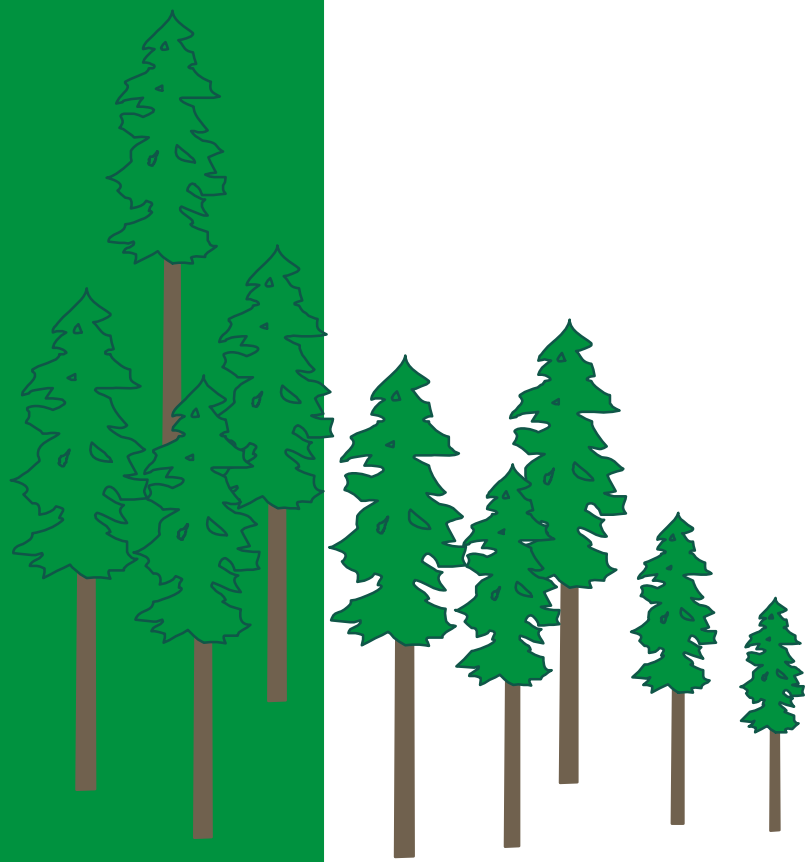
BRITISH COLUMBIA

Ministry of Forests and Range

SPECIFICATIONS:

Calculation of the Interior

Average Market Price



October 1, 2008

Revenue Branch

Specifications: Calculation of the Interior Average Market Price

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Prepared by Revenue Branch, Ministry of Forests and Range (October 1, 2008)

Specifications: Calculation of the Interior Average Market Price

1. SOURCE DATA

Naming conventions for source data used throughout this document are as follows.

PAR	=	3 month average market values and other parameters published quarterly.
IAM	=	*Interior Appraisal Manual*.
Mark	=	refers to values on the corporate data base for each mark.
Mark/IAM		refers to site data for the mark and cost estimates from current *Interior Appraisal Manual*.
APP X	=	refers to an appendix of this document.
S X.X.X	=	refers to steps described in this document.

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2. SELECTING MARKS TO BE INCLUDED IN THE AVERAGE MARKET PRICE CALCULATION

The selection of Interior marks is done from a snapshot of the DBP01 database. The species records for the mark are extracted to ensure only appraised species are used. Volumes billed for all coniferous species over the period (12 month period beginning 14 months prior to the stumpage adjustment date) are then totalled into 2 groups: logs which receive the stand rate and low grade logs that are billed at the statutory minimum rate.

Select marks which meet the following criteria.

1. Mark is a stumpage mark.
2. Mark is appraised by the Interior method.
3. Mark is not part of BC Timber Sales.
4. Mark is from one of the following tenures:

   Forest licence.
   Tree farm licence.
   Timber sale licence with allowable annual cut exceeding 10,000 cubic metres.
   Timber licence.

5. Mark has complete appraisal data and is quarterly adjustable.
6. Mark has a total cruise volume of 100 cubic metres or more.
7. Mark has a confirmed worksheet with an appraisal effective data not before 48 months prior to the stumpage adjustment date, and has not expired as of the stumpage adjustment date.
8. Mark has information for at least one of the following species: balsam, cedar, fir, hemlock larch, lodgepole pine, spruce, white pine or yellow pine.

