récolte de type classique est présenté. Ce modèle, applicable à la Colombie-Britannique, exige que l'utilisateur indique le niveau d'utilisation des arbres et fournisse des données sur le peuplement (Compartment Area Statement), lesquelles peuvent être obtenues du ministère provincial des Forêts. Ce modèle peut être utilisé pour produire des estimations pour tout peuplement forestier décrit par l'utilisateur. Les résultats sont exprimés en tonnes totales par composante des arbres (bois de tige, écorce de la tige, trois classes de dimension des branches et feuillage).

Acknowledgements

The development of the program for this model was in large part carried out at B.C. Research, 3650 Westbrook Mall, Vancouver, B.C., by the team of Alex Tunner, Operations Research Scientist and Stanley Chow, Computer Programmer.

We would also like to thank the staff of the B.C. Ministry of Forests Inventory Branch, especially Mr. Imre Spandli. Finally, Dr. G.H. Manning and others at the Pacific Forestry Centre provided helpful editorial comments and suggestions.

Contents

	Page
Foreword	3
Abstract/Résumé	4
Acknowledgements	4
Introduction	6
Biomass Estimation Model	6
Overview of the Model	7
Program Elements	8
Performance of the Model	9
Bibliography	12
*	
Appendix	14

Tables

1. Input parameters for the Biomass Estimation Model	10
2. Example of the output of the Biomass Estimation Model	11

Figure

1. Flow Chart of B.C. Biomass Estimation Model	9
--	---

Introduction

Love (1980) has indicated the potentially great contribution of forest biomass to Canada's future energy supply; forest biomass, including logging residue, is a potentially viable energy source in British Columbia (McDaniels 1982). A prerequisite to realizing this potential is the availability of an adequate inventory of forest biomass (Bonnor 1979; Dobbs 1981).

Total forest biomass inventories are a useful statement of the total energy available on a forest site. However, in most cases the only biomass available for energy conversion is that which remains after logging for more conventional forest products. In the United States, the Forest Service is presently integrating biomass estimates with its Renewable Resources Evaluation Program (Bones 1982), from which the first biomass estimates are now available (USDA Forest Service 1981).

In Canada, no such national attempt is under way, although a national total forest biomass inventory is in preparation. The estimation of available forest residues has until now depended on after-the-fact surveys of the type developed

by Warren and Olsen (1964), and amplified by Van Wagner (1968), Bailey (1969) and Brown (1974). The latter is the standard reference for inventorying logging residues for forest fuel control and has frequently been utilized for biomass measurement (e.g., Paul H. Jones and Assoc. Ltd. 1979; Blakeney 1980).

Several approaches to predicting site-specific residue weights prior to logging have been developed in the United States (Snell and Brown 1980; Brown *et al* 1979; Brown 1978; Snell *et al* 1981). The latter is the only computerized model that has been integrated in the conventional inventory.

As part of the ENFOR program's forest biomass inventory program, a model to predict residual biomass following logging to specified standards was developed for British Columbia (Standish 1983). The purpose of the model is to estimate forest biomass that is potentially available for energy conversion. Such estimates are needed for decision making in energy policy as well as more specific decisions on the need for and locations of biomass conversion plants (Dobbs 1981).

Biomass estimation model

The biomass estimation model was developed by B.C. Research and Talisman in consultation with the Inventory Branch of the B.C. Ministry of Forests. A modified mean-tree approach, as discussed by Baskerville (1965a), is used. The model applies biomass equations (Standish *et al* 1985) to the information in B.C. Ministry of Forests Stand and Stock Tables and uses a modified form of the Inventory Branch's merchantability, decay, waste and breakage factors to estimate the amount of biomass removed by logging according to specified utilization limits. Biomass removed by logging is subtracted from the standing biomass (before logging) to arrive at the residual biomass.

The basic data are specific to British Columbia and the inventory system presently in use. The Compartment was judged to be the most convenient unit for describing forest stands and for linking with the inventory system of the B.C. Ministry of Forests. Thus, the model requires access to Compartment Area Statements and associated stand and stock tables.

British Columbia is divided into 12 Forest Inventory Zones. Forest Inventory Zones are subdivided into Forest Inventory Regions and these are further subdivided into compartments. Compartments consist of a collection uniquely identified strata (types or type polygons) which describe

not only forest land but also non-forest land such as rock, open range or cultivated land.

A Compartment Area Statement is a listing of the strata in a compartment, including their areas in acres or hectares. A stratum (where it defines forest land) is defined according to tree species composition, stand age and height, stocking and site class. One or more stand and stock tables (one table for each species), showing the number of stems per hectare by Dbh class and decay risk group, are provided for each stratum. Biomass regression equations are applied to the data in the stand and stock tables to produce biomass estimates for a stratum (Standish *et al* 1985).

The biomass estimation model incorporates within it and in associated basic data files the following information:

- Biomass regression equations;
- B.C. Ministry of Forests whole-stem metric volume equations;
- B.C. Ministry of Forests merchantability, decay, waste and breakage factors.

For each tree species the three regression models were used to compute equations that are included in the Biomass Estimation Model:

$$(1) y = a + b(V) + c(D, H, V) + d(D, H, V)$$

$$(2) y = a + b(D^2H)$$

$$(3) \log(y) = a + b \log(Dbh) + c \log(H)$$

where $D = Dbh =$ diameter at breast height, $H =$ total height, $V =$ stem volume, $y =$ biomass and a, b, c and d are regression coefficients. Equations (1) and (2) are discussed by Standish *et al* 1985. The logarithmic equations (3) were computed but were not fully analyzed and were not corrected for downward bias; their use requires caution. In general, Equation (1) will give the most precise estimates and can be used as long as trees described in the stand data are within the size range of the sample trees used to calculate the equations. Equation (3) underestimates biomass because of the downward bias associated with logarithmic transformation. Equation (2) gives estimates of stemwood, bark and

total above-ground biomass that are of nearly comparable precision as the estimates from Equation (1).

Whole stem, metric volume equations were also computed for each species from the biomass sample trees. These are not likely to be of interest to most users of the Biomass Estimation Model. However, volume estimates for each stratum described in the Compartment Area Statement appear in the Biomass Estimation Model output.

Overview of the model

Generally, the model works as follows:

- The user selects the regression equations to be used and the desired level of utilization.
- The user provides stand data (such as a Compartment Area Statement).
- The data file is read.
- The corresponding stand table is found.
- Gross and net volumes are calculated using B.C. Ministry of Forests decay, waste and breakage factors, merchantable volume factors and volume equations.
- Fresh and dry component and total above-ground biomass are calculated. The mass removed by logging and the residual mass are thus computed.
- Values are accumulated for each Dbh class in the stand and stock table, for each species and strata, and for the given compartment or region.

Output can consist of fresh and dry biomass, expressed in metric tonnes, by Dbh class, component, species, strata, compartment and, if desired, region. Values for standing biomass (before logging), biomass removed by logging at the specified utilization level and biomass remaining after logging are printed. As an option, the stand and stock tables can also be printed. The total area (in hectares) and the species in each strata are also printed.

The major components of the Biomass Estima-

tion Model are shown in the schematic diagram (Figure 1). The elements shown in the diagram are described briefly below.

Program elements

- INIT1:** Initializes BCFS volume equations and merchantable volume factors. Also initializes the look-up table for decay, waste and breakage factors. Reads terms and coefficients for three sets of biomass equations from file EQS.
- INIT2:** Initializes date, time, page numbers, line numbers and sets defaults for run parameters.
- SETUP:** Displays full parameter menu on the video display terminal (VDT) by calling VDTPSU and PENTER.
VDTPSU: VDT parameter setup — writes run parameters on VDT.
PENTER: Parameter entry — reads/writes on VDT the parameter changes for a single run.
- PTRPSU:** Print parameter setup — identical to VDTPSU, writes final run parameters on printer.
- CAS:** Reads strata names and acreage from Compartment Area Statement file CAF.
FINDST: Checks validity of stratum "name" (see below).
 If valid, accumulates acreage of similar strata in temporary file BMS.
PTRSTRA: The strata selected and the accumulated acreage are written on printer or VDT.
MESSAGE: Writes any warning messages on printer or VDT.
- FINDST:** For a given stratum name, tries to find corresponding stand and stock table in file SSF.
- TRYHT:** Tries to find given height class; if not found, tries 4 classes higher and lower.
- TRYAGE:** Tries to find given age class; if not found, tries 4 classes higher and lower.
- TRYAS:** Tries to read indexed stand and stock file SSF.
- BD1:** Determines type group given the first and second species type.
- SAS:** Stand and stock subroutine calculates:
CLEAR: Clears required levels of various arrays.
- DCALC:** Called wherever a new dbh class is read from stand and stock file. It calls:
VOLUME: Calculates BCFS volume and merchantable volume factor.
DWB: Calculates decay-waste-breakage for the trees involved.
COMPO: Calculates dry and fresh component biomass weights using the appropriate set of biomass equations.
- CALCS:** Accumulates the biomass weights calculated in DCALC to higher levels (Dbh class, species, stratum, compartment, region).
- PSAS:** Prints stand and stock tables on VDT and/or printer, to the level of detail specified by the appropriate parameter in SETUP.
- PBM:** Print biomass volumes, amount logged, and biomass remaining following logging.

Further details of the model and output can be obtained through the senior author.

B.C. biomass estimation model overview

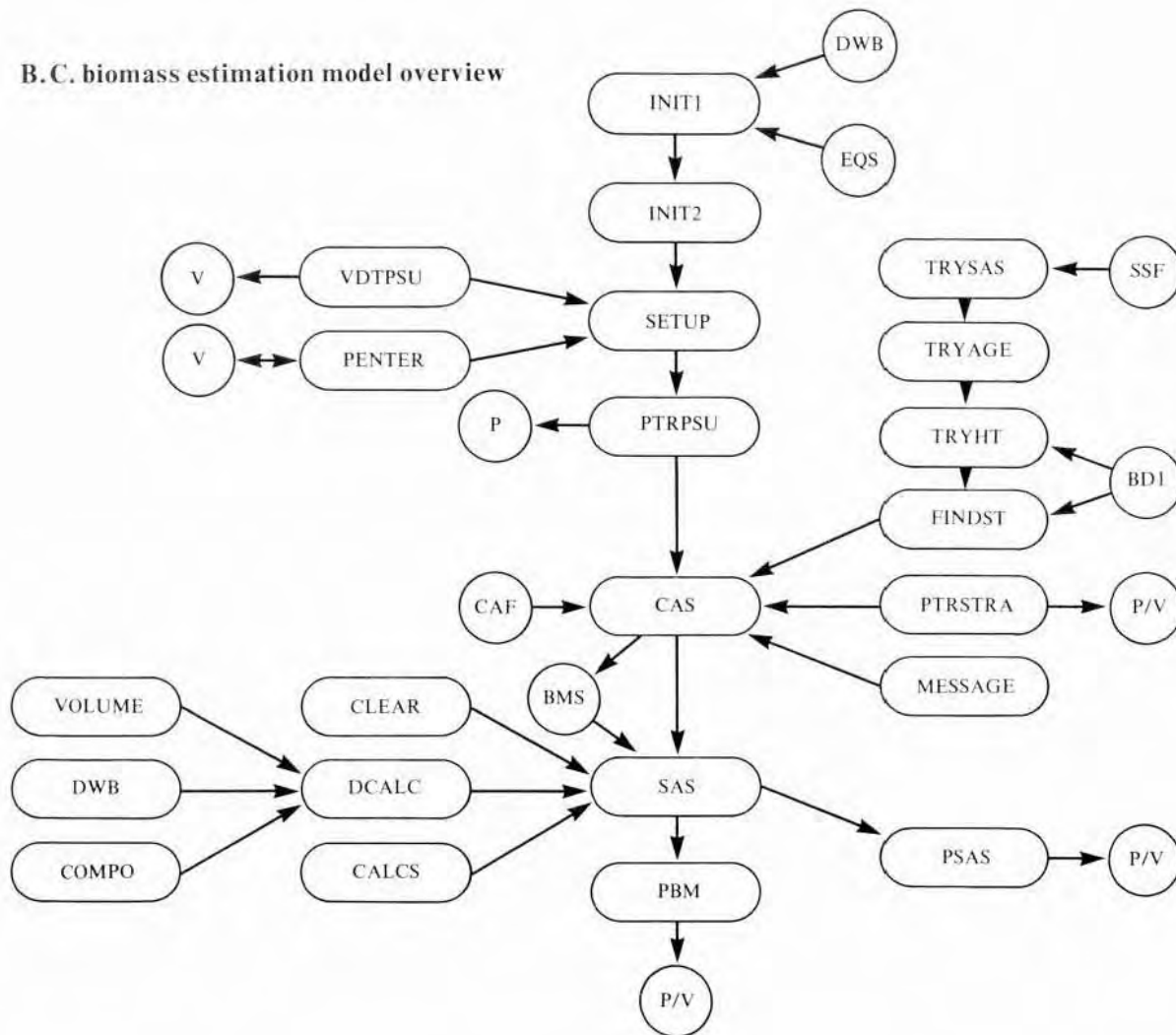


Figure 1. B.C. biomass estimation model flow chart.

Performance of the model

The model was tested using two sets of data obtained from the B.C. Ministry of Forests:

1. A large and complex coastal area: Region 9, Compartment 3 located just east of Stave Lake in the Fraser Timber Supply Area of the Vancouver Forest Region.
2. An interior area: Region 60, Compartment 156, located near Whitesail Lake in the Morice Timber Supply Area of the Prince Rupert Forest Region.

Examples of output are shown in Tables 1 and 2.

Table 1 shows the basic input parameters. These specify the equations to be used and the level of detail desired in the output. Referring to Table 1, a biomass regression model is selected (01) and a mode (02). The simple linear regression is indicated by "2" in this example; "1" corresponds to the multiple linear equations and "3" corresponds to the logarithmic equations. "Mode" (02) refers to the type of data file: B.C. Ministry of Forests inventory data in this case. A Compartment Area Summary is used in this study, so "2" is selected.

The compartment level of aggregation ("2") is selected in step 03. Printing of the stand and stock tables is requested in step 04 by entering

Table 1. INPUT PARAMETERS FOR THE BIOMASS ESTIMATION MODEL

BIOMASS ESTIMATION MODEL

	REGION 9	COMPARTMENT 003-0
RUN PARAMETERS	(01) BIOMASS EQUATION SET=2 (02) MODE=2	(1="COMPLEX" 2=DBH 3=LOGS) (1=INDIVIDUAL 2=BCFS INVENTORY)
STOCK & STAND REPORTING LEVEL	(03) VDT SCREEN LEVEL=2 (04) PRINTER LEVEL=5	(1=NONE 2=COMPARTMENT 3=STRATA 4=SPECIES 5=DBH)
RECOVERY CRITERIA	(05) TOP DIB= 10.0cm. (06) STUMP HEIGHT= 30.0cm. (07) MINIMUM DBH= 25.0cm. (08) SPECIES+ F C H	
STAND DESCRIPTION	(09) REGION= 9 (10) COMPARTMENT= 003-0	

"5". Utilization levels are chosen by the use and shown in steps 05 to 07 and the species of interest (using B.C. Ministry of Forests Inventory Branch's abbreviations) are shown in step 08. Information related to the data files to be read is shown in steps 09 and 10.

Table 2 shows a portion of the output for coastal, immature hemlock-balsam stands in Compartment 3, Region 9, using the simple linear regression model for biomass prediction. The total for one stratum (number 15220) is shown. In this particular case, very little biomass is removed by logging because of the small size of most of the trees. However, it does illustrate the general format of the model output. More complete and detailed samples of output are shown in the Appendix.

In general, the model itself seems to perform well. However, the actual predictions of biomass shown in many of the examples in the Appendix should be viewed with caution because some trees represented in the inventory data file are beyond the size range of the sample trees used for deriving the regression equations. Suitable biomass equations covering a wider range of tree sizes are not available; however, other equations can be included if they become available.

Predictions of biomass per hectare and the proportion of different components are reasonable compared to general estimates in the literature (Baskerville 1965b; Franklin 1979; Whittaker 1975) and are adequate with respect to the object of this study. Errors in forest inventory and biomass estimates are discussed by Baskerville (1965a) Cunia (1965 and 1979) and Shaw (1979). Sources of error include sampling and non-sampling errors associated with biomass regression equations, the B.C. Ministry of Forests inventory samples, and the B.C. Ministry of Forests decay, waste and breakage factors.

Sampling errors associated with the inventory data (B.C. Ministry of Forests stand tables) are not available on an individual stratum or even a compartment basis. Therefore the only estimate of sampling error available is that associated with the regression equations (e.g., 95% confidence limits).

As a final caution, recoverable biomass in any given situation may be considerably less than predictions based on models such as those described here. For example, Blakeney (1980) shows that 67% to 94% of inventoried, downed, woody material was recovered during trials at two sites on Vancouver Island.

Table 2. EXAMPLE OF THE OUTPUT OF THE BIOMASS ESTIMATION MODEL

STRATUM NUMBER	OVEN-DRY MASS	TONNES.....							TOTAL ABOVE-GROUND BIOMASS OF TREES
BIOMASS ESTIMATES:		REGION 9	COMPARTMENT 003-0					TOTAL	
	STEM VOLUME (CUBIC M)		STEM	BARK	BR-L	BR-M	BR-S	FOLI	
15220 BCF	2038 DRY BIOMASS		818	152	44	220	104	252	1591
STRAT BEM	1936 LOGGED		33	5	—	—	—	—	38
TOTAL %DIF	-5.0 RESIDUE		785	147	44	220	104	252	1553
	GRN BIOMASS		1815	329	74	406	225	545	3394
	LOGGED		66	8	—	—	—	—	75
	RESIDUE		1749	321	74	406	225	545	3394

VOLUME ESTIMATE:	Fresh ("GREEN") MASS	AMOUNT OF REMAINING & AVAILABLE FOR BIOMASS HARVESTING (in box)
(1) BCMOF Equations		
(2) Biomass study Volume Equations		
% Difference (1) - (2)		

AMOUNT REMOVED BY LOGGING AT SPECIFIED UTILIZATION LIMITS	DEAD BRANCHES
---	---------------

Bibliography

- Bailey, G.R. 1969. An evaluation of the line-intersect method of assessing logging residue. Dept. of Fisheries and Forestry, Inf. Rept. VP-X-23.
- Baskerville, G.L. 1965a. Estimation of dry weight of tree components and total standing crop in conifer stands. *Ecology* 46(6): 867-869.
- Baskerville, G.L. 1965b. Dry matter production in immature balsam fir stands. *For. Sci. Mono.* 9-1965. Soc. Am. For.
- Blakeney, K.J. 1980. Development and testing of afield treatment system for logging residues. *Can. For. Serv., Pac. For. Res. Cent., Inf. Rept.* BC-X-212.
- Bones, J.T. 1982. Quantifying logging residue — before the fact. *For. Prod. J.* 32(6):51-52.
- Bonnor, G.M. 1979. Development of forest biomass inventory methodology in Canada. Pages 736-744 *in* Workshop Proceedings: Forest Resource Inventories, Volume II. Colorado State University, Fort Collins, CO.
- Brown, J.K. 1974. Handbook for inventorying downed woody material. USDA Forest Service, Gen. Tech. Rept. INT-16.
- Brown, J.K. 1978. Weight and density of crowns of Rocky Mountain conifers. USDA Forest Service, Res. Pap. INT-197.
- Brown, J.K., J.A.K. Snell and D.L. Bunnell. 1977. Handbook for predicting slash weight of western conifers. USDA Forest Service, Gen. Tech. Rept. INT-37.
- Cunia, T. 1965. Some theory on reliability of volume estimates in a forest inventory sample. *For. Sci.* 11(1):115-128.
- Cunia, T. 1979. On tree biomass tables and regression: Some statistical comments. Pages 629-642 *in* Workshop Proceedings: Forest Resource Inventories, Volume II. Colorado State University, Fort Collins, CO.
- Dobbs, R.C. 1981. The ENFOR production program. Pages 1-16 *in* Proceedings: Third Bioenergy Research and Development Seminar, March 24-25, 1981, sponsored by Energy Project Office, NRC, Ottawa.
- Franklin, J.F. 1979. Vegetation of the Douglas-fir region. Page 93 *in* P.E. Heilman, H.W. Anderson and D.M. Baumgartner (eds.). *Forest Soils of the Douglas-fir region*. Wash. U. Coop. Ext. Serv., Pullman, Wash.
- Love, P. 1980. Biomass energy in Canada: Its potential contribution to future energy supply. Supply and Services Canada, Cat. No. M23-13/0-4-1E.
- McDaniels, T.L. 1982. Forest biomass energy in British Columbia: Opportunities, impacts and constraints. *Can. For. Serv., Pac. For. Res. Cent., Inf. Rept.* BC-X-226.
- Paul H. Jones and Assoc., Ltd. 1979. Energy from forest biomass on Vancouver Island. *Can. For. Serv., Pac. For. Res. Cent., Inf. Rept.* BC-X-197.
- Shaw, D.L. 1979. Biomass equations for Douglas-fir, western hemlock and red cedar in Oregon and Washington. Pages 763-781 *in* Workshop Proceedings: Forest Resource Inventories, Volume II. Colorado State Univ., Fort Collins, CO.
- Snell, J.A.K. and J.K. Brown. 1980. Handbook for predicting residue weights of Pacific Northwest conifers. USDA Forest Service, Gen. Tech. Rept. PNW-103.
- Snell, J.A.K., R.G. Schmidt, J.D. Dell and D.W. Carleton. 1981. Users guide to debris prediction and hazard appraisal—Pacific Northwest Region. USDA Forest Service, Pacific Northwest Region (R-6), R6A&FM071 1981.
- Standish, J.T. 1983. Development of a system to estimate quantity of biomass following logging in British Columbia forests to specified recovery criteria. Talisman Land Resource consultants, *for* Pacific Forest Research Centre, Canadian Forestry Service.

- Standish, J.T., G.H. Manning and J.P. Demaerschalk. 1985. Development of biomass equations for British Columbia tree species. Can. For. Serv., Pac. For. Res. Cent. Inf. Rept. BC-X-264.
- USDA Forest Service. 1981. Tree biomass — A state-of-the-art compilation. U.S.D.A. Forest Service, Gen. Tech. Rept. WO-33.
- Van Wagner, C.E. 1968. The line intersect method in forest fuel sampling. For. Sci. 14:20-26.
- Warren, W.G. and P.F. Olsen. 1964. A line intersect technique for assessing logging waste. For. Sci. 10:267-276.
- Whittaker, R.H. 1975. Communities and ecosystems (2nd ed.). Macmillan Publ. Co. Inc., N.Y. p. 205.