   Calculate the low grade and high grade volume billed for all coniferous saw log species.

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9. Include volume billed for the above species and the following species: white bark pine and cypress. Do not include the volumes of special forest products. Only volumes from normal and cruise based billings are included.

   Low grade volumes and values are based on the species and grades shown in the species low grade saw log factors table for the applicable date.

   High grade volumes are based on all volumes except Grade Z and low grade volumes.

   Calculate the total volume billed for each mark by adding the individual species low grade and high grade volumes.

   Exclude any mark where the total volume billed is less than 1,000 cubic metres.

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3. CALCULATING THE MARKET PRICE OF EACH MARK

		Units	Decimal Places	Source/ Value	Rounding
2.1	selling price index	$/m^3	2		yes
=	stand value			S 2.1.2	
/	CONVOL			S 2.1.1	
2.1.1	CONVOL	m^3	0		
=	sum of coniferous species cruise volumes	m^3		Mark	
2.1.2	stand value	$	2		
=	sum of species values	$		S 2.1.3	
2.1.3	species value	$	2		
=	species selling price	$/m^3		S 2.1.4	
*	species cruise volume	m^3	0	Mark	
2.1.4	species selling price	$/m^3	2		
=	species appraisal LRF	fbm/m^3		S 2.1.5	
*	species lumber AMV	$/fbm		S 2.1.6	
2.1.5	species appraisal LRF	fbm/m³	0		
=	species cruise LRF	fbm/m³	0	Mark	
+	species LRF add-on	fbm/m³	0	LRF	
2.1.6	species lumber AMV (fbm)	$/fbm	3		
=	species lumber AMV (Mbm)	$/Mbm	0	PAR	
/	1000				
2.2	exchange rate	US$/C$	4	PAR	yes
2.3	Douglas fir fraction	fraction	4		yes
=	Douglas fir cruise volume	m³	0	Mark	
/	CONVOL			S 2.1.1	
2.4	hembal fraction	fraction	4		yes
=	hembal volume	m³	0	S 2.4.1	
/	CONVOL			S 2.1.1	
2.4.1	hembal volume	m³	0		
=	hemlock cruise volume	m³	0	Mark	
+	balsam cruise volume	m³	0	Mark	
2.5	cedar fraction	fraction	4		yes
=	cedar cruise volume	m³	0	Mark	
/	CONVOL			S 2.1.1	

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		Units	Decimal Places	Source/ Value	Rounding
2.7	LOGVOL				
=	natural logarithm (CONVOL/1000)		4	S 2.1.1	yes
2.8	INVVPT		4		yes
=	1 / average volume per tree			S 2.8.1	
*	(1- hembal fraction)			S 2.4	
2.8.1	average volume per tree	m^3/tree	4	S 2.8.2	
=	sum of harvest method vpt prorates				
2.8.2	harvest method vpt prorate	m^3/tree			
=	harvest method vpt	m^3/tree	2	Mark	
*	harvest method volume	m^3	0	Mark	
/	HARVOL			S 2.8.3	
note: in the above calculation, system vpt = 0.428 for horse harvest method					
2.8.3	HARVOL	m^3	0		yes
=	sum of all harvest method volumes, excluding specified operation volume.	m^3	0	Mark	
2.9	deciduous fraction	fraction	4		
=	appraised deciduous volume	m^3	0	Mark	
/	TOTVOL	m^3		S 2.9.1	
2.9.1	TOTVOL	m^3	0		
=	CONVOL			S 2.1.1	
+	appraised deciduous volume	m^3	0	Mark	
2.10	decay fraction	fraction	4		yes
=	sum of species decay percent prorates	%		S 2.10.1	
/	100				
2.10.1	species decay percent prorate	%			
=	species decay percent	%	0	Mark	
*	species cruise volume		0	Mark	
/	CONVOL			S 2.1.1	