Appendix

A-1

```

** BIOMASS ESTIMATION MODEL ***                5-APR-83   19 10 26   PAGE   1
      → REGION 9   COMPARTMENT 003-0          ↓
RUN PARAMETERS      (01) BIOMASS EQUATION SET=2   (1="COMPLEX" 2=DDH 3=LOGS)
                   (02) MODE=2                 (1=INDIVIDUAL 2=BCFS INVENTORY)

STOCK & STAND      (03) VDT SCREEN LEVEL=2       (1=NONE 2=COMPARTMENT 3=STRATA
REPORTING LEVEL    (04) PRINTER LEVEL=5         4=SPECIES 5=DBH)

RECOVERY CRITERIA (05) TOP DIB= 10 0cm
                   (06) STUMP HEIGHT= 30 0cm
                   (07) MINIMUM DBH= 25 0cm

                   (08) SPECIES= F C H

STAND DESCRIPTION  (09) REGION= 9
                   (10) COMPARTMENT=003-0

```

PAGE 2

STAND DESCRIPTION. REGION 9 COMPARTMENT 003-0

STRATA	1220	2220	2320	2330	2640	2851	3220
HECTARES	347 2	2 8	2 8	24 7	43 7	0 4	6 9
SPECIES	F	F C Mb	F C H	F C H	F C H	F C H	F C H
STRATA	3640	3650	3831	8440	9831	10630	10640
HECTARES	36 8	4 0	5 3	11 3	8 9	80 9	15 0
SPECIES	F C H	F C H	F H	F C H	C H Cy	F C H	F C H
STRATA	10941	10951	11530	11841	11931	11941	11951
HECTARES	21 0	14 2	4 5	0 8	84 6	320 9	613 1
SPECIES	F C H	F C H	C H	F C H	C H Cy	F C H	C H B
STRATA	12420	13220	13530	13831	14220	14630	14831
HECTARES	17 4	4 9	10 5	19 4	53 4	13 4	9 3
SPECIES	F C H	F C H	F C H	F C H	F C H	F C H	C H Cy
STRATA	14851	14931	14941	14951	15220	15540	15931
HECTARES	0 4	64 3	432 2	159 0	10 9	0 8	38 0
SPECIES	C H	H B Cy	C H B	C H B	C H B	H B	H B Cy
STRATA	15941	15951	15961	17220	18941	19931	19941
HECTARES	295 4	202 7	1 2	6 5	6 1	110 5	291 8
SPECIES	C H B	C H B	H B	H D B1	B	H B Cy	H B Cy
STRATA	19951	19961					
HECTARES	547 5	19 8					
SPECIES	C H B	C H B					

5-APR-83 19 10 26 PAGE 3

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
1220										
1 F	10 0	9 2	17 1	536 2	0 0	0 0	0 0	1 2	3 5	540 9
	15 0	12 4	30 7	335 8	0 0	0 0	0 0	0 0	5 2	340 9
	20 0	15 8	29 1	149 2	0 0	0 0	0 0	0 0	0 0	149 2
	25 0	18 6	18 7	54 0	0 0	0 0	0 0	0 0	0 0	54 0
	30 0	21 1	8 3	15 0	0 0	0 0	0 0	0 0	0 0	15 0
	35 0	22 7	2 0	1 7	0 0	0 0	0 6	0 0	0 3	2 6
	40 0	25 9	2 0	1 5	0 0	0 0	0 0	0 0	0 3	1 8
	45 0	24 7	0 4	0 0	0 0	0 0	0 0	0 0	0 3	0 3
	50 0	25 2	2 0	0 0	0 0	0 0	0 6	0 0	0 6	1 2
	55 0	25 2	1 2	0 0	0 0	0 0	0 0	0 0	0 6	0 6
	60 0	28 7	0 8	0 0	0 0	0 0	0 0	0 0	0 3	0 3
	70 0	31 7	1 1	0 0	0 0	0 0	0 0	0 0	0 3	0 3
	80 0	30 0	4 1	0 0	0 0	0 0	0 0	0 3	0 6	0 9
	100 0	27 8	5 7	0 0	0 0	0 0	0 0	0 0	0 9	0 9
	115 0	26 8	2 3	0 0	0 0	0 0	0 0	0 0	0 3	0 3
1 F	SPECIES TOTAL		125 6	1093 4	0 0	0 0	1 2	1 5	13 1	1109 1
1220										
2 C	10 0	8 2	1 3	35 0	3 5	0 0	0 0	0 6	0 0	39 1
	15 0	11 6	0 8	6 5	0 0	0 0	0 0	0 6	1 2	8 2
	20 0	15 3	0 4	0 0	0 0	0 0	0 0	0 0	1 8	1 8
	25 0	17 3	0 3	0 0	0 0	0 0	0 0	0 3	0 6	0 9
	30 0	15 2	0 1	0 3	0 0	0 0	0 0	0 0	0 0	0 3
	35 0	18 9	0 2	0 0	0 0	0 0	0 0	0 3	0 0	0 3
	40 0	20 4	0 6	0 0	0 0	0 0	0 0	0 3	0 3	0 6
	60 0	23 8	0 7	0 0	0 0	0 0	0 0	0 0	0 3	0 3
	65 0	24 1	1 6	0 0	0 0	0 0	0 0	0 0	0 6	0 6
	70 0	22 3	0 8	0 0	0 0	0 0	0 0	0 0	0 3	0 3
	75 0	24 1	1 0	0 0	0 0	0 0	0 0	0 0	0 3	0 3
	100 0	22 3	1 5	0 0	0 0	0 0	0 0	0 0	0 3	0 3
2 C	SPECIES TOTAL		9 2	41 8	3 5	0 0	0 0	2 0	5 6	52 9
1220										
3 H	10 0	8 2	4 1	113 0	29 4	0 0	0 0	0 0	0 0	142 4
	15 0	11 3	2 6	24 1	6 5	0 0	0 0	0 0	0 0	30 6
	20 0	12 7	0 7	0 6	2 9	0 0	0 6	0 0	0 0	4 1
	30 0	12 5	0 1	0 0	0 0	0 0	0 3	0 0	0 0	0 3
	35 0	15 5	1 0	0 6	0 3	0 0	0 9	0 0	0 0	1 8
	40 0	14 7	0 4	0 0	0 0	0 0	0 3	0 0	0 3	0 6
3 H	SPECIES TOTAL		9 0	138 3	39 1	0 0	2 0	0 0	0 3	179 7

5-APR-83 19 10 26 PAGE 4

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
1220										
4 S	10 0	6 7	0 0	0 3	0 0	0 0	0 0	0 0	0 0	0 3
4 S	SPECIES TOTAL		0 0	0 3	0 0	0 0	0 0	0 0	0 0	0 3
1220										
5 P1	10 0	9 4	0 1	1 2	1 8	0 0	0 0	0 0	0 0	3 0
	15 0	11 5	0 5	2 9	1 2	0 0	0 0	0 0	1 2	5 3
	20 0	12 5	0 1	0 6	0 0	0 0	0 0	0 0	0 0	0 6
5 P1	SPECIES TOTAL		0 7	4 7	3 0	0 0	0 0	0 0	1 2	8 8
1220										
6 Co	10 0	8 8	0 0	0 6	0 0	0 0	0 0	0 0	0 0	0 6
	15 0	15 5	0 1	0 6	0 0	0 0	0 0	0 0	0 0	0 6
	30 0	22 3	0 2	0 3	0 0	0 0	0 0	0 0	0 0	0 3
6 Co	SPECIES TOTAL		0 2	1 5	0 0	0 0	0 0	0 0	0 0	1 5
1220										
7 D	10 0	7 6	0 0	0 6	0 0	0 0	0 0	0 0	0 0	0 6
	15 0	13 1	0 5	4 7	0 0	0 0	0 0	0 0	0 0	4 7
	20 0	18 0	0 6	1 2	0 0	0 0	0 0	0 0	1 2	2 4
	25 0	19 2	0 1	0 3	0 0	0 0	0 0	0 0	0 0	0 3
	30 0	14 0	0 1	0 3	0 0	0 0	0 0	0 0	0 0	0 3
7 D	SPECIES TOTAL		1 3	7 1	0 0	0 0	0 0	0 0	1 2	8 2
1220										
8 Mb	10 0	11 9	0 1	2 9	0 0	0 0	0 0	0 0	0 0	2 9
	15 0	15 2	0 4	4 1	0 0	0 0	0 0	0 0	0 0	4 1
	20 0	18 2	0 3	1 2	0 0	0 0	0 0	0 0	0 0	1 2
8 Mb	SPECIES TOTAL		0 8	8 2	0 0	0 0	0 0	0 0	0 0	8 2
1220										
9 B1	10 0	12 1	1 5	37 8	0 0	0 0	0 0	0 0	0 0	37 8
	15 0	14 9	1 8	16 5	0 0	0 0	0 0	0 0	0 0	16 5
	20 0	16 2	0 2	1 2	0 0	0 0	0 0	0 0	0 0	1 2
	25 0	17 1	0 2	0 5	0 0	0 0	0 0	0 0	0 0	0 5
9 B1	SPECIES TOTAL		3 7	56 0	0 0	0 0	0 0	0 0	0 0	56 0
1220	STRATUM TOTAL		150 5	1351 2	45 6	0 0	3 2	3 5	21 3	1424 8

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP									
		DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
19961											
1 C		10 0	8 0	0 1	0 0	2 5	0 0	0 0	0 0	0 0	2 5
		20 0	14 7	0 2	0 8	0 0	0 0	0 0	0 0	0 0	0 8
		25 0	18 3	0 3	0 0	0 8	0 0	0 0	0 0	0 0	0 8
		35 0	23 4	0 7	0 0	0 8	0 0	0 0	0 0	0 0	0 8
		105 0	39 1	7 9	0 0	0 0	0 0	0 0	0 8	0 0	0 8
		175 0	48 4	23 7	0 0	0 8	0 0	0 0	0 0	0 0	0 8
1 C	SPECIES TOTAL			32 9	0 8	4 9	0 0	0 0	0 8	0 0	6 6
19961											
2 H		10 0	8 6	0 5	11 1	4 9	0 0	0 0	0 0	0 0	16 1
		15 0	12 3	1 3	4 1	7 4	0 0	0 0	0 0	1 6	13 2
		20 0	16 1	1 4	3 3	2 5	0 0	0 0	0 0	0 8	6 6
		25 0	19 8	3 5	3 7	4 9	0 0	0 0	0 0	0 0	8 7
		30 0	23 0	1 2	1 0	0 0	0 0	0 0	0 0	0 8	1 9
		35 0	25 5	4 0	3 3	0 8	0 0	0 0	0 0	0 0	4 1
		40 0	28 4	7 2	2 7	2 5	0 0	0 0	0 0	0 0	5 2
		45 0	31 1	7 9	1 6	2 5	0 0	0 0	0 0	0 0	4 1
		50 0	32 7	12 1	2 5	1 6	0 0	0 0	0 0	0 8	4 9
		55 0	34 3	12 6	0 0	4 1	0 0	0 0	0 0	0 0	4 1
		60 0	34 7	5 9	0 8	0 8	0 0	0 0	0 0	0 0	1 6
		65 0	36 1	4 5	0 0	1 0	0 0	0 0	0 0	0 0	1 0
		70 0	37 3	12 7	0 8	0 0	0 8	0 0	0 0	0 8	2 5
		75 0	37 7	4 9	0 8	0 0	0 0	0 0	0 0	0 0	0 8
		80 0	39 4	17 2	0 8	1 6	0 0	0 0	0 0	0 0	2 5
		85 0	40 0	40 8	1 6	2 7	0 0	0 0	0 0	0 8	5 2
		90 0	40 5	16 4	0 0	1 0	0 8	0 0	0 0	0 0	1 9
		95 0	41 6	18 7	0 0	1 9	0 0	0 0	0 0	0 0	1 9
		100 0	43 3	28 4	0 8	0 8	0 0	0 0	0 0	0 8	2 5
		105 0	43 6	10 4	0 0	0 8	0 0	0 0	0 0	0 0	0 8
		110 0	43 2	14 1	0 0	0 0	0 0	0 0	0 0	1 0	1 0
		115 0	43 3	36 6	0 8	1 6	0 0	0 0	0 0	0 0	2 5
		120 0	43 6	26 4	0 0	0 8	0 0	0 0	0 0	0 8	1 6
		125 0	47 7	15 7	0 0	0 0	0 0	0 0	0 0	0 8	0 8
		130 0	46 2	32 5	0 8	0 0	0 8	0 0	0 0	0 0	1 6
		135 0	46 6	57 4	1 6	1 0	0 0	0 0	0 0	0 0	2 7
		145 0	44 9	19 1	0 0	0 0	0 8	0 0	0 0	0 0	0 8
		175 0	41 4	24 4	0 0	0 8	0 0	0 0	0 0	0 0	0 8
2 H	SPECIES TOTAL			438 2	42 4	46 3	3 3	0 0	0 0	9 2	101 2
19961											
3 B		10 0	7 1	3 8	104 2	25 1	0 0	0 0	0 8	3 7	133 8