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		Units	Decimal Places	Source/ Value	Rounding
2.11	average slope	%	2	S 2.11.1	yes
=	sum of harvest method slope Prorates	%			
2.11.1	harvest method slope prorate	%			
=	harvest method slope	%		Mark	
*	harvest method volume	m^3	0	Mark	
/	HARVOL		0	S 2.8.3	

note: in the above calculation, slope = 17.4% for horse harvest method

2.12	partial cut fraction	fraction			
=	1		4		yes
-	CAPCUT% (no 80% limit)		2	Mark/IAM	
/	100				
2.13	cable yarding fraction	fraction	4		yes
=	(hi lead and grapple volume	m^3	0	Mark	
+	skyline volume)	m^3	0	Mark	
/	HARVOL			S 2.8.3	
2.14	heli fraction	fraction	4		yes
=	helicopter yarding volume	m^3	0	Mark	
/	HARVOL			S 2.8.3	
2.15	horse fraction	fraction	4		yes
=	horse logging harvest method Volume	m^3	0	Mark	
/	HARVOL			S 2.8.3	
2.16	fire damage fraction	fraction	4		yes
=	sum of fire damage percent Prorates	%		S 2.16.1	
/	100				
2.16.1	species fire damage percent prorate	%			
=	species fire damage percent	%	0	Mark	
*	species cruise volume	m^3	0	Mark	
/	CONVOL			S 2.1.1	
2.17	total cycle time	hours	1		
=	primary cycle time	hours	1	Mark	
+	secondary cycle time	hours	1	Mark	

Specifications: Calculation of the Interior Average Market Price

		Units	Decimal Places	Source/ Value	Rounding
2.20	Fort Nelson Peace				
=	1 if Zone 9 0 otherwise		0	Mark	
2.21	2007 Auctions		0	1	
=	1 for all marks				
2.22	DANB		1		
=	DANB looked up by district			APP 1	
2.23	CPIF	ratio	4		yes
=	current CPI		1	PAR	
/	109.3			109.3	
2.24	highway transportation				
=	1 if highway transportation 0 if off-highway transportation		0	Mark	
2.25	green MPB and other pest fraction	fraction	4		yes
=	green MPB and other pest volume	m^3	0	S 2.25.1	
/	CONVOL			S 2.1.1	
2.25.1	green MPB and other pest volume	m^3	0		
=	MPB green attack volume	m^3	0	Mark	
+	other pest volume	m^3	0	Mark	
2.26	red and grey MPB fraction	fraction	4		yes
=	red and grey MPB attack volume	m^3	0	S 2.26.1	
/	CONVOL			S 2.1.1	
2.26.1	red and grey MPB attack volume	m^3	0		
=	MPB red attack volume	m^3	0	Mark	
+	MPB grey attack volume	m^3	0	Mark	
2.27	LOGVPT				
=	natural logarithm (average volume per tree)			S 2.8.1	

Specifications: Calculation of the Interior Average Market Price

			Units	Decimal Places	Source/ Value	Rounding
3.1		selling price contribution	$/m³	2		yes
	=	selling price index	$/m³		S 2.1	
	*	selling price coefficient			0.193	
	/	CPIF	$/m³		S 2.23	
3.2		exchange rate contribution	$/m³	2		yes
	=	exchange rate			S 2.2	
	*	exchange rate coefficient			-22.23	
3.3		Douglas fir contribution	$/m³	2		yes
	=	Douglas fir fraction			S 2.3	
	*	Douglas fir fraction coefficient			7.34	
3.4		hembal contribution	$/m³	2		yes
	=	hembal fraction			S 2.4	
	*	hembal fraction coefficient			-21.75	
3.5		cedar contribution	$/m³	2		yes
	=	cedar fraction			S 2.5	
	*	cedar fraction coefficient			37.24	
3.7		LOGVOL contribution	$/m³	2		yes
	=	LOGVOL			S 2.7	
	*	LOGVOL coefficient			2.36	
3.8		INVVPT contribution	$/m³	2		yes
	=	INVVPT			S 2.8	
	*	INVVPT coefficient			-1.37	
3.9		deciduous contribution	$/m³	2		yes
	=	deciduous fraction			S 2.9	
	*	deciduous fraction coefficient			-7.77	
3.10		decay contribution	$/m³	2		yes
	=	decay fraction			S 2.10	
	*	decay fraction coefficient			-19.43	
3.11		slope contribution	$/m³	2		yes
	=	slope			S 2.11	
	*	slope coefficient			-0.0244	
3.12		partial cut contribution	$/m³	2		yes
	=	partial cut fraction			S 2.12	
	*	partial cut coefficient			-3.88	