5-APR-83 19 10 26 PAGE 88

STAND & STOCK DATA STEMS PER HECTARE BY DECAY RISK GROUP

	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
19961										
3 B	15 0	10 4	5 1	39 9	14 8	0 0	0 0	0 0	1 6	56 4
	20 0	14 1	7 2	24 3	9 9	0 0	0 0	0 0	0 0	34 2
	25 0	17 7	9 8	16 9	4 3	0 8	0 0	0 8	1 6	24 5
	30 0	21 4	16 6	16 1	5 8	0 8	0 0	1 6	0 0	24 3
	35 0	24 2	12 1	6 8	4 1	0 0	0 0	0 0	0 8	11 7
	40 0	27 1	17 1	7 2	3 3	0 0	0 0	0 0	1 0	11 5
	45 0	30 2	20 4	5 8	2 5	0 0	0 0	0 0	1 6	9 9
	50 0	33 0	15 8	3 3	2 5	0 0	0 0	0 0	0 0	5 8
	55 0	34 8	14 2	0 8	2 5	0 8	0 0	0 0	0 0	4 1
	60 0	37 4	22 5	2 7	1 6	0 0	0 0	0 8	0 0	5 2
	65 0	39 8	63 4	4 1	4 1	0 0	0 0	0 8	2 7	11 7
	70 0	41 0	31 4	0 8	2 5	0 0	0 0	0 0	1 6	4 9
	75 0	42 7	13 9	0 8	0 0	0 0	0 0	0 0	1 0	1 9
	80 0	44 5	52 7	3 5	0 0	0 8	0 0	0 8	0 8	6 0
	85 0	45 6	43 7	1 6	1 9	0 8	0 0	0 0	0 0	4 3
	90 0	47 8	29 1	1 6	0 8	0 0	0 0	0 0	0 0	2 5
	95 0	49 1	93 7	1 6	1 6	0 8	0 0	0 8	2 1	7 0
	100 0	48 8	77 9	1 6	2 9	0 8	0 0	0 0	0 0	5 4
	105 0	50 8	82 1	2 5	1 6	0 0	0 0	0 0	0 8	4 9
	110 0	52 5	46 2	0 8	1 6	0 0	0 0	0 0	0 0	2 5
	115 0	53 1	67 5	0 8	0 0	0 0	0 0	0 0	2 5	3 3
	125 0	49 3	36 0	0 8	0 0	0 0	0 0	0 0	0 8	1 6
	130 0	54 5	21 5	0 0	0 0	0 0	0 0	0 0	0 8	0 8
3 B	SPECIES	TOTAL	804 0	248 7	93 5	5 7	0 0	6 6	23 7	378 2
19961	STRATUM	TOTAL	1275 1	291 9	144 7	9 0	0 0	7 4	32 9	486 0
COMPARTMENT TOTAL			33748 5	29609	011260 4	397 9	95 6	240 3	3114 2	44717 4

5-APR-83 19 10.26 PAGE 1

BIOMASS ESTIMATES REGION 9 COMPARTMENT 003-0

				TONNES						
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL
1220	BCF	43594	DRY BIOMASS	19959	3469	1399	3770	1414	4547	34556
1	F	BEM 45171	LOGGED	4141	625	-	-	-	-	4765
	%DIF	3.6	RESIDUE	15818	2844	1399	3770	1414	4547	29790
			GRN BIOMASS	42011	7961	2219	7646	3129	10095	73062
			LOGGED	7620	1248	-	-	-	-	8868
			RESIDUE	34391	6713	2219	7646	3129	10095	64952
									DEAD	758
1220	BCF	3197	DRY BIOMASS	1093	162	100	193	72	215	1834
2	C	BEM 3247	LOGGED	54	7	-	-	-	-	62
	%DIF	1.5	RESIDUE	1038	155	100	193	72	215	1772
			GRN BIOMASS	2203	341	171	354	178	450	3696
			LOGGED	103	15	-	-	-	-	118
			RESIDUE	2100	325	171	354	178	450	3617
									DEAD	39
1220	BCF	3108	DRY BIOMASS	1484	331	118	545	285	537	3299
3	H	BEM 3363	LOGGED	174	24	-	-	-	-	198
	%DIF	8.2	RESIDUE	1309	307	118	545	285	537	3101
			GRN BIOMASS	3115	742	187	989	619	1179	6831
			LOGGED	348	42	-	-	-	-	390
			RESIDUE	2767	700	187	989	619	1179	6667
									DEAD	227
1220	BCF	2	DRY BIOMASS	1	0	0	1	0	1	3
4	S	BEM 1	LOGGED	0	0	-	-	-	-	0
	%DIF	-61.1	RESIDUE	1	0	0	1	0	1	3
			GRN BIOMASS	2	1	0	1	1	2	6
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	2	1	0	1	1	2	7
									DEAD	0
1220	BCF	243	DRY BIOMASS	147	16	5	23	5	20	215
5	P1	BEM 286	LOGGED	0	0	-	-	-	-	0
	%DIF	17.3	RESIDUE	147	16	5	23	5	20	215
			GRN BIOMASS	293	41	9	46	10	39	437
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	293	41	9	46	10	39	440
									DEAD	10

BIOMASS ESTIMATES			REGION 9	COMPARTMENT 003-0	5-APR-83 19 10 26 PAGE 2						
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	TONNES			FOLI	TOTAL
							BR-M	BR-S			
1220 BCF	81	DRY	BIOMASS	30	5	2	9	1	3	49	
6 Co BEM	108		LOGGED	0	0	-	-	-	-	0	
%DIF	33.4		RESIDUE	30	5	2	9	1	3	49	
		GRN	BIOMASS	61	12	4	16	1	5	99	
			LOGGED	0	0	-	-	-	-	0	
			RESIDUE	61	12	4	16	1	5	100	
									DEAD	1	
1220 BCF	460	DRY	BIOMASS	200	29	17	30	6	9	289	
7 D BEM	456		LOGGED	0	0	-	-	-	-	0	
%DIF	-0.9		RESIDUE	200	29	17	30	6	9	289	
		GRN	BIOMASS	377	53	30	57	13	22	551	
			LOGGED	0	0	-	-	-	-	0	
			RESIDUE	377	53	30	57	13	22	561	
									DEAD	10	
1220 BCF	285	DRY	BIOMASS	132	18	12	26	5	8	201	
8 Nb BEM	307		LOGGED	0	0	-	-	-	-	0	
%DIF	7.6		RESIDUE	132	18	12	26	5	8	201	
		GRN	BIOMASS	251	36	22	49	11	21	390	
			LOGGED	0	0	-	-	-	-	0	
			RESIDUE	251	36	22	49	11	21	396	
									DEAD	6	
1220 BCF	1292	DRY	BIOMASS	625	91	19	109	37	62	944	
9 B1 BEM	1217		LOGGED	0	0	-	-	-	-	0	
%DIF	-5.8		RESIDUE	625	91	19	109	37	62	944	
		GRN	BIOMASS	1011	175	35	177	69	107	1574	
			LOGGED	0	0	-	-	-	-	0	
			RESIDUE	1011	175	35	177	69	107	1585	
									DEAD	11	
1220 BCF	52253	DRY	BIOMASS	23670	4121	1672	4703	1824	5400	41391	
STRAT BEM	54155		LOGGED	4369	656	-	-	-	-	5026	
TOTAL %DIF	3.6		RESIDUE	19301	3465	1672	4703	1824	5400	36365	
		GRN	BIOMASS	49323	9361	2676	9336	4031	11920	86647	
			LOGGED	8070	1305	-	-	-	-	9376	
			RESIDUE	41253	8056	2676	9336	4031	11920	78333	
									DEAD	1062	

5-APR-83 19 10 26 PAGE 57

BIOMASS ESTIMATES REGION 9 COMPARTMENT 003-0

STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	TONNES			FOLI	TOTAL
							BR-M	BR-S			
19951	BCF	22216	DRY	BIOMASS	14244	844	286	503	97	581	16554
4 Cy	BEM	32694		LOGGED	0	0	-	-	-	-	0
	%DIF	47.2		RESIDUE	14244	844	286	503	97	581	16554
				GRN	BIOMASS	21638	1605	495	837	170	25764
					LOGGED	0	0	-	-	-	0
					RESIDUE	21638	1605	495	837	170	25881
										DEAD	117
19951	BCF	573	DRY	BIOMASS	223	21	12	14	7	13	290
5 Pw	BEM	555		LOGGED	0	0	-	-	-	-	0
	%DIF	-3.1		RESIDUE	223	21	12	14	7	13	290
				GRN	BIOMASS	409	52	17	26	15	546
					LOGGED	0	0	-	-	-	0
					RESIDUE	409	52	17	26	15	550
										DEAD	5
19951	BCF	628488	DRY	BIOMASS	262843	32984	11941	19489	8244	31353	366854
STRAT	BEM	649871		LOGGED	50628	6621	-	-	-	-	57249
TOTAL	%DIF	3.4		RESIDUE	212216	26363	11941	19489	8244	31353	309606
				GRN	BIOMASS	548389	63155	22839	38141	16914	753487
					LOGGED	99759	11170	-	-	-	110929
					RESIDUE	448630	51984	22839	38141	16914	645272
										DEAD	2713
19951	BCF	652	DRY	BIOMASS	221	29	20	19	4	22	314
1 C	BEM	733		LOGGED	92	12	-	-	-	-	104
	%DIF	12.5		RESIDUE	128	17	20	19	4	22	210
				GRN	BIOMASS	399	58	33	35	9	588
					LOGGED	167	24	-	-	-	191
					RESIDUE	232	34	33	35	9	407
										DEAD	10
19961	BCF	8690	DRY	BIOMASS	4047	528	193	144	91	155	5160
2 H	BEM	9196		LOGGED	2014	263	-	-	-	-	2276
	%DIF	5.8		RESIDUE	2034	266	193	144	91	155	2884
				GRN	BIOMASS	8048	872	370	257	195	10077
					LOGGED	4004	433	-	-	-	4436
					RESIDUE	4045	439	370	257	195	5674
										DEAD	33

5-APR-83 19 10 26 PAGE 58

BIOMASS ESTIMATES: REGION 9 COMPARTMENT 003-0

STEM VOLUME (CUBIC M)			TONNES							
			STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL	
19961	BCF	15943	DRY BIOMASS	6367	812	271	671	261	1210	9592
3 B	BEM	16443	LOGGED	0	0	-	-	-	-	0
	%DIF	3 1	RESIDUE	6367	812	271	671	261	1210	9592
			GRN BIOMASS	14287	1716	534	1355	522	2439	20854
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	14287	1716	534	1355	522	2439	20908
									DEAD	54
19961	BCF	25284	DRY BIOMASS	10635	1370	485	834	355	1388	15066
STRAT	BEM	26372	LOGGED	2106	275	-	-	-	-	2381
TOTAL	%DIF	4 3	RESIDUE	8529	1095	485	834	355	1388	12686
			GRN BIOMASS	22734	2647	937	1648	726	2826	31519
			LOGGED	4170	457	-	-	-	-	4627
			RESIDUE	18564	2189	937	1648	726	2826	26989
									DEAD	97
COMP	BCF	3905217	DRY BIOMASS	1673244	199760	80307	109883	43295	152441	2258929
	BEM	4152640	LOGGED	505133	64980	-	-	-	-	572113
TOTAL	%DIF	6 3	RESIDUE	1168111	132779	80307	109883	43295	152441	1686816
			GRN BIOMASS	3237703	375394	146589	208164	91302	319126	4378280
			LOGGED	973160	117899	-	-	-	-	1091059
			RESIDUE	2264544	257495	146589	208164	91302	319126	3313515
									DEAD	26294