Specifications: Calculation of the Interior Average Market Price

		Units	Decimal Places	Source/ Value	Rounding
3.13	cable yarding contribution	$/m³	2		yes
=	cable yarding fraction			S 2.13	
*	cable yarding fraction coefficient			-8.21	
3.14	heli contribution	$/m³	2		yes
=	heli fraction			S 2.14	
*	heli fraction coefficient			-61.08	
3.15	horse contribution	$/m³	2		yes
=	horse fraction			S 2.15	
*	horse fraction coefficient			-9.21	
3.16	fire damage contribution	$/m³	2		yes
=	fire damage fraction			S 2.16	
*	fire damage fraction coefficient			-16.14	
3.17	cycle time contribution	$/m³	2		yes
=	total cycle time			S 2.17	
*	cycle time coefficient			-1.75	
3.20	Fort Nelson Peace contribution	$/m³	2		yes
=	Fort Nelson Peace			S 2.20	
*	Fort Nelson Peace coefficient			-4.60	
3.21	2007 auctions contribution	$/m³	2		yes
=	2007 auctions			S 2.21	
*	2007 auctions coefficient			-3.86	
3.22	DANB contribution	$/m³	2		yes
=	DANB			S 2.22	
*	DANB coefficient			0.678	
3.24	highway transportation contribution	$/m³	2		yes
=	highway transportation	$/m³		S 2.24	
*	highway transportation coefficient			0.343	
3.25	green and other pest contribution	$/m³	2		yes
=	green MPB and other pest fraction			S 2.25	
*	green MPB and other pest coefficient			-6.79	

Specifications: Calculation of the Interior Average Market Price

		Units	Decimal Places	Source/ Value	Rounding
3.26	red and grey MPB contribution	$/m³	2		yes
=	red and grey MPB fraction			S 2.26	
*	red and grey MPB coefficient			-9.10	
3.27	LOGVPT contribution	$/m³	2		
=	LOGVPT			S 2.27	
*	LOGVPT coefficient			6.58	
4.1	real estimated winning bid PLG	$/m³	2		yes
=	maximum of 0.25 or:				
	constant			50.80	
+	selling price contribution			S 3.1	
+	exchange rate contribution			S3.2	
+	Douglas fir contribution			S 3.3	
+	hembal contribution			S 3.4	
+	cedar contribution			S 3.5	
+	LOGVOL contribution			S 3.7	
+	VPT variable contribution			S 3.8	
+	deciduous contribution			S 3.9	
+	decay contribution			S 3.10	
+	slope contribution			S 3.11	
+	partial cut contribution			S 3.12	
+	cable yarding contribution			S 3.13	
+	heli contribution			S 3.14	
+	horse contribution			S 3.15	
+	fire damage contribution			S 3.16	
+	cycle time contribution			S 3.17	
+	Fort Nelson Peace contribution			S 3.20	
+	2007 auctions			S 3.21	
+	DANB contribution			S 3.22	
+	highway transportation contribution			S 3.24	
+	green and other pest contribution			S 3.25	
+	red and grey MPB contribution			S 3.26	
+	LOGVPT contribution			S 3.27	
4.2	estimated winning bid	$/m³	2		yes
=	maximum of 0.25 or:				
	real estimated winning bid	$/m³		S 4.1	
*	CPIF			S 2.23	

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		Units	Decimal Places	Source/ Value	Rounding
5.1	final TOA	$/m³			
=	TOA subtotal 4			S 5.1.1	
+	return to forest management			S 5.1.7	
+	MLRC subtotal 2			S 5.1.8	
5.1.1	TOA subtotal 4	$/m³	2		yes
=	TOA subtotal 3	$/m³		S 5.1.3	
/	high grade fraction			S 5.1.6	
5.1.2	TOA subtotal 3	$/m^3	2		yes
=	TOA subtotal 2	$/m^3		S 5.1.2	
*	TOACPIF			S 5.3.1	
5.1.3	TOA subtotal 2	$/m³	2		yes
=	TOA subtotal 1	$/m³		S 5.1.4	
*	TOA trend factor			S 5.1.5	
5.1.4	TOA subtotal 1				yes
=	forest planning and administration	$/m³	2	Mark	
+	road development	$/m³	2	Mark	
+	road management	$/m³	2	Mark	
+	basic silviculture	$/m³	2	Mark	
5.1.5	TOA trend factor			APP 3	
5.1.6	high grade fraction	fraction	4		yes
=	mark high grade AMP volume	$/m³	0	Mark	
/	mark AMP volume	$/m³	0	Mark	
5.1.7	return to forest management	$/m³	2		yes
=	TOA subtotal 4			S 5.1.1	
*	0.034			0.034	
5.1.8	MLRC subtotal 2	$/m³	2		yes
=	MLRC subtotal 1			S 5.1.9	
/	high grade fraction			S 5.1.6	
5.1.9	MLRC subtotal 1	$/m³	2		yes
=	MLRC	$/m³	2	1.11	
*	TOACPIF			S 5.3.1	
5.2.1	final specified operations	$/m³	2		yes
=	specified operations subtotal 1			S 5.2.2	
*	TOACPIF			S 5.3.1	