** BIOMASS ESTIMATION MODEL **

12-APR-83 14 44 50 PAGE 1

→ REGION 9 COMPARTMENT 003-0

RUN PARAMETERS	(01) BIOMASS EQUATION SET=1 (02) MODE=2	(1="COMPLEX" 2=DDH 3=LOGS) (1=INDIVIDUAL 2=BCFS INVENTORY)
STOCK & STAND REPORTING LEVEL	(03) VDT SCREEN LEVEL=2 (04) PRINTER LEVEL=2	(1=NONE 2=COMPARTMENT 3=STRATA 4=SPECIES 5=DBH)
RECOVERY CRITERIA	(05) TOP DIB= 10 0cm (06) STUMP HEIGHT= 30 0cm (07) MINIMUM DBH= 25 0cm (08) SPECIES= F C H	
STAND DESCRIPTION	(09) REGION= 9 (10) COMPARTMENT=003-0	

12-APR-83 14 44:50 PAGE 1

BIOMASS ESTIMATES REGION 9 COMPARTMENT 003-0

STEM VOLUME (CUBIC M)			TONNES							
			STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL	
1220	BCF	43594	DRY BIOMASS	18697	3203	1579	3147	1139	3585	31350
1	F	BEM	LOGGED	4445	702	-	-	-	-	5147
		%DIF	RESIDUE	14252	2501	1579	3147	1139	3585	26203
			GRN BIOMASS	37246	7226	2702	6400	2616	8267	64455
			LOGGED	9267	1495	-	-	-	-	10762
			RESIDUE	27978	5730	2702	6400	2616	8267	54416
								DEAD		724
1220	BCF	3197	DRY BIOMASS	1114	161	130	146	56	139	1746
2	C	BEM	LOGGED	56	8	-	-	-	-	64
		%DIF	RESIDUE	1058	153	130	146	56	139	1683
			GRN BIOMASS	2185	349	223	275	143	313	3489
			LOGGED	105	15	-	-	-	-	121
			RESIDUE	2080	334	223	275	143	313	3414
								DEAD		46
1220	BCF	3108	DRY BIOMASS	650	90	26	277	92	297	1432
3	H	BEM	LOGGED	203	35	-	-	-	-	238
		%DIF	RESIDUE	447	54	26	277	92	297	1194
			GRN BIOMASS	1609	191	45	542	226	697	3311
			LOGGED	382	61	-	-	-	-	442
			RESIDUE	1228	131	45	542	226	697	2969
								DEAD		100
1220	BCF	2	DRY BIOMASS	1	0	0	0	0	0	2
4	S	BEM	LOGGED	0	0	-	-	-	-	0
		%DIF	RESIDUE	1	0	0	0	0	0	2
			GRN BIOMASS	2	0	0	1	0	0	4
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	2	0	0	1	0	0	4
								DEAD		0
1220	BCF	243	DRY BIOMASS	143	16	5	23	5	20	211
5	P1	BEM	LOGGED	0	0	-	-	-	-	0
		%DIF	RESIDUE	143	16	5	23	5	20	211
			GRN BIOMASS	286	41	9	47	10	39	433
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	286	41	9	47	10	39	443
								DEAD		11

BIOMASS ESTIMATES:				REGION	9	COMPARTMENT	003-0	12-APR-83 14 44 50 PAGE 2			
STEM VOLUME (CUBIC M)					STEM	BARK	BR-L	TONNES BR-M	BR-S	FOLI	TOTAL
1220	BCF	B1	DRY	BIOMASS	31	5	2	8	1	3	50
6 Co	BEM	120	LOGGED		0	0	-	-	-	-	0
	%DIF	47.6	RESIDUE		31	5	2	8	1	3	50
			GRN	BIOMASS	63	12	4	14	1	5	99
			LOGGED		0	0	-	-	-	-	0
			RESIDUE		63	12	4	14	1	5	100
										DEAD	1
1220	BCF	460	DRY	BIOMASS	196	27	24	38	7	12	306
7 D	BEM	452	LOGGED		0	0	-	-	-	-	0
	%DIF	-1.6	RESIDUE		196	27	24	38	7	12	306
			GRN	BIOMASS	373	52	43	72	17	30	587
			LOGGED		0	0	-	-	-	-	0
			RESIDUE		373	52	43	72	17	30	597
										DEAD	9
1220	BCF	285	DRY	BIOMASS	119	16	13	26	5	9	187
5 Mb	BEM	279	LOGGED		0	0	-	-	-	-	0
	%DIF	-2.4	RESIDUE		119	16	13	26	5	9	187
			GRN	BIOMASS	227	32	23	49	11	22	365
			LOGGED		0	0	-	-	-	-	0
			RESIDUE		227	32	23	49	11	22	370
										DEAD	5
1220	BCF	1292	DRY	BIOMASS	630	92	19	109	37	62	949
9 B1	BEM	1225	LOGGED		0	0	-	-	-	-	0
	%DIF	-5.1	RESIDUE		630	92	19	109	37	62	949
			GRN	BIOMASS	1020	176	34	178	69	107	1584
			LOGGED		0	0	-	-	-	-	0
			RESIDUE		1020	176	34	178	69	107	1595
										DEAD	11
1220	BCF	52263	DRY	BIOMASS	21581	3610	1799	3774	1342	4127	36233
STRAT	BEM	46931	LOGGED		4704	745	-	-	-	-	5449
TOTAL	%DIF	-10.2	RESIDUE		16877	2865	1799	3774	1342	4127	30783
			GRN	BIOMASS	43011	8080	3083	7578	3095	9480	74327
			LOGGED		9754	1571	-	-	-	-	11325
			RESIDUE		33257	6509	3083	7578	3095	9480	63908
										DEAD	906

BIOMASS ESTIMATES			REGION	9	COMPARTMENT	003-0	12-APR-83 14 44 50 PAGE 57				
STEM VOLUME (CUBIC M)							TONNES				
					STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL
19951	BCF	22216	DRY	BIOMASS	11550	689	233	418	81	484	13454
4	Cy	BEM		LOGGED	0	0	-	-	-	-	0
		%DIF		RESIDUE	11550	689	233	418	81	484	13454
				GRN	17591	1291	394	671	133	817	20897
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	17591	1291	394	671	133	817	20992
										DEAD	95
19951	BCF	573	DRY	BIOMASS	220	20	10	12	7	11	280
5	Pw	BEM		LOGGED	0	0	-	-	-	-	0
		%DIF		RESIDUE	220	20	10	12	7	11	280
				GRN	399	51	14	22	14	22	522
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	399	51	14	22	14	22	526
										DEAD	4
19951	BCF	628488	DRY	BIOMASS	264044	22390	5438	6780	3074	9265	310990
STRAT	BEM	643068		LOGGED	53597	4488	-	-	-	-	58085
TOTAL	%DIF	2 3		RESIDUE	210447	17902	5438	6780	3074	9265	252906
				GRN	459742	45260	8573	11786	5609	16717	547687
				LOGGED	89619	6088	-	-	-	-	97707
				RESIDUE	370123	37173	8573	11786	5609	16717	451291
										DEAD	1311
19961	BCF	652	DRY	BIOMASS	193	25	7	11	2	12	250
1	C	BEM		LOGGED	81	11	-	-	-	-	92
		%DIF		RESIDUE	112	15	7	11	2	12	158
				GRN	343	51	14	22	5	32	466
				LOGGED	144	21	-	-	-	-	165
				RESIDUE	199	30	14	22	5	32	310
										DEAD	9
19961	BCF	8690	DRY	BIOMASS	4564	166	34	44	28	43	4879
2	H	BEM		LOGGED	2254	114	-	-	-	-	2368
		%DIF		RESIDUE	2309	53	34	44	28	43	2511
				GRN	6407	303	62	77	58	92	6999
				LOGGED	3323	202	-	-	-	-	3525
				RESIDUE	3084	101	62	77	58	92	3490
										DEAD	16

12-APR-83 14 44 50 PAGE 58

BIOMASS ESTIMATES REGION 9 COMPARTMENT 003-0

STEM VOLUME (CUBIC M)			TONNES							
			STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL	
19961	BCF	15943	DRY BIOMASS	5980	651	166	151	77	223	7248
3 B	BEM	15032	LOGGED	0	0	-	-	-	-	0
	%DIF	-5.7	RESIDUE	5980	651	166	151	77	223	7248
			GRN BIOMASS	11446	1373	231	237	120	351	13759
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	11446	1373	231	237	120	351	13766
									DEAD	8
19961	BCF	25284	DRY BIOMASS	10736	843	208	206	106	278	12376
STRAT	BEM	26149	LOGGED	2335	124	-	-	-	-	2459
TOTAL	%DIF	3.4	RESIDUE	8401	718	208	206	106	278	9917
			GRN BIOMASS	18196	1727	307	337	182	474	21223
			LOGGED	3467	223	-	-	-	-	3690
			RESIDUE	14729	1504	307	337	182	474	17566
									DEAD	32
COMP	BCF	3905217	DRY BIOMASS	1623198	157585	44903	68128	26426	83495	2003734
	BEM	3969350	LOGGED	515918	58087	-	-	-	-	574005
TOTAL	%DIF	1.6	RESIDUE	1107280	99498	44903	68128	26426	83495	1429729
			GRN BIOMASS	2867144	305778	78371	124430	54349	171503	3601576
			LOGGED	924321	105791	-	-	-	-	1030112
			RESIDUE	1942823	199987	78371	124430	54349	171503	2593545
									DEAD	22081

** BIOMASS ESTIMATION MODEL ***

8-APR-83 09 46 12 PAGE 1

→ REGION 60 COMPARTMENT 156-0



RUN PARAMETERS	(01) BIOMASS EQUATION SET=2 (02) MODE=2	(1="COMPLEX" 2=DDH 3=LOGS) (1=INDIVIDUAL 2=BCFS INVENTORY)
STOCK & STAND REPORTING LEVEL	(03) VDT SCREEN LEVEL=2 (04) PRINTER LEVEL=5	(1=NONE 2=COMPARTMENT 3=STRATA 4=SPECIES 5=DBH)
RECOVERY CRITERIA	(05) TOP DIB= 10 0cm (06) STUMP HEIGHT= 30 0cm (07) MINIMUM DBH= 25 0cm (08) SPECIES= B S	
STAND DESCRIPTION	(09) REGION=60 (10) COMPARTMENT=156-0	

PAGE 2

STAND DESCRIPTION REGION 60 COMPARTMENT 156-0

STRATA	18620	18821	18831	18921	18931	18941	19931
HECTARES	136 B	295 0	19 B	1520 B	2866 B	203 2	1253 B
SPECIES	B	H B Pw	B	H B Pw	B Pw	B	H B Pw

STRATA	28831
HECTARES	0 B
SPECIES	B S P1

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
B-APR-83 09 46 12 PAGE 3										
18620										
1 B	10 0	7 9	32 5	640 6	403 0	0 0	0 0	6 3	34 3	1084 2
	15 0	10 8	60 7	417 7	243 8	0 0	0 0	6 3	24 9	692 6
	20 0	13 6	76 0	315 1	56 1	0 0	0 0	18 8	12 4	402 3
	25 0	16 6	48 6	87 4	42 1	0 0	0 0	1 6	7 7	138 8
	30 0	19 0	25 5	23 4	15 6	0 0	3 1	0 0	3 1	45 2
	35 0	21 1	14 3	4 7	7 8	0 0	3 1	0 0	1 6	17 2
	40 0	22 8	19 8	7 7	6 2	0 0	3 1	0 0	0 0	17 1
	45 0	24 2	19 2	4 7	3 1	0 0	3 1	0 0	1 6	12 5
	50 0	24 8	24 0	4 7	4 7	0 0	3 1	0 0	0 0	12 5
	55 0	24 9	3 6	0 0	0 0	0 0	1 6	0 0	0 0	1 6
	60 0	25 9	4 6	0 0	1 6	0 0	0 0	0 0	0 0	1 6
1 B	SPECIES TOTAL		328 7	1506 0	783 9	0 0	17 2	32 8	85 5	2425 4
18620										
2 S	10 0	10 3	1 4	31 0	6 2	0 0	0 0	0 0	0 0	37 1
	15 0	13 1	6 4	61 8	0 0	0 0	0 0	0 0	0 0	61 8
	20 0	16 0	1 3	6 2	0 0	0 0	0 0	0 0	0 0	6 2
	25 0	17 3	1 1	0 0	3 1	0 0	0 0	0 0	0 0	3 1
	30 0	23 4	2 1	0 0	3 1	0 0	0 0	0 0	0 0	3 1
	45 0	25 0	4 8	0 0	0 0	0 0	3 1	0 0	0 0	3 1
2 S	SPECIES TOTAL		17 2	99 0	12 4	0 0	3 1	0 0	0 0	114 4
18600										
3 P1	15 0	11 1	0 6	0 0	6 2	0 0	0 0	0 0	0 0	6 2
	20 0	14 9	3 2	6 2	9 3	0 0	0 0	0 0	0 0	15 5
	25 0	17 8	4 2	7 7	0 0	0 0	0 0	0 0	3 1	10 8
	30 0	19 6	13 8	12 4	7 7	0 0	0 0	0 0	3 1	23 2
	35 0	22 1	5 6	3 1	3 1	0 0	0 0	0 0	0 0	6 2
	50 0	23 9	2 9	0 0	1 6	0 0	0 0	0 0	0 0	1 6
3 P1	SPECIES TOTAL		30 3	29 4	27 9	0 0	0 0	0 0	6 2	63 5
18620	STRATUM TOTAL		376 2	1634 4	824 1	0 0	20 3	32 8	91 7	2603 3
18821										
1 B	10 0	7 8	20 4	455 0	177 5	2 5	0 0	5 0	50 0	690 0
	15 0	11 0	41 0	242 5	160 0	0 0	0 0	5 0	52 5	460 0

B-APR-83 09 46 12 PAGE 4

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
18821										
1 B	20 0	13 9	56 0	90 0	122 5	0 0	0 0	27 5	50 0	290 0
	25 0	16 7	66 5	81 3	43 8	1 3	0 0	17 5	45 0	188 8
	30 0	19 3	60 1	45 0	30 0	0 0	0 0	3 8	26 3	105 0
	35 0	21 5	38 3	16 3	18 8	0 0	0 0	3 8	6 3	45 0
	40 0	23 3	23 7	13 8	5 0	0 0	0 0	0 0	1 3	20 0
	45 0	24 9	9 9	0 0	3 8	0 0	0 0	1 3	1 3	6 3
	50 0	25 4	4 9	0 0	2 5	0 0	0 0	0 0	0 0	2 5
	55 0	24 8	14 3	1 3	2 5	1 3	0 0	1 3	0 0	6 3
1 B	SPECIES TOTAL		335 2	945 0	566 3	5 0	0 0	65 0	232 5	1813 8
18821										
2 S	25 0	19 8	1 5	0 0	2 5	0 0	0 0	0 0	1 3	3 8
	40 0	25 8	3 2	1 3	1 3	0 0	0 0	0 0	0 0	2 5
2 S	SPECIES TOTAL		4 7	1 3	3 8	0 0	0 0	0 0	1 3	6 3
18821										
3 P1	10 0	9 7	0 2	0 0	0 0	0 0	0 0	0 0	5 0	5 0
	15 0	12 3	0 5	0 0	0 0	0 0	0 0	0 0	5 0	5 0
	20 0	15 9	2 3	0 0	5 0	0 0	0 0	0 0	5 0	10 0
	25 0	20 1	2 2	0 0	3 8	0 0	0 0	0 0	1 3	5 0
	30 0	21 8	0 8	0 0	0 0	0 0	0 0	0 0	1 3	1 3
3 P1	SPECIES TOTAL		6 0	0 0	8 8	0 0	0 0	0 0	17 5	26 3
18821	STRATUM TOTAL		345 9	946 3	578 8	5 0	0 0	65 0	251 3	1846 3
18831										
1 H	10 0	6 1	0 8	28 8	7 6	0 0	0 0	0 0	0 0	36 4
	15 0	8 9	0 6	7 3	1 9	0 0	0 0	0 0	0 0	9 2
	20 0	11 6	0 8	0 9	3 5	0 0	0 0	0 0	0 6	5 1
	25 0	14 9	0 3	0 5	0 3	0 0	0 0	0 0	0 2	1 0
	30 0	17 5	0 6	0 6	0 3	0 0	0 0	0 0	0 2	1 1
	35 0	19 7	0 5	0 2	0 5	0 0	0 0	0 0	0 0	0 6
	40 0	21 5	0 3	0 2	0 2	0 0	0 0	0 0	0 0	0 3
	45 0	23 2	0 2	0 2	0 0	0 0	0 0	0 0	0 0	0 2
	50 0	24 7	0 3	0 0	0 2	0 0	0 0	0 0	0 0	0 2
1 H	SPECIES TOTAL		4 4	38 7	14 4	0 0	0 0	0 0	1 0	54 0

B-APR-83 09 46:12 PAGE 11										
STAND & STOCK DATA:		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
19931										
2 B	15 0	11 0	13 5	107 5	41 4	0 0	0 0	0 0	2 8	151 7
	20 0	14 2	23 7	69 1	23 5	6 9	0 0	0 0	20 6	120 1
	25 0	17 1	20 1	37 1	11 1	1 4	0 0	0 7	5 5	55 8
	30 0	19 8	43 3	38 5	19 3	5 5	0 0	1 4	8 9	73 6
	35 0	22 1	43 4	28 2	11 1	3 5	0 0	0 0	6 9	49 6
	40 0	24 0	68 0	30 3	8 9	7 6	0 0	0 7	8 3	55 8
	45 0	25 7	71 7	22 7	9 6	1 4	0 0	1 4	8 9	44 0
	50 0	27 0	54 5	12 4	6 2	2 8	0 0	0 0	4 8	26 1
	55 0	28 1	42 8	8 9	3 4	2 1	0 0	0 0	2 1	16 5
	60 0	29 5	30 8	4 1	3 4	0 0	0 0	0 0	2 1	9 6
	65 0	30 3	15 8	2 8	1 4	0 0	0 0	0 0	0 0	4 1
	70 0	30 6	9 1	0 0	1 4	0 0	0 0	0 0	0 7	2 1
	75 0	31 5	10 8	0 7	0 0	0 0	0 0	0 0	1 4	2 1
	80 0	32 6	4 2	0 7	0 0	0 0	0 0	0 0	0 0	0 7
	85 0	30 7	4 4	0 7	0 0	0 0	0 0	0 0	0 0	0 7
	95 0	30 9	5 5	0 0	0 0	0 7	0 0	0 0	0 0	0 7
2 B	SPECIES TOTAL		466 4	493 3	175 1	31 7	0 0	4 2	72 9	777 1
19931										
3 Pw	35 0	17 1	0 5	0 0	0 7	0 0	0 0	0 0	0 0	0 7
	55 0	22 9	1 5	0 0	0 7	0 0	0 0	0 0	0 0	0 7
3 Pw	SPECIES TOTAL		1 9	0 0	1 4	0 0	0 0	0 0	0 0	1 4
19931	STRATUM TOTAL		707 1	726 1	343 8	35 8	0 0	4 2	79 8	1189 7
28831										
1 B	10 0	8 1	2 4	63 3	13 8	0 0	0 0	0 0	1 1	78 2
	15 0	11 5	2 5	21 3	4 4	0 0	0 0	0 0	1 1	26 8
	20 0	14 6	3 1	8 7	5 5	0 0	0 0	0 0	1 1	15 3
	25 0	17 7	2 4	3 9	1 3	0 0	0 0	0 2	1 0	6 5
	30 0	20 3	2 4	1 8	1 3	0 0	0 0	0 3	0 6	3 9
	35 0	22 6	1 6	1 1	0 6	0 0	0 0	0 0	0 1	1 8
	40 0	24 4	1 1	0 4	0 2	0 0	0 0	0 2	0 0	0 9
	45 0	26 1	0 4	0 0	0 1	0 0	0 0	0 1	0 0	0 2
	55 0	28 4	0 9	0 2	0 0	0 1	0 0	0 0	0 0	0 3
1 B	SPECIES TOTAL		16 7	100 8	27 2	0 1	0 0	0 9	5 0	133 9

B-APR-83 09 46 12 PAGE 12

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
28831										
2 S	10 0	10 3	3 6	73 2	18 0	0 0	0 0	0 4	1 9	93 6
	15 0	14 2	5 0	33 5	8 7	0 0	0 0	0 4	1 3	43 9
	20 0	17 8	5 3	16 3	5 5	0 0	0 0	0 0	0 2	22 1
	25 0	21 2	6 1	9 9	3 0	0 0	0 0	0 4	0 7	13 9
	30 0	24 0	4 7	5 4	1 2	0 0	0 0	0 1	0 1	6 7
	35 0	26 4	3 8	2 6	1 1	0 0	0 0	0 0	0 1	3 8
	40 0	28 4	2 3	1 0	0 6	0 0	0 0	0 0	0 0	1 6
	45 0	30 1	2 5	0 7	0 5	0 0	0 0	0 0	0 1	1 4
	50 0	31 9	0 8	0 1	0 2	0 0	0 0	0 0	0 0	0 3
	55 0	32 9	0 9	0 2	0 1	0 0	0 0	0 0	0 0	0 3
	60 0	33 7	0 4	0 0	0 1	0 0	0 0	0 0	0 0	0 1
2 S	SPECIES TOTAL		35 4	142 9	39 0	0 0	0 0	1 4	4 4	187 7
28931										
3 P1	10 0	11 1	3 6	13 5	28 8	0 0	0 0	10 5	31 0	83 8
	15 0	15 1	24 2	34 9	86 0	0 0	0 0	17 8	53 6	192 2
	20 0	18 5	72 6	83 6	142 4	0 0	0 0	16 7	29 6	272 2
	25 0	22 0	112 4	83 3	130 3	0 2	0 0	4 4	13 3	231 5
	30 0	24 2	111 5	56 2	85 7	0 5	0 0	1 5	4 2	148 2
	35 0	25 7	66 1	20 0	39 0	0 0	0 0	0 3	2 8	62 1
	40 0	27 0	23 6	6 2	9 9	0 0	0 0	0 1	0 2	16 4
	45 0	28 3	5 3	0 9	1 8	0 0	0 0	0 0	0 2	2 8
	50 0	29 0	2 8	0 3	0 9	0 0	0 0	0 0	0 0	1 2
	55 0	30 5	0 5	0 0	0 2	0 0	0 0	0 0	0 0	0 2
3 P1	SPECIES TOTAL		422 7	298 7	525 0	0 8	0 0	51 3	134 9	1010 7
28831										
4 A	10 0	11 9	0 0	0 5	0 3	0 0	0 0	0 0	0 0	0 8
	15 0	15 4	0 0	0 0	0 2	0 0	0 0	0 0	0 0	0 2
	20 0	18 3	0 0	0 0	0 2	0 0	0 0	0 0	0 0	0 2
	25 0	20 3	0 2	0 1	0 4	0 0	0 0	0 0	0 0	0 5
4 A	SPECIES TOTAL		0 3	0 6	1 1	0 0	0 0	0 0	0 0	1 7
28831	STRATUM TOTAL		475 0	543 0	592 2	0 9	0 0	53 6	144 2	1333 9
COMPARTMENT TOTAL			4566 5	6810 3	3592 0	59 2	20 3	205 1	1303 2	11990 0