Specifications: Calculation of the Interior Average Market Price

		Units	Decimal Places	Source/ Value	Rounding
5.2.2	specified operations subtotal 1	$/m³	2		yes
=	rail haul	$/m³	2	Mark/IAM	
+	barge and ferry	$/m³	2	Mark/IAM	
+	dump boom dewater and reload	$/m³	2	Mark/IAM	
+	camp costs	$/m³	2	Mark/IAM	
+	skyline	$/m³	2	Mark/IAM	
+	lake tow	$/m3	2	Mark IAM	
+	suitable secondary stand survey	$/m3	2	Mark IAM	
5.3.1	TOACPIF	Ratio	4		yes
=	current CPI		1	PAR	
/	126.4			126.4	
6.1	preliminary MPS market price	$/m³	2		yes
=	maximum of 0.25 or:				
	Estimated winning bid			S 4.2	
-	final TOA			S 5.1	
-	final specified operations			S 5.2.1	

Specifications: Calculation of the Interior Average Market Price

		Units	Decimal Places	Source/ Value	Rounding
6.2	MPS market price	$/m³	2		yes
=	maximum of 0.25 or:				
	preliminary MPS market price			S 6.1	
-	dead saw log adjustment			S 6.2.1	
note: if appraisal effective date is greater than or equal to April 1, 2006, then dead saw log adjustment equals zero.					
6.2.1	dead saw log adjustment	$/m³	2		yes
=	dead saw log volume differential			S 6.2.2	
*	dead saw log value differential			10.00	
6.2.2	dead saw log volume differential	N/A	2		yes
=	historic dead saw log fraction			S 6.2.3	
-	auction data set dead saw log fraction			0.184	
6.2.3	historic dead saw log fraction	N/A	2	Mark	
note: if mark data is insufficient (see Appendix 2), then look up dead saw log fraction by point of appraisal in Appendix 2.					

4. CALCULATING THE AVERAGE MARKET PRICE

7.1	average market price	$/m³	2		yes
=	total AMP value			S 7.2.1	
/	total AMP volume			S 7.2.5	
7.2.1	total AMP value	$	2		yes
=	sum of mark AMP value			S 7.2.2	
7.2.2	mark AMP value	$	2		yes
=	mark high grade value			Mark	
*	mark low grade value			Mark	
7.2.3	mark high grade value	$	2		yes
=	mark high grade volume			Mark	
*	MPS market price			S 6.2	
7.2.4	mark low grade value	$	2		yes
=	mark low grade volume			Mark	
*	minimum stumpage rate			0.25	
7.2.5	total AMP volume	m³	0		yes
=	sum of mark high grade volume			Mark	
+	sum of mark low grade volume			Mark	

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APPENDIX 1: District Average Number of Bidders (DANB)

Forest District	DANB
100 Mile House	4.3
Arrow Boundary	3.2
Cascades	5.0
Central Cariboo	4.8
Chilcotin	2.1
Columbia	3.8
Fort Nelson	2.5
Fort St. James	2.9
Headwaters	4.8
Kalum	2.5
Kamloops	4.6
Kootenay Lake	3.9
Mackenzie	2.3
Nadina	5.1
Okanagan Shuswap	4.2
Peace	3.4
Prince George	3.5
Quesnel	4.4
Rocky Mountain	3.7
Skeena Stikine	3.0
Vanderhoof	2.7

Specifications: Calculation of the Interior Average Market Price

APPENDIX 2: Dead Saw Log Fraction by Point of Appraisal

Mark specific data for historic dead saw log fraction is insufficient if: Volume billed prior to April 1, 2006 is less than 1000 cubic metres, or calculated dead saw log fraction is less than 0 or greater than 1.