8-APR-83 09 46.12 PAGE 1

BIOMASS ESTIMATES: REGION 60 COMPARTMENT 156-0

STEM VOLUME (CUBIC M)					TONNES							
			STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL			
18620	BCF	44964	DRY	BIOMASS	16720	2399	432	3008	1031	4943	28533	
1	B	BEM		LOGGED	7176	933	-	-	-	-	8109	
		%DIF		RESIDUE	9544	1466	432	3008	1031	4943	20424	
				GRN	BIOMASS	40624	5207	876	5887	2157	10295	65046
				LOGGED	16304	1980	-	-	-	-	18284	
				RESIDUE	24320	3227	876	5887	2157	10295	47164	
									DEAD		403	
18620	BCF	2048	DRY	BIOMASS	811	110	51	179	76	262	1488	
2	S	BEM		LOGGED	381	43	-	-	-	-	424	
		%DIF		RESIDUE	430	67	51	179	76	262	1064	
				GRN	BIOMASS	1807	251	88	332	152	538	3169
				LOGGED	824	97	-	-	-	-	921	
				RESIDUE	983	154	88	332	152	538	2276	
									DEAD		28	
18620	BCF	4146	DRY	BIOMASS	1823	140	46	142	31	97	2279	
3	P1	BEM		LOGGED	0	0	-	-	-	-	0	
		%DIF		RESIDUE	1823	140	46	142	31	97	2279	
				GRN	BIOMASS	3187	289	87	258	60	184	4065
				LOGGED	0	0	-	-	-	-	0	
				RESIDUE	3187	289	87	258	60	184	4115	
									DEAD		49	
18620	BCF	51458	DRY	BIOMASS	19354	2648	529	3329	1138	5302	32300	
STRAT		BEM		LOGGED	7558	975	-	-	-	-	8533	
TOTAL		%DIF		RESIDUE	11797	1673	529	3329	1138	5302	23767	
				GRN	BIOMASS	45619	5748	1051	6477	2369	11017	72280
				LOGGED	17128	2077	-	-	-	-	19205	
				RESIDUE	28491	3671	1051	6477	2369	11017	53555	
									DEAD		480	
18821	BCF	98891	DRY	BIOMASS	36866	5122	1128	5849	2055	9787	60808	
1	B	BEM		LOGGED	13197	1720	-	-	-	-	14916	
		%DIF		RESIDUE	23670	3402	1128	5849	2055	9787	45892	
				GRN	BIOMASS	87618	11041	2262	11515	4261	20251	136947
				LOGGED	30036	3653	-	-	-	-	30689	
				RESIDUE	57582	7388	2262	11515	4261	20251	103981	
									DEAD		723	

BIOMASS ESTIMATES				REGION 60	COMPARTMENT 156-0	B-APR-83 09 46 12 PAGE 2					
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	TONNES BR-M		BR-S	FOLI	TOTAL
18821	BCF	1393	DRY	BIOMASS	516	58	30	59	26	103	792
2	S	BEM	1384	LOGGED	394	44	-	-	-	-	438
	%DIF	-0.7		RESIDUE	123	14	30	59	26	103	354
				GRN BIOMASS	1117	133	52	109	53	209	1672
				LOGGED	851	101	-	-	-	-	951
				RESIDUE	266	32	52	109	53	209	731
				DEAD							10
18821	BCF	1763	DRY	BIOMASS	819	70	22	82	18	63	1074
3	P1	BEM	1791	LOGGED	0	0	-	-	-	-	0
	%DIF	1.6		RESIDUE	819	70	22	82	18	63	1074
				GRN BIOMASS	1489	159	41	157	35	121	2003
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	1489	159	41	157	35	121	2035
				DEAD							33
18821	BCF	102047	DRY	BIOMASS	38202	5250	1180	5990	2099	9953	62674
STRAT	BEM	98374		LOGGED	10590	1764	-	-	-	-	15354
TOTAL	%DIF	-3.6		RESIDUE	24611	3486	1180	5990	2099	9953	47320
				GRN BIOMASS	90223	11333	2356	11781	4348	20581	140622
				LOGGED	30887	3754	-	-	-	-	34641
				RESIDUE	59336	7579	2356	11781	4348	20581	106747
				DEAD							766
18831	BCF	88	DRY	BIOMASS	39	7	3	10	5	10	73
1	H	BEM	88	LOGGED	0	0	-	-	-	-	0
	%DIF	0.5		RESIDUE	39	7	3	10	5	10	73
				GRN BIOMASS	80	16	4	18	11	21	150
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	80	16	4	18	11	21	154
				DEAD							4
18831	BCF	9567	DRY	BIOMASS	3720	488	144	458	170	800	5780
2	B	BEM	9606	LOGGED	1727	222	-	-	-	-	1949
	%DIF	0.4		RESIDUE	1993	266	144	458	170	800	3831
				GRN BIOMASS	8510	1040	284	914	346	1629	12724
				LOGGED	3896	470	-	-	-	-	4366
				RESIDUE	4614	569	284	914	346	1629	8403
				DEAD							45

B-APR-83 09 46 12 PAGE 7

BIOMASS ESTIMATES REGION 60 COMPARTMENT 156-0

STEM VOLUME (CUBIC M)			TONNES							
			STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL	
19931	BCF	589407	DRY BIOMASS	230499	30007	9175	27140	10222	47816	354859
2 B	BEM	595228	LOGGED	114305	14673	-	-	-	-	128978
	%DIF	1.0	RESIDUE	116195	15334	9175	27140	10222	47816	225681
			GRN BIOMASS	524290	63730	18132	54368	20685	97147	778352
			LOGGED	257574	31058	-	-	-	-	288633
			RESIDUE	266715	32672	18132	54368	20685	97147	492260
								DEAD		2541
19931	BCF	2421	DRY BIOMASS	951	90	50	66	32	60	1251
3 Pw	BEM	2378	LOGGED	0	0	-	-	-	-	0
	%DIF	-1.8	RESIDUE	951	90	50	66	32	60	1251
			GRN BIOMASS	1765	231	74	123	66	129	2388
			LOGGED	0	0	-	-	-	-	0
			RESIDUE	1765	231	74	123	66	129	2409
								DEAD		21
19931	BCF	893703	DRY BIOMASS	351836	46843	15328	35150	14845	56075	520077
STRAT	BEM	871065	LOGGED	114305	14673	-	-	-	-	128978
TOTAL	%DIF	-2.5	RESIDUE	237532	32169	15328	35150	14845	56075	391099
			GRN BIOMASS	766660	93046	29598	68824	30643	115081	1103852
			LOGGED	257574	31058	-	-	-	-	288633
			RESIDUE	509085	61988	29598	68824	30643	115081	820372
								DEAD		5153
28831	BCF	14	DRY BIOMASS	5	1	0	1	0	2	9
1 B	BEM	13	LOGGED	2	0	-	-	-	-	2
	%DIF	-4.1	RESIDUE	3	1	0	1	0	2	7
			GRN BIOMASS	12	2	0	2	1	3	20
			LOGGED	4	0	-	-	-	-	4
			RESIDUE	9	1	0	2	1	3	16
								DEAD		0
28831	BCF	29	DRY BIOMASS	10	1	1	2	1	3	18
2 S	BEM	26	LOGGED	5	1	-	-	-	-	6
	%DIF	-9.8	RESIDUE	5	1	1	2	1	3	12
			GRN BIOMASS	22	3	1	4	2	6	37
			LOGGED	12	1	-	-	-	-	13
			RESIDUE	11	2	1	4	2	6	25
								DEAD		0

B-APR-83 09 46.12 PAGE 8

BIOMASS ESTIMATES REGION 60 COMPARTMENT 156-0

				TONNES							
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL	
28831	BCF	342	DRY	BIOMASS	148	12	4	12	3	8	186
3	P1	BEM		LOGGED	0	0	-	-	-	-	0
	%DIF	-1.9		RESIDUE	148	12	4	12	3	8	186
			GRN	BIOMASS	260	24	7	22	5	16	334
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	260	24	7	22	5	16	339
									DEAD		4
28831	BCF	0	DRY	BIOMASS	0	0	0	0	0	0	0
4	A	BEM		LOGGED	0	0	-	-	-	-	0
	%DIF	0.8		RESIDUE	0	0	0	0	0	0	0
			GRN	BIOMASS	0	0	0	0	0	0	0
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	0	0	0	0	0	0	0
									DEAD		0
									0		0
28831	BCF	384	DRY	BIOMASS	163	14	5	15	4	13	212
STRAT	BEM	374		LOGGED	7	1	-	-	-	-	8
TOTAL	%DIF	-2.6		RESIDUE	156	13	5	15	4	13	204
			GRN	BIOMASS	294	29	8	28	7	25	392
				LOGGED	15	2	-	-	-	-	17
				RESIDUE	279	27	8	28	7	25	379
									DEAD		5
BCF	4228761		DRY	BIOMASS	1658537	218243	66994	196420	75957	332981	2549133
COMP	BEM	4238183		LOGGED	674258	86459	-	-	-	-	760717
TOTAL	%DIF	0.2		RESIDUE	984279	131784	66994	196420	75957	332981	1788416
			GRN	BIOMASS	3737434	458519	130828	389751	155066	679789	5551389
				LOGGED	1519157	183170	-	-	-	-	1702327
				RESIDUE	2218278	275349	130828	389751	155066	679789	3872024
									DEAD		22962

** BIOMASS ESTIMATION MODEL ***

12-APR-83 15 49 24 PAGE 1

→ REGION 60 COMPARTMENT 156-0



RUN PARAMETERS	(01) BIOMASS EQUATION SET=1 (02) MODE=2	(1="COMPLEX" 2=DDH 3=LOGS) (1=INDIVIDUAL 2=BCFS INVENTORY)
STOCK & STAND REPORTING LEVEL	(03) VDT SCREEN LEVEL=4 (04) PRINTER LEVEL=4	(1=NONE 2=COMPARTMENT 3=STRATA 4=SPECIES 5=DBH)
RECOVERY CRITERIA	(05) TOP DIB= 10 0cm (06) STUMP HEIGHT= 30 0cm (07) MINIMUM DBH= 25 0cm (08) SPECIES= H B	
STAND DESCRIPTION	(09) REGION=60 (10) COMPARTMENT=156-0	

PAGE 2

STAND DESCRIPTION: REGION 60 COMPARTMENT 156-0

STRATA	18620	18821	18831	18921	18931	18941	19931
HECTARES	136 B	295.0	19 B	1520.8	2866.8	203.2	1263.8
SPECIES	B	H B Pw	B	H B Pw	D Pw	B	H B Pw
STRATA	28831						
HECTARES	0 B						
SPECIES	B S P1						

12-APR-83 15 49.24 PAGE 4

STAND & STOCK DATA STEMS PER HECTARE BY DECAY RISK GROUP

	DBH	HCHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
18921										
2 B	SPECIES TOTAL		588.1	1078.5	431.7	0.7	0.0	7.6	291.9	1810.5
3 S	SPECIES TOTAL		2.2	2.1	2.1	0.0	0.0	0.0	0.0	4.1
4 Pw	SPECIES TOTAL		4.3	0.7	1.4	0.0	0.0	0.0	0.0	2.1
18921	STRATUM TOTAL		595.2	1091.5	435.2	0.7	0.0	7.6	291.9	1827.0
18931										
1 H	SPECIES TOTAL		11.9	147.2	48.4	0.0	0.0	0.0	3.3	198.8
2 B	SPECIES TOTAL		713.8	612.5	221.3	7.9	0.0	3.3	168.6	1013.6
3 S	SPECIES TOTAL		4.8	1.1	0.4	0.0	0.0	0.0	0.7	2.2
4 Pw	SPECIES TOTAL		9.8	0.7	4.4	0.0	0.0	0.0	0.4	5.4
5 P1	SPECIES TOTAL		0.7	0.4	0.4	0.0	0.0	0.0	0.0	0.7
18931	STRATUM TOTAL		741.0	761.8	274.8	7.9	0.0	3.3	172.9	1220.8
18941										
1 B	SPECIES TOTAL		608.5	403.7	157.9	3.1	0.0	14.8	62.6	642.1
2 S	SPECIES TOTAL		38.1	14.3	15.6	0.4	0.0	0.0	5.0	35.3
3 P1	SPECIES TOTAL		37.8	2.1	18.8	0.0	0.0	0.0	5.2	26.1
18941	STRATUM TOTAL		684.4	420.1	192.2	3.5	0.0	14.8	72.8	703.4
19931										
1 H	SPECIES TOTAL		238.9	232.9	167.3	4.1	0.0	0.0	6.9	411.2