Point of Appraisal	Dead Saw Log Fraction
100M	0.4410
ADLK	0.1105
ARMS	0.2321
BELK	0.2524
BOBA	0.1162
BSLK	0.3742
CAFL	0.0507
CANO	0.0818
CARN	0.0442
CAST	0.1168
CHET	0.0132
CHSM	0.3789
CLLK	0.5350
CRAI	0.0417
CRAN	0.0748
CRES	0.0758
ELKO	0.0731
ENGE	0.7078
FRLK	0.6781
FTJA	0.2590
FTJO	0.0112
FTNE	0.0326
GALL	0.0956
GRFO	0.0771
HAZE	0.0868
HOUS	0.1381
ISPI	0.5948
KAML	0.3374
KELO	0.1117
KITW	0.0153
LAVI	0.1053
LILL	0.0673
LSCK	0.2904
LUMB	0.0757

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Point of Appraisal	Dead Saw Log Fraction
LYTT	0.1583
MBRI	0.0778
MERR	0.1566
MIDW	0.0655
MKEN	0.0576
OKFA	0.1189
PASI	0.0596
PRGE	0.4034
PRIN	0.0869
QUES	0.6213
RADI	0.0811
REVE	0.0403
SLOC	0.0582
SMIT	0.1908
STRA	0.4840
TAYL	0.0154
TERR	0.0087
THRU	0.1294
UPFR	0.1593
VALE	0.0711
VAND	0.5456
VAVE	0.1237
WEST	0.0615
WILK	0.3990
YMIR	0.0329

Specifications: Calculation of the Interior Average Market Price

APPENDIX 3: TOA Trend Factors

TOA values are trended based on appraisal effective date. Trend factors are as follows:

Appraisal Effective Date	TOA trend factor
November 1, 2002	0.811
November 1, 2004	0.805
July 1, 2007	0.996
July 1, 2008	1.000

APPENDIX 4: Explanation of Variables used in the Auction Dataset but not in calculating the AMP

Grade 3 Fraction --- fraction of coniferous volume harvest on the auction sale that was scaled as grade 3 --- This variable does not apply in the calculation of the AMP because there has been no grade 3 volume scaled since the April 1, 2006 change to Interior log grades. MPS is constructed so that policy in the final year of auctions sales (2007) is consistent with application. Since there was no grade 3 during 2007, the variable is always zero in application.

Competitive Deciduous --- 1 if auction sale sold under Section 7.5.1.5 of the IAM, zero otherwise --- This variable does not apply in calculating the AMP because no AMP eligible permits are sold under that section of the IAM. Therefore the Competitive Deciduous variable is always zero and the variable, and its impact on the deciduous fraction variable, can be ignored.

Insect Attack Code Indicator --- 1 if insect attack volumes are unavailable, zero otherwise --- This variable does not apply in calculating the AMP because insect attack volumes are determined for all AMP eligible permits, therefore the value is always zero.

Salvage --- 1 if total insect attack is greater than 1/3 of coniferous volume, zero otherwise --- This variable does not apply in calculating the AMP because in the structure of the estimated winning bid regression the salvage is multiplied by the insect attack code indicator. Since the insect attack code indicator is always zero for AMP permits, this product is also always zero.

2004, 2005 and 2006 Annual Dummy Variables --- 1 if the sale was sold during these years, zero otherwise --- These variable do not apply in calculating the AMP because in MPS applies the dummy variable from the latest year (2007) to all permits in application.

Decked Volume --- coniferous volume that has been previously felled and decked --- This variable does not apply in calculating the AMP because the practice of combining decked timber with standing timber only occurs in BCTS, and therefore no AMP permits will contain decked volume.

Second Quarter Auctions --- 1 if auction sold during the second quarter, zero otherwise --- This variable does apply but the average value of the variable from the auction dataset is applied in all cases and this constant value is added into the constant from the regressions, and therefore no longer appears explicitly in the equation.