12-APR-83 15 49 24 PAGE 5

STAND & STOCK DATA		STEMS PER HECTARE BY DECAY RISK GROUP								
	DBH	HGHT	SVOL	GR-1	GR-2	GR-3	VETR	POTL	USLS	TOTAL
19931										
2 B	SPECIES TOTAL		466 4	493 3	175 1	31 7	0 0	4 2	72 9	777 1
3 Pw	SPECIES TOTAL		1 9	0 0	1 4	0 0	0 0	0 0	0 0	1 4
19931	STRATUM TOTAL		707 1	726 1	343 8	35 8	0 0	4 2	79 8	1189 7
28831										
1 B	SPECIES TOTAL		16 7	100 8	27 2	0 1	0 0	0 9	5 0	133 9
2 S	SPECIES TOTAL		35 4	142 9	39 0	0 0	0 0	1 4	4 4	187 7
3 P1	SPECIES TOTAL		422 7	298 7	525 0	0 8	0 0	51 3	134 9	1010 7
4 A	SPECIES TOTAL		0 3	0 6	1 1	0 0	0 0	0 0	0 0	1 7
28831	STRATUM TOTAL		475 0	543 0	592 2	0 9	0 0	53 6	144 2	1333 9
COMPARTMENT TOTAL			4566 5	6810 3	3592 0	59 2	20 3	205 1	1303 2	11990 0

BIOMASS ESTIMATES			REGION 60	COMPARTMENT 156-0	12-APR-83	14 57:08	PAGE	1			
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	TONNES			TOTAL	
							BR-M	BR-S	FOLI		
18620	BCF	44964	DRY	BIOMASS	15207	2259	498	3079	1048	5079	27169
1	B	BEM		LOGGED	6321	852	-	-	-	-	7173
		%DIF	-12.4	RESIDUE	8886	1406	498	3079	1048	5079	19996
				GRN	BIOMASS	38039	4899	1096	6019	2194	10574
				LOGGED	14871	1809	-	-	-	-	16680
				RESIDUE	23168	3090	1096	6019	2194	10574	46558
										DEAD	417
18620	BCF	2348	DRY	BIOMASS	897	115	27	139	60	176	1415
2	S	BEM		LOGGED	427	44	-	-	-	-	471
		%DIF	-2.5	RESIDUE	469	71	27	139	60	176	944
				GRN	BIOMASS	1888	263	53	257	124	382
				LOGGED	856	102	-	-	-	-	958
				RESIDUE	1032	162	53	257	124	382	2028
										DEAD	20
18620	BCF	4146	DRY	BIOMASS	2052	165	86	244	54	181	2781
3	P1	BEM		LOGGED	0	0	-	-	-	-	0
		%DIF	8.6	RESIDUE	2052	165	86	244	54	181	2781
				GRN	BIOMASS	3775	388	160	452	101	333
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	3775	388	160	452	101	333	5209
										DEAD	78
18620	BCF	51458	DRY	BIOMASS	18155	2539	611	3462	1162	5435	31365
STRAT	BEM	46170		LOGGED	6748	896	-	-	-	-	7644
TOTAL	%DIF	-10.3		RESIDUE	11408	1643	611	3462	1162	5435	23721
				GRN	BIOMASS	43702	5551	1309	6727	2419	11289
				LOGGED	15727	1911	-	-	-	-	17638
				RESIDUE	27975	3640	1309	6727	2419	11289	53873
										DEAD	514
18821	BCF	98891	DRY	BIOMASS	33363	4814	1198	6075	2114	10225	57790
1	B	BEM		LOGGED	11710	1588	-	-	-	-	13298
		%DIF	-12.5	RESIDUE	21653	3227	1198	6075	2114	10225	44492
				GRN	BIOMASS	81994	10372	2582	11987	4405	21209
				LOGGED	27674	3372	-	-	-	-	31045
				RESIDUE	54320	7000	2582	11987	4405	21209	102268
										DEAD	766

BIOMASS ESTIMATES			REGION 60	COMPARTMENT 156-C	12-APR-83 14 57 08 PAGE 2						
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	TONNES		FOLI	TOTAL	
							BR-M	BR-S			
18821	BCF	1393	DRY	BIOMASS	591	60	8	19	9	31	718
2 S	BEM	1596		LOGGED	453	45	-	-	-	-	499
	%DIF	14 5		RESIDUE	138	15	8	19	9	31	219
				GRN BIOMASS	1176	140	14	36	20	64	1450
				LOGGED	894	106	-	-	-	-	1000
				RESIDUE	281	34	14	36	20	64	453
										DEAD	3
18821	BCF	1763	DRY	BIOMASS	880	76	32	107	23	83	1201
3 P1	BEM	1889		LOGGED	0	0	-	-	-	-	0
	%DIF	7 1		RESIDUE	880	76	32	107	23	83	1201
				GRN BIOMASS	1639	183	60	204	45	157	2287
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	1639	183	60	204	45	157	2327
										DEAD	39
18821	BCF	102047	DRY	BIOMASS	34835	4751	1238	6201	2146	10338	59709
STRAT	BEM	90010		LOGGED	12163	1633	-	-	-	-	13796
TOTAL	%DIF	-11 8		RESIDUE	22672	3318	1238	6201	2146	10338	45913
				GRN BIOMASS	24809	10695	2656	12227	4469	21430	136285
				LOGGED	28568	3478	-	-	-	-	32046
				RESIDUE	56241	7217	2656	12227	4469	21430	105048
										DEAD	809
18831	BCF	88	DRY	BIOMASS	30	5	1	6	2	6	51
1 H	BEM	68		LOGGED	0	0	-	-	-	-	0
	%DIF	-22 1		RESIDUE	30	5	1	6	2	6	51
				GRN BIOMASS	60	9	2	11	6	14	102
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	60	9	2	11	6	14	104
										DEAD	2
18831	BCF	9567	DRY	BIOMASS	3299	433	125	404	149	700	5111
2 B	BEM	8507		LOGGED	1521	195	-	-	-	-	1716
	%DIF	-11 1		RESIDUE	1778	238	125	404	149	700	3395
				GRN BIOMASS	7521	921	248	802	303	1425	11221
				LOGGED	3408	412	-	-	-	-	3819
				RESIDUE	4113	509	248	802	303	1425	7442
										DEAD	41

BIOMASS ESTIMATES REGION 60 COMPARTMENT 156-0 12-APR-83 14 57:08 PAGE 7

STEM VOLUME (CUBIC M)			TONNES								
			STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL		
19931	BCF	589407	DRY	BIOMASS	204064	26346	7774	23015	8634	40124	309957
2	B	BEM		LOGGED	100850	12776	-	-	-	-	113626
	%DIF	-10		RESIDUE	103213	13570	7774	23015	8634	40124	196330
			GRN	BIOMASS	459169	55925	15176	45755	17410	81302	674737
				LOGGED	223911	27022	-	-	-	-	250934
				RESIDUE	235258	28903	15176	45755	17410	81302	425973
									DEAD		2170
19931	BCF	2421	DRY	BIOMASS	909	94	98	133	38	122	1395
3	Pw	BEM		LOGGED	0	0	-	-	-	-	0
	%DIF	-3		RESIDUE	909	94	98	133	38	122	1395
			GRN	BIOMASS	1861	273	161	261	81	283	2920
				LOGGED	0	0	-	-	-	-	0
				RESIDUE	1861	273	161	261	81	283	2959
									DEAD		39
19931	BCF	893703	DRY	BIOMASS	343763	49542	12880	33791	14919	49929	504823
STRAT	BEM	838542		LOGGED	100850	12776	-	-	-	-	113626
TOTAL	%DIF	-6		RESIDUE	242913	36766	12880	33791	14919	49929	391197
			GRN	BIOMASS	724287	95362	23683	64406	30079	101101	1038918
				LOGGED	223911	27022	-	-	-	-	250934
				RESIDUE	500376	68340	23683	64406	30079	101101	794916
									DEAD		6932
28831	BCF	14	DRY	BIOMASS	5	1	0	1	0	1	8
1	B	BEM		LOGGED	1	0	-	-	-	-	2
	%DIF	-11		RESIDUE	3	0	0	1	0	1	6
			GRN	BIOMASS	11	1	0	2	1	3	18
				LOGGED	3	0	-	-	-	-	4
				RESIDUE	8	1	0	2	1	3	15
									DEAD		0
28831	BCF	29	DRY	BIOMASS	12	1	0	1	1	1	16
2	S	BEM		LOGGED	6	1	-	-	-	-	7
	%DIF	7		RESIDUE	5	1	0	1	1	1	9
			GRN	BIOMASS	24	3	0	2	1	3	33
				LOGGED	12	1	-	-	-	-	14
				RESIDUE	11	2	0	2	1	3	20
									DEAD		0

12-APR-83 14 57.08 PAGE 8

BIOMASS ESTIMATES REGION 60 COMPARTMENT 156-0

				TONNES								
STEM VOLUME (CUBIC M)				STEM	BARK	BR-L	BR-M	BR-S	FOLI	TOTAL		
28831	BCF	342	DRY	BIOMASS	154	12	5	14	3	10	198	
3 P1	BEM	347		LOGGED	0	0	-	-	-	-	0	
	%DIF	1 5		RESIDUE	154	12	5	14	3	10	198	
				GRN	BIOMASS	275	26	9	26	6	19	361
				LOGGED	0	0	-	-	-	-	0	
									DEAD		5	
				RESIDUE	275	26	9	26	6	19	366	
28831	BCF	0	DRY	BIOMASS	0	0	0	0	0	0	0	
4 A	BEM	0		LOGGED	0	0	-	-	-	-	0	
	%DIF	1 1		RESIDUE	0	0	0	0	0	0	0	
				GRN	BIOMASS	0	0	0	0	0	0	
				LOGGED	0	0	-	-	-	-	0	
									DEAD		0	
				RESIDUE	0	0	0	0	0	0	0	
28831	BCF	384	DRY	BIOMASS	171	14	5	16	4	13	223	
STRAT	BEM	390		LOGGED	3	1	-	-	-	-	9	
TOTAL	%DIF	1 5		RESIDUE	163	13	5	16	4	13	214	
				GRN	BIOMASS	310	31	9	30	8	25	413
				LOGGED	16	2	-	-	-	-	18	
									DEAD		5	
				RESIDUE	294	29	9	30	8	25	400	
COMP	BCF	4228761	DRY	BIOMASS	1501616	199228	56838	171279	65747	284105	2278813	
TOTAL	BEM	3817571		LOGGED	595315	75246	-	-	-	-	670561	
	%DIF	-9 7		RESIDUE	906301	123982	56838	171279	65747	284105	1608252	
				GRN	BIOMASS	3332362	414735	109611	336788	133363	578155	4905013
				LOGGED	1321061	159417	-	-	-	-	1480478	
									DEAD		21762	
				RESIDUE	2011301	255317	109611	336788	133363	578155	3446297